Superior
Health Council

The effects of use of screens and social media on young people

December 2025
No. 9877

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Please cite this document as follows:
Superior Health Council (of Belgium). The effects of use of screens and social media on young people. Brussels: SHC; 2025. Report No. 9877.

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With the support of:
Federal Public Service Health, Food Chain Safety and Environment.

Superior Health Council

ADVISORY REPORT OF THE SUPERIOR HEALTH COUNCIL no. 9877

The effects of use of screens and social media on young people

In this scientific advisory report, which offers guidance to public health policy-makers, the Superior Health Council of Belgium provides recommendations to protect children and young people from the harmful effects of screen use and social media and promote safe and healthy use.

This version was validated by the Board on
5 November[1]

SUMMARY

In April 2025, Federal Minister of Health Frank Vandenbroucke tasked the Superior Health Council (SHC) with assessing the impact of screen and social media use among young people and formulating recommendations for the federal government. This initiative aligns with efforts already underway at the level of the federated entities and within the broader European context.

To carry out this mission, an ad hoc multidisciplinary working group was formed. Its work was based on a comprehensive literature review, partially applying the GRADE methodology, with particular attention given to recent studies, qualitative research, and vulnerable populations.

Screens and social media use have become ubiquitous in the lives of young people. Civil society and public authorities are paying growing attention to the potential negative effects of screens and social media. This increased concern provides an opportunity for evidence-based and balanced policy responses that aim to promote safe and healthy screen and social media use. The SHC stresses that public policies must be grounded in scientific evidence rather than myths or moral panic. Ill-informed measures risk being ineffective or even counterproductive.

The **effects of screen and social media** use are generally **mild to moderate and highly context-dependent**. While screen time has a more established impact on somatic health issues such as sleep or vision problems, the relationship between screen time and mental health is complex and does not support simple causal conclusions.

Documented physical risks include sleep problems, eye strain and myopia, and sedentary behavior. Links have also been identified between excessive screen use and developmental delays in motor, language, and cognitive domains, although some educational content may have beneficial effects when properly supervised.

[1] The Council reserves the right to make minor typographical amendments to this document at any time. On the other hand, amendments that alter its content are automatically included in an erratum. In this case, a new version of the advisory report is issued.

The impact on mental health depends more on the nature of the content, platform architecture, context of use, and individual characteristics than on exposure time alone. Certain practices can foster creativity, social connection, and learning. Others-particularly passive and prolonged exposure to harmful content-are associated with negative outcomes such as anxiety, depression, body dissatisfaction, and sleep disturbances. Young children and adolescents are especially vulnerable. Importantly, the recent deterioration in youth mental health cannot be attributed solely to digital media. It is a multifactorial issue, with academic pressure, poverty, and social inequality often playing a more significant role. The effects of media exposure are generally of small to moderate magnitude.

Major psychosocial risks include cyberbullying, sexting, grooming, and exposure to harmful content such as idealized body images, risky challenges, violence, and eating disorders. Addictive behaviors are also a concern.

The SHC's recommendations are based on an integrated, multisectoral approach and the principle of shared responsibility:

- Prevention and education: Strengthen media literacy and socio-emotional education, train parents and professionals (teachers, educators), launch targeted awareness campaigns, and promote meaningful offline alternatives and age-appropriate screen use in schools.
- Regulation: Hold platforms accountable by ensuring algorithm transparency, safety-by-design principles, and stronger content moderation. Reinforce protections for minors in line with European directives.
- Support and detection: Reinforce and develop accessible support services such as helplines and training for health professionals. Integrate screen exposure assessments into routine health check-ups.
- Research and governance: Establish a national digital health observatory, accelerate interdisciplinary research, and anticipate the effects of emerging technologies such as artificial intelligence.

The issue of setting a legal minimum age for smartphone and social media use remains divisive. A majority of experts do not support a general ban on smartphones before age 13, citing insufficient scientific evidence and practical challenges. However, most support restrictions on social media use before age 13, invoking the precautionary principle. Opponents of such restrictions highlight potentially even more problematic unintended consequences, enforcement difficulties, and the need for targeted regulation rather than blanket bans. All experts agree on the need for a comprehensive and gradual approach. In this context, it is advisable to limit screen exposure before the age of 24 months and to introduce social media gradually - ideally not before age 13 - within a guided and educational framework.

In conclusion, the SHC emphasizes that screen use is part of a broader societal challenge at the intersection of mental health, social inequality, and a rapidly evolving digital landscape. Isolated measures, such as age restrictions, will not suffice. Only a coordinated combination of educational, preventive, regulatory, and support strategies can effectively mitigate risks while preserving the potential benefits of digital technologies for young people.

Keywords and MeSH *descriptor terms*[2]

MeSH terms*	Keywords	Sleutelwoorden	Mots clés	Schlüsselwörter
Screen Time	Screen use	Schermgebruik	Utilisation des écrans	Bildschirmnutzung
Television	Televised Media	Televisiemedia	Médias télévisés	Fernsehvermittlung / Fernsehmedien
Video games	Video games	Videospellen	Jeux vidéo	Videospiele
Social Media	Social Media	Sociale media	Médias sociaux	Soziale Medien
	Digital content	Digitale inhoud	Contenu numérique	Digitale Inhalte
Child, preschool	Early childhood	Vroege kinderjaren	Petite enfance	Frühe Kindheit
Child	Children	Kinderen	Enfants	Kinder
Adolescent	Adolescents	Adolescenten	Adolescents	Jugendliche
Mental Health	Mental Health	Geestelijke gezondheid	Santé mentale	Psychische Gesundheit
Health	Physical Health	Lichamelijke gezondheid	Santé physique	Körperliche Gesundheit
	Online risk behaviors	Risicogedrag online	Comportements à risque en ligne	Risikoverhalten online
Child development	Child development	Ontwikkeling van het kind	Développement de l'enfant	Kindesentwicklung
Technology addiction	Problematic use	Problematisch gebruik	Usage problématique	Problematische Nutzung

MeSH (Medical Subject Headings) is the NLM (National Library of Medicine) controlled vocabulary thesaurus used for indexing articles for PubMed http://www.ncbi.nlm.nih.gov/mesh.

List of abbreviations used

ADHD	Attention-Deficit/Hyperactivity Disorder
ASD	Autism Spectrum Disorder
AVG	Active video game
BIPT	Belgian Institute for Postal Services and Telecommunications
BMI	Body mass index
CF	Cardiorespiratory fitness
CB	Cyberbullying
DMA	Digital Markets Act
DSA	Digital Services Act
DSM-5	Diagnostic and Statistical Manual of Mental Disorders 5th Revision
ESM	Experience sampling method
FoMO	Fear of Missing Out
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HBSC	Health Behaviour in School-aged Children
HRV	Heart rate variability
ICD-11	International Classification of Diseases 11th Revision
MET	Metabolic equivalent
MVPA	Moderate-to-vigorous physical activity
NCDII	Non-consensual distribution of intimate images
OR	Odds ratio
OSMR	Online Safety and Media Regulation

[2] The Council wishes to clarify that the MeSH terms and keywords are used for referencing purposes as well as to provide an easy definition of the scope of the advisory report. For more information, see the section entitled "methodology".

OSP	Online service providers
PSMU	Problematic social media use
RCT	Randomized controlled trial
REM	Rapid eye movement
SES	Socio-economic status
SHC	Superior Health Council
SM	Social Media
SWS	Slow-wave sleep
TB	Traditional bullying
TPA	Total physical activity
VLOP	Very large online platform
VLOSE	Very Large Online Search Engine
VR	Virtual reality

I. INTRODUCTION AND ISSUE

In April 2025, the Federal Minister of Health, Frank Vandenbroucke, requested the Superior Health Council (SHC) to issue an advisory report on the effects of excessive screen use and social media among young people, in line with the federal government agreement that provided for mapping these issues together with the federal government's partners. Several initiatives have already been launched at the European level and in neighboring countries (e.g., France, The Netherlands), as well as within the federated entities. Respecting the division of competences and in coordination with the policies of the federated entities in this field, the Minister expressed the intention to establish a policy aimed at minimizing the health impact and, in this context, sought the expertise of the SHC.

The Minister asked the SHC to develop an advisory report addressing the following questions:

1. What is the current state of scientific knowledge regarding the health impact of screen use and social media among young people?
2. Which research questions remain open?
3. What are the different levels of government (communities, EU, neighboring countries, others) working on, and what good practices exist?
4. In this context, what policy measures could be taken additionally by the federal government, and how should they be organized to limit as much as possible the negative health impact on young people?

The SHC was asked to respond to this request within 6 months.

II. METHODOLOGY

After analysing the request, the Board and the Chair of the working group identified the necessary fields of expertise. An *ad hoc* working group was then set up which included experts in a variety of complementary fields covering the key domains required including communication science, psychological science, medicine, psychiatry, and physiotherapy. While not all sub-disciplines could be represented within the six-month timeframe, the group's expertise contributed to a comprehensive and balanced approach to the topic. Moreover, experts from a broad range of societal and clinical settings were also invited to represent the broad variety of actors that are working in this area[3]. The experts of this working group provided a general and an *ad hoc* declaration of interests and the Committee on Deontology assessed the potential risk of conflicts of interest.

This advisory report is based on a review of the scientific literature published in both scientific journals and reports from national and international organisations competent in this field (peer-reviewed), as well as on the opinion of the experts.

In certain sections, the GRADE approach (Grading of Recommendations Assessment, Development and Evaluation)-a structured method used to assess the quality (or certainty) of scientific evidence and the strength of recommendations-was applied. However, given the strict deadlines imposed, it was not possible to use this approach for every chapter.

In other sections, attention is given to *recent research* as technological innovations lead to a fast evolving mediated landscape[4]. Limitations of the available evidence, such as reliance on cross-sectional and self-reported data, are acknowledged, and where possible, effect sizes, dose-effect relationships, and distinctions between higher- and lower-quality evidence have been considered to support balanced interpretation. In addition, *time sensitive* research helps to answer whether media is the cause of change, or whether different types of adolescents are using different types of media, or both (i.e., dynamic interaction). Overall attention is given to the effect sizes to also understand the strength of the effect. *Qualitative research* is further added to ensure a child-centered perspective and include the opportunities and struggles formulated by minors themselves (i.e., self-perceived effects literature).

Particular attention is further given to vulnerable and/or *susceptible groups* in line with the digital inequality literature. Note that especially third level digital inequalities (i.e. first level = inequalities in access to technology; second level = inequalities in digital skills; third level = inequalities in outcomes or benefits from technology use) are being considered given the focus on content effects in the current report (Rosic, 2025).

The input of societal actors and stakeholders was solicited towards the end of the process to incorporate a wide variety of views and concerns. This process had to be concise provided the strict deadline of the report.

Once the advisory report was endorsed by the working group (and by the standing working group mental health), it was ultimately validated by the Board.

[3] Given the very tight timeline (six months to respond to the request), stakeholder involvement was not as complete and in-depth as it would have been if more time had been available. They will therefore need to be closely involved in the next stages of the advisory report's implementation.
[4] A topical example is that the conclusion on, for instance, passive social media use and depressive symptoms in adolescents has changed after TikTok became more popular anno 2023 (ICA, 2025; Vereecke et al., 2025; Lebedikova, 2026).

III. ELABORATION AND ARGUMENTATION

1. Introduction

There is much debate in society over the harms associated with children and adolescents' screen use. In recent years, **especially adolescent smartphone use** has come under scrutiny, leading to policy initiatives such as a smartphone ban in schools or recommendations not to use certain social network platforms before the age of 15, as in the Netherlands. In addition, for younger children, concerns over early exposure to digital technologies and screens have become more prominent.

The prominence of these concerns can be understood as part of a broader 'tech-lash' in society: algorithms, user-generated content, short form video, engagement enhancing mechanics and anytime, anyplace connectivity with mobile data and smart appliances, ... there is increasing awareness in society that certain aspects of the contemporary media environment can come with drawbacks: cyberbullying, exposure to unrealistic body ideals, addictively designed video games, social media and video sharing platforms, but also dis- and misinformation are just a few examples illustrating how digitization and datafication might hamper the health and well-being of individuals, and undermine the (democratic) well-functioning of society.

With increasing public awareness, institutions and governments are faced with growing demands from the public to develop policies and regulations on digital technology use, especially for children and adolescents. A variety of measures taken abroad show that policy makers have a role to play. There is also growing pressure from lobby groups, such as the Kids Unplugged[5] initiative in Belgium. This further contributes to a sense of urgency that action – in the form of policy and regulation – is needed.

It is essential, however, that **policies and regulation are developed to promote safe and healthy screen and social media use based on scientific evidence, and are not just drawn from anecdotal evidence or "moral panic" thinking**. There are a lot of myths about screens and digital media use – it is essential to not let these inform government actions, as ill-informed actions themselves may lead to ineffective – or even unintentionally harmful – policies and regulations. The effects of screen and social media use are generally mild to moderate and highly context-dependent. The aim of this report is therefore to (1) provide an overview of recent scientific evidence, followed by (2) a brief discussion of actions that are currently already being undertaken at different levels of governance. The report ends with (3) a set of conclusions and recommendations.

2. State of scientific knowledge

2.1. Introduction

In this first section of the report, we provide an overview of the scientific evidence in relation to the impact of digital screen use on children and adolescents. Before presenting the state of the art, it is important to briefly elaborate on some background and three important considerations that the reader of this document needs to be attentive to.

2.1.1. Children and adolescent's health and well-being: A 'wicked problem'

The call to develop regulations and policies surrounding the screen use of children and adolescents is understandable: there are concerns over a deterioration in the health and well-

[5] https://www.kidsunplugged.be/: KidsUnplugged is a movement by parents for parents, which aims to protect children from the harmful effects of smartphones.

being of these populations, and in view of the recent widespread diffusion and use of digital technology by young people, it is logical to turn towards the role of digital media, and to explore their role as a potential cause of this deterioration. One of the key reasons that screen time and social media specifically have been implicated in debate on mental health is that mental health in youth, especially in girls, has deteriorated since 2010 which coincides with the increasing popularity of social media platforms such as Facebook (see Haidt, 2024).

Before presenting evidence on the association between screen time and children and adolescents' health well-being, it is essential to point out that the issue of declining health and well-being should be considered as a 'wicked problem'. It is generally acknowledged that most mental health problems are complex, multifactorially determined phenomena. A **correct analysis of the (possible) causes of decreases in mental health shows that several factors play a role, of which digital media use (including the use of smartphones and social media) is just one** (see table below, from: Valkenburg et al., 2024). Moreover, other factors (e.g. school pressure, poverty and inequality) appear to be stronger predictors than digital media use: overall, media effects are known to be small effects (Armitage et al., 2024). If the aim is to tackle the declining health and mental well-being of young people, these elements must also (and especially) be addressed.

Table 1: Mentioned causes of the decline in mental health of young people (translated from: Valkenburg et al., 2024, p.4)

1	Broader definition of mental health problems (±1960 →)
2	Expansion of diagnostic criteria (±1960 →)
3	Greater collective awareness of mental health problems (±1960 →)
4	Decline in negative stereotypes about mental health problems (±1960 →)
5	Increase in mental health problems among parents (±1960 →)
6	Decline in religiosity (±1970 →)
7	Increase in individualism (±1970 →)
8	Greater emphasis on extrinsic goals: financial success, status, and beauty (±1980 →)
9	Shift toward knowledge economies in affluent countries (±1980 →)
10	Decline in social play in early childhood (±1980 →)
11	Increase in school stress among youth (±1990 →)
12	Changing media environment (violence, consumerism, pessimism) (±1990 →)
13	Increased worries of youth about their future (±2010 →)
14	Smartphones and social media (±2010 →)
15	Covid-19 lockdowns (2020)

Furthermore, what additionally complicates understanding the role of digital media use in the 'wicked problem' of children and adolescents' health and well-being, is that digitization may have an indirect, and sometimes invisible impact on these other factors (e.g., digitization affecting poverty). As such, digital media use is influenced by, as well as intrinsically linked to a wide variety of factors that influence mental health. Therefore, researchers have argued that the effects of digital media use need to be understood within a complex and dynamic network of variables.

In the current report, we focus foremost on the **evidence that suggests a direct link** between digital media use and children and adolescents' health and well-being. We ask the reader to keep in mind that **media effects are typically moderate to small.** This means that, while media effects may be there, they are typically not the single factor impacting health and well-being. To put this further in perspective, effect sizes are typically also moderate to small in other areas such as psychology or medical science (i.e., effect sizes are comparable to those of psychology and effects of parenting styles or to reported effects in medicine on genes and cancer, Valkenburg & Peter, 2013)

2.1.2. What's in a name: 'well-being', 'screen time', and 'young people'

A second important consideration is that the current report presents evidence on complex issues that often come with complex, and sometimes fuzzy terminology. When we talk about terms such as "well-being", "digital media use", and "young people", we must remember the following.

- In the case of "health and well-being", for example, health may refer to both physical and mental health, and well-being can refer to both hedonic well-being (feeling good, being happy) and eudaimonic well-being (feeling like living a meaningful life).
- Well-being is also distinguished from "ill-being" (experiencing depressive symptoms and stress, being anxious, having low self-esteem, being dissatisfied with one's own life). "Well-being" and "ill-being" are not just the other sides of the same coin (Valkenburg, 2022; Parry et al., 2022; Meier & Reinecke, 2021; Rosic, 2025). Rather, they represent two relatively independent dimensions of mental health: one can experience high levels of well-being while still facing mental health problems, or have few psychological complaints while reporting low levels of well-being. At the same time, these dimensions are interrelated: strengthening well-being can reduce the risk or burden of mental health problems, while alleviating symptoms of ill-being can create space for greater flourishing (Keyes, 2005). It is important to bear in mind that there is a complex relationship between mental health and well-being (e.g., Agteren & Lasiello, 2020).
- Well-being itself is often considered an umbrella term and measures such as "feeling good" have been called too generic to understand the nuanced processes that affect digital media uses and their outcomes. Specified outcomes such as body dissatisfaction, sleep problems, gender stereotypical traits, sexualisation, loneliness and sexism have been noted as much more appropriate to be considered in relation to digital media uses as they have much more relevance in relating to *particular* digital media uses practices (Valkenburg, 2022; Parry et al., 2022; Meier & Reinecke, 2021; Rosic, 2025)
- The term "digital media use" can also cover a lot of things. Sometimes reference is made to the use of specific devices (e.g. smartphones); types of platforms or apps (e.g. TikTok versus Snapchat); types of use (active versus passive) for various reasons (social, informational, entertainment ...), different types of content (funny videos, news ... but also: violence, sexual images, idealized bodies and lives ...) and interactions (positive or negative, but also liking, commenting, posting, chatting etc.) with different people – acquaintances (parents, friends) and strangers. In other cases, more general terms (such as screen time) or terms that already refer to a problem ("excessive screen time", "problematic use", "cyberbullying", "grooming", etc.) are also used.
- Finally, "young people" are not a homogeneous group, and the boundaries of what constitutes a 'young child' versus an "adolescent" are not always applied in the same way across research. Moreover, characteristics such as gender, age, socio-economic status (SES), cultural background, emotion regulation skills, personality traits ... influence media use, well-being, and the (possible) relationship between the two. Scholars have cautioned against overreliance on summary approaches and group-

level data that treat all users as a single, homogeneous group. In such analyses, the relationship between media use and well-being is often flattened, since individuals who thrive with social media are averaged together with those who suffer significantly. This masking effect can lead to the misleading conclusion that there is little or no overall impact (e.g. Rosic, 2025). Causal effect heterogeneity[6] has therefore been called the golden standard for future research (Valkenburg, 2022; Valkenburg et al., 2024).

In the current report, we focus foremost on **the psychological impact of digital media use on children and adolescents**, as this impact is currently most heavily debated in society. We thereby focus foremost on indicators of mental health (e.g., depression), well-being (e.g. the quality of social relationships, life satisfaction), and ill-being (e.g. social anxiety). Additionally, we briefly discuss societal and medical impact. We differentiate between **three age groups**, infants/toddlers/preschoolers (roughly aged 0 – 6 years), children (roughly aged 7-12 years) and adolescents (roughly aged 13-18 years). Where relevant, we differentiate between **different types of screens** (e.g. television versus smartphones), platforms (e.g. Instagram versus TikTok), or even media activities within specific platforms (e.g. scrolling versus chatting). Note that in terms of causal effect heterogeneity the applied attention in this report to heterogenous effects may potentially not be sufficient to overcome the flattening / "nomothetic approach" problem that has been characteristic to the research on digital media uses and well-being.

2.1.3. The 'moving target' problem

One final consideration we wish to give to the reader before presenting the evidence, is that media platforms and technologies, like society in general, are constantly changing – a phenomenon that is known in the literature as the 'moving target' problem. Especially when we speak of social media platforms, it is essential to be considerate of how much these platforms have changed from their initial entry into society: features such as the infinite scroll or algorithmic personalization are relatively recent; similarly, changes in technology cannot be separated from broader evolutions and changes in society. For example, the changes in the platform X (formerly known as Twitter) can be situated against broader socio-political changes in society, and these impact the nature and effects that the use of these platforms have on society (e.g. less content moderation). Moreover, the recent integration of AI developments in social media may affect user experiences and consequences on (mental) health.

In most studies on the relationship between social media and mental health, differences between social media platforms are not taken into account. Usage time is either collapsed across platforms or only usage of a single platform is measured (in older studies that platform was typically Facebook whereas in more recent studies often Instagram is examined). This is troublesome as platforms do not only differ in architecture and affordances, but also in (often implicit) socio-cultural norms (Masciantonio, 2021). TikTok, for example, is markedly different from more traditional platforms such as Facebook (excluding reels) by offering an endless stream of personalised videos. Initial reviews on more novel platforms such as TikTok are being published (e.g. Conte et al., 2025) but more non-cross-sectional data is needed to understand their impact on mental health. Moreover, the conclusion that user and usage characteristics matter likely holds for all social media platforms, but future research is needed to also integrate platform characteristics in the equation.

[6] This methodology combines nomothetic (group-level, population generalization) and idiographic (individual-level, person-specific) approaches by gathering extensive experience sampling data from large and representative samples, often using over 100 repeated assessments per participant. This allows for the use of advanced statistical models like Dynamic Structural Equation Modeling to estimate both average (population-level) and person-specific (individual-level) effects of media use on well-being. By incorporating tests for moderators and evaluating meaningful effect sizes at the individual level, the method can identify which subgroups experience harm, benefit, or no effect, thus providing more precise and actionable insights than group averages alone. This approach enables researchers and policymakers to address the true diversity of responses among young people to social media use.

In the current report, we focus on recent evidence that reflects on **the situation as it presents itself currently, anno 2025**, but it is highly likely that, under the influence of generative AI as well as changes in the broader sociopolitical landscape in which tech companies currently operate (also facing increasing regulation from the EU), we may be confronted with a new media reality soon; this observation only further emphasizes the need to continue investments in media effects research – research in which Belgium is currently an international front runner.

2.1.4. Time and Causality

Rosic (2025) recently summarized the **challenges within research of digital media uses and causality**: the majority of mostly older research with adults and particularly adolescents has been cross-sectional in nature, which precludes the establishment of causality (Appel et al., 2020; Orben, 2020; Odgers & Jensen, 2020; Valkenburg, 2022). Furthermore, scholars have criticized that most studies have employed trait-level measures that do not specify a timeframe, while it is known that indicators of areas important for adolescents' developmental tasks, such as indicators of social development (e.g. friendship closeness) (Pouwels et al., 2021), cognitive development (e.g. attention) (Siebers et al., 2021), and mental health development (e.g. affective well-being) fluctuate in specific time frames (Meier & Reinecke, 2021). **Longitudinal and intensive longitudinal research** enables the separation of the between-person correlations (i.e. stable differences between people) from within-person effects (i.e. the extent to which the deviations from an individual's baseline carry over to the next time-point) (Hamaker et al., 2015). Yet such research **remains scarce**.
Such time sensitive designs are necessary to answer the key question: Are screen uses truly causing problems? A similar question can be asked in relation to positive effects of screen use. Recent research has increasingly applied such time sensitive designs causing prior meta-analyses to sometimes give a bit of an outdated perspective on how the state of the art of research currently looks in terms of causal conclusions (important exceptions are for instance the time sensitive meta-analysis on social media and body image; De Valle et al., 2021).
On the other hand, the currently applied research approaches have often been deemed to be inappropriate to capture what are called the **dynamic media effect processes** that are believed to underly the relationship between screen uses and users' identity (Valkenburg et al., 2024). Such an approach is consistent with foundational media effects theories, which suggest that over time, psychosocial functioning remains stable through the interaction of positive and negative feedback loops (Cacioppo & Cacioppo, 2018; Granic, 2005; Slater, 2007).*"These intertwined feedback loops illustrate the complex dynamics of social media's impact on adolescent psychosocial functioning. This interplay of positive and negative feedback loops may stabilize mean levels of psychosocial functioning in the long term. Only by following adolescents over extended periods of time, it is possible to investigate the potential impact of feedback loops and to find out whether (positive or negative) effects of social media use experienced in a certain period are predictive of the same effects experienced in later periods.*" (Pouwels et al., 2025, p.754).
Additionally, scholars have emergingly uncovered that short-term effects of digital media uses and well-being are different than long-term effects as the short-term effect will not always result in stability as is expected in the intertwined feedback loops (Devos et al., 2022; Rosic, 2025). Moreover, effects differ depending on individuals 'baseline' positions at the start of the development of an effect (Vandenbosch et al., 2025).

2.1.5. Quantitative vs Qualitative approaches

The majority of research on the (causal) influence of digital media use and health has relied on quantitative research methods. These methods allow to relate measures of digital media use to well-validated measures of affective wellbeing and/or (mental) health. Yet, because of the intricate nature of digital media use and some of the challenges highlighted above, making

causal inferences is a major challenge in these types of research (see Vanden Abeele et al., 2025).

Qualitative research, with its idiographic orientation, seeks to complement the broad patterns identified in quantitative studies. This approach enables media users to express the diverse ways in which they engage with digital media and to describe how they perceive its effects (van der Wal et al., 2024; Rosic, 2025). As a result, qualitative studies have generated detailed narratives from young people about their rich variety in responses to digital media uses, highlighting both its perceived benefits and drawbacks (Weinstein, 2018).

Interestingly qualitative research, as compared to quantitative research, has much more frequently concluded that media users, such as for instance adolescents, experience a considerable impact from their use of digital media (Throuvala et al., 2019; Toh et al., 2019; Vaterlaus & Winter, 2021; Rosic, 2025; Maes et al., 2025). It remains currently unclear whether such different conclusions in terms of the magnitude of media effects exist because quantitative research has too much ignored causal effect heterogeneity in its approaches or whether social desirability biases are at play. Rosic (2025) explains that such biases "may lead to the provision of a desirable answer (Miller, 2012), in line with socially constructed (Fulk et al., 1990; Wolfers, 2024) and prevalent societal discourse regarding the harmful effects of digital media (Lanette et al., 2018; Sutton, 2020).

2.2. Psychological impact

In this section of the report, we focus on the available evidence in relation to the psychological impact of digital media use on children and adolescents' mental health and well-being.
We organize the evidence according to three main types of harms that are the cause of frequent concern in society:

- Harms resulting from **the time spent** on screens:
  Children and adolescents spend large amounts of time using (digital) media. In the first section of this chapter, we (1) present some facts and figures on children and adolescent digital media use. We then focus on (2) research that examines 'screen time' - this research reveals the importance of differentiating between different types of activities performed on screens. Next, we elaborate on the question of what constitutes too much time on the screen. Here, we first discuss (3) 'mundane' harms of excessive screen use, namely time displacement and interference. Finally, we discuss (4) how 'normal' use can become problematic use of media technologies.
- Harms resulting from **the content exposed to** on screens: In the second section of this chapter, we focus on the questions of how different content types prevail in different media with particular attention to so-called (1) antisocial or problematic and (2) prosocial or empowering content themes.
- Harms resulting from **the interactions** that occur via screens: we focus on cyberbullying, sexting, grooming; while also taking into account the positive effects of online friendships.

2.2.1. Psychological impact of exposure

a) Facts and figures on screen time

Children and adolescents spend a substantial portion of their time on the use of digital media platforms. Already in early childhood, toddlers and preschoolers live 'media lives', which at this age centre mostly around viewing video content on the television screen or on the screen of other media devices (such as tablets or smartphones). In Flanders, research from 2014 found that almost all preschoolers (96%) consume video content. The average television viewing time for preschoolers averaged around 11 hours per week, but with standard deviation of 7 hours, indicating large variability between preschoolers' viewing behavior (Beyens &

Eggermont, 2014). More recent findings from the German LIFE Child study (Schwarzer et al., 2022) paint a similar picture, reporting that preschoolers spend 45 minutes per day on – mostly television – screens, but with 24% of them showing more than 1 hour per day.

Among children in primary school, roughly aged between 7 and 12, we observe a gradually expanding media life. The most recent Apenstaartjaren report (Vanwynsberghe et al., 2024), which reports on the media life of Flemish and Brussels children, reports that among 7-8 year olds, 88% of children views television, 77% uses a tablet to access media content, 50% uses a computer and video game console, and 48% regularly uses a smartphone; by the age of 11-12 years old, the percentage of children viewing television (91%) and using tablets (75%) remain stable, but there is an increase in the use of computer (75%), smartphone (66%) and game consoles (61%). Most children live in media rich households. The average age to adopt a personal smartphone currently lies around 10-11 years. At this age, 47% reports also owning a personal tablet device, and 23% reports having a personal computer. Similarly, the most recent #Génération 2024 survey (Média Animation, 2024), which reports on the media life of French-speaking children and adolescents in Wallonia and Brussels, observed that, among children in 1st to 4th grade of primary school, 87% watch television, 66% use a (smart)phone, 64% use a video game console, 59% a tablet computer, and 40% a computer. One percent reports not using any of these devices. By the 5th year of primary school, an increasing number of children owning a (smart)phone is observed: 47% in 5th grade, 59% in 6th grade, and an increased 94% and 99% during 1st and 2nd grade of secondary school, respectively. Overall, among older children and adolescents (5th grade of primary school to 7th grade of secondary school), 90% watch television, 72% use a computer, 68% a video game console, 46% a tablet computer (which is a decrease as compared to younger children), 23% listens to music through radio or a music player, 23% again uses smart watches or glasses, 18% use smart speakers and 9% a virtual reality headset.

According to the same #Generation2024 survey, a minority of children have access to social networks. 32% use Snapchat (the most popular at this age) at least once a week in 5th and 6th grade of primary school, whereas 65% use it once a week in 1st and 2nd grade of secondary school (Média Animation, 2024). Similar numbers were reported in a Flemish study (Vanwynsberghe et al., 2024; e.g. 36% of children before 12 years old adopted TikTok). Youtube is one exception as it is generally popular in children.

Zooming in on the smartphone and the internet, European time use data from the large-scale EU Kids online project (Smahel et al., 2020) indicate that European 9–11-year-olds spend 114 minutes (or almost two hours) per day online (via the smartphone or computer). This number increases to 192 minutes (or 3 hrs and 12 mins) per day for 12-14-year-olds, and 229 minutes (or almost 4 hrs) per day for 15-16-year-olds.

Gonzalez (2025) recently summarized the screen use in adolescence based on Apestaartjaren reports (Vanwynsberghe et al., 2022; 2024). From the age of 12, almost every teen has their own smartphone. Among adolescents, social media is highly popular: In Belgium, 82% of 13–18-year-olds reported having at least one social media account in 2022 (Vanwynsberghe et al., 2022). YouTube, Snapchat, TikTok, and Instagram are the most popular platforms among 11–18-year-olds (Vanwynsberghe et al., 2022, 2024). Usage patterns shift with age: younger adolescents primarily use YouTube, Snapchat, and TikTok, while older adolescents rely more on Snapchat, Instagram, and TikTok, though YouTube remains consistently popular across age groups (Vanwynsberghe et al., 2022; 2024; Arcom, 2024). Notably, in 2020, Instagram was the platform with the highest reported account ownership, but in recent years TikTok has rapidly become one of the most widely used platforms among teens (Rideout & Robb, 2019; Rideout et al., 2022). In terms of time spent, 77% of adolescents aged 12–18 watch online videos (mainly on YouTube) for an average of 1 hour and 46 minutes per day, and 67% report using social media for roughly two hours daily

(Rideout et al., 2022)." Similar conclusions can be drawn regarding the French-speaking children and adolescents based on the #Generation2024 survey (Média Animation, 2024).

Playing video games is also a common activity among adolescents aged 9-16 years, albeit showing a pronounced gender difference: while 59% of European boys report playing video games daily or more, only 29% of girls report gaming daily (Smahel et al., 2020). A recent study comparing EU adolescents' video gaming behavior found the average gaming time on school days to be 2 hours and 25 mins per day, with again a large standard deviation of 1 hr and 43 minutes (Colasante et al., 2022). Among adolescents who self-report struggling with problematic gaming behavior, the average daily video game time increases to 3 hrs and 32 minutes per day on school days.

b) The sense and nonsense of focusing on 'screen time'

There is a tendency in public debates to focus on 'screen time' in general terms, without differentiating between what that screen time constitutes, and by whom and in what contexts screens are used for what purposes and activities. This approach often leads to results that show no associations, or only very weak associations between 'screen time' and (mental) health and well-being. Below, we illustrate this by giving an overview of the findings in relation to 'screen time' and well-being, first focusing on children and electronic screens (including tv), then focusing on adolescents and social media:

Children and electronic screen time: aggregate effects. In their recent umbrella review of meta-analyses focusing on benefits and risks associated with youths' interactions with electronic screens, Sanders et al. (2024) found that associations between screen use, as expressed in time on screens, and outcomes showed small-to-moderate effects (with high heterogeneity, and few meta-analyses graded as having low risk of biases), which varied depending on the outcome. They identified two types of outcomes: education and health. Regarding education, general screen use, television viewing and video games were all negatively associated with learning. However, when taking into account certain contexts, such as co-viewing (see part 2.4 on contact), the nature of the content (e.g. educational, see part 2.2.2 on content), the motivation behind screen use (e.g. screen used in order to attain a learning goal, screen used in an educational setting…; see below) or the type of device (e.g. touch screens, augmented reality …), the association between screen use and education became positive, suggesting that limiting exposure to "time spent in front of a screen" is insufficient, and that other variables need to be taken into account.

Regarding health-related outcomes, similar results were obtained: content (e.g. digital advertising of unhealthy food or risky content *vs* content targeting healthy behaviours) and motivation (e.g. screen-based intervention aiming at healthy behaviours) were important factors in the relationship between screen use and health-related outcomes. Regarding this outcome, most effects were small. Social media was one type of exposure that showed consistent (but small) associations with risk taking, unsafe sex and substance abuse. In addition, whereas some research they included found linear association between screen time and a specific outcome, others found non-linear relationships, especially for very high levels of screen use.

In their review, no age-based conclusions were drawn due to a small number of studies and missing individual study data. They also observed high differences in measures across studies. As such, spending time watching "TV programs and movies" covers an important range of content, which may explain heterogeneous associations observed.

In sum, the evidence in relation to children and electronic screen time calls for guidelines that are less simplistic and that acknowledge **nuances, going further than the sole duration of device type**. Rather than targeting reducing screen use, the researchers invite to understand better screen use (considering context, environment, content …). They additionally identified a generalised use of self-report studies (which lacks the necessary nuance and may be inaccurate). Moreover, they did not draw any causal conclusions but suggested that **the directions of causality likely depend on the specific exposure and outcome, as well as potential third variables and/or combination of influences**.

Adolescents and social media screen time: aggregate effects. A massive number of studies examining this relationship has been conducted. These findings have been summarized in an almost equally impressive number of reviews and meta-analyses. We will therefore maximally rely on meta-reviews (i.e., reviews of prior reviews and meta-analyses) as well as very recent meta-analyses to provide an overview of this large evidence base.

One of the first extensive meta-reviews was published five years ago. Reviewing evidence until 2019, Orben (2020) noted that no less than 80 systematic reviews and meta-analyses had been conducted on the relationship between social media and mental health. Orben provided a narrative review of this evidence and argued that the relationship between time spent on social media and mental health in adolescents is negative but that t**he size of this effect is (very) small** ($r \approx -.10$). Similarly, reviewing 34 reviews and meta-analyses published until 2019, Meier and Reinecke (2021) concluded that the relationship between social media and mental health is characterized by a small negative association with no outspoken differences between adolescents and older participants. Valkenburg et al. (2022) built upon this work and provided an overview of seven meta-analyses, nine systematic reviews and nine narrative reviews published between 2019 and mid-2021. Consistent with the conclusions of Orben (2020) and Meier and Reinecke (2021), they mentioned that **most reviews interpreted the associations between social media use and mental health as 'weak' or 'inconsistent'.** For example, in a meta-analysis by Ivie et al. (2020) the correlation between social media usage and depressive symptoms was found to be positive but weak ($r = .11$).

The most recently published meta-analyses align with the claim that the relationship between time spent on social media and mental health is characterized by non-significant or weak effect sizes. For example, Marciano et al. (2024) conducted a meta-analysis of 78 studies and found a non-significant correlation between social media usage and well-being ($r = .02$). The same conclusion was reached in a meta-analysis of 46 studies by Ferguson et al. (2025) on the relationship between time spent on social media and adolescents' mental health problems. Fassi et al. (2024) conducted a meta-analysis of 143 studies on the relationship between social media and internalizing symptoms (e.g., depression and anxiety) in clinical and community adolescent samples. A significant but weak positive association was observed (clinical samples: $r = .08$, community samples, $r = .12$).

A limitation of the above-mentioned meta-reviews and meta-analyses is that the conclusions are mainly based on cross-sectional studies. During the past years, an increasing number of longitudinal and experience sampling studies have been conducted allowing to investigate whether social media use predicts mental health outcomes over time. However, **similarly to meta-analyses on cross-sectional findings, meta-analyses of longitudinal studies did not find evidence for substantial relationships between social media usage and mental health** (Ferguson et al., 2024; Godard & Holtzman, 2024).

While longitudinal methods can provide some insight in the causal direction of effects (does social media usage impact mental health or vice versa), experiments are particularly (but not exclusively) important to allow to make causal inferences, but such studies are relatively rare. Most conducted experiments followed a similar design: participants are allocated to one of two

conditions. In the control condition, participants continue using social media as usual whereas in the experimental condition participants are asked to reduce or eliminate social media use for a short (lab studies) or long period of time (field studies). Ferguson (2025) recently conducted a meta-analysis of 27 experimental studies (not restricted to adolescents) and concluded that while there is large variability in results between studies, the average effect size is essentially zero.

In sum, research on the relationship between time spent on social media and mental health does not reveal strong associations. In some meta-analyses, evidence tilts in the negative direction but also then effect sizes are only weak (correlation ≈ -.10). However, such aggregated effect sizes may hide a deeper set of complexities (Kross et al., 2021; Verduyn et al., 2022; Sala et al., 2024). **The consequences of social media for adolescents depend on how social media are used (usage types), choosing theoretically relevant well-being outcomes, as well as characteristics of social media users (user characteristics).**

c) A more nuanced perspective on the relationship between time spent on social media and mental health: broad usage types and user characteristics

In response to growing criticism over 'screen time' research, in the past fifteen years, researchers have begun differentiating between different user types and user characteristics, to gain a better grip on the association between aggregate level screen time and (mental) health and well-being. We report below on how these efforts have informed our understanding of the impact of social media screen time.

Broad usage types. Adolescents can use social media *actively* or *passively*. Adolescents spend time using social media actively when they engage with others by producing content such as posting, commenting, or sending messages. Conversely, when using social media passively, adolescents only consume content (e.g., watching TikTok videos). According to the active-passive model of social media usage (Verduyn et al., 2017; Frison & Eggermont, 2016), active usage is positively related to mental health as it helps adolescents to build supportive networks and feel connected to others. In contrast, passive usage of social media would negatively impact mental health by stimulating damaging social comparisons, because content on social media is often selected and edited to express success.

Many studies have been conducted to examine the consequences of time spent using social media actively or passively for mental health. In a recent meta-analysis of 78 studies, Marciano et al. (2024) found that active social media use (r = .08) and social media communication (r = .12) – a subtype of active usage – were positively but weakly related to well-being while no significant associations were obtained for passive usage. Similarly, in a meta-analysis of 141 studies, Godard and Holtzman (2024) examined the relationship between active/passive social media usage and a wide range of mental health indicators. They found that most effects sizes were negligible (r < .10) but also that active social media usage is related to greater online support (r = .34), wellbeing (r = .15), and positive affect (r = .11), but also anxiety (r = .12). Results for active usage did not differ between adult and adolescent populations and for passive usage associations were largely found to be non-significant.

As such, similarly to overall time spent on social media, time spent using social media actively or passively only demonstrates weak associations with mental health outcomes. In their recently developed extended active-passive model, Verduyn et al. (2022) argued that it is necessary to make a distinction between different types of interaction when studying active social media usage as well as between different types of content when examining the consequences of passive usage. In the sections 2.2.3. Content and 2.3. Conduct further on in this report, the role of content and interaction types are discussed. This research reveals effect

sizes that are often substantially larger than those associated with total time spent using social media or using social media actively and passively.

User characteristics. There is growing consensus that the consequences of time spent on social media for mental health differ across adolescents. For example, in a Dutch study (Valkenburg et al., 2021), it was found that the self-esteem of the majority of adolescents (88%) was not impacted ($|r| < .10$) by their time spent on social media, but 8% experienced negative ($r < -.10$) and 4% experienced positive ($r > .10$) consequences. Such findings beg the question of which user characteristics operate as vulnerabilities or protective factors in the relationship between social media and mental health.
While it is sometimes claimed that social media holds especially negative consequences for adolescents, research on the role of age is mixed (for reviews, see Gugushvili et al., 2025; Meier & Reinecke, 2021). An interesting pattern was found, however, when making a distinction between young and older adolescents. Orben et al. (2022) conducted an analysis of two large-scale UK cross-sectional datasets encompassing 84.011 participants (10-80 years old) and found that the negative association between social media and life satisfaction was stronger amongst young adolescents (10-15 years old). Moreover, their analysis of a large-scale longitudinal dataset (17.409 participants, 10–21 years old) suggest distinct developmental windows of sensitivity to social media in adolescence, when higher estimated social media use predicts a decrease in life satisfaction ratings one year later. The authors found that these windows occur at different ages for males (14–15 and 19 years old) and females (11–13 and 19 years old). While interesting, the observed effects were still small in magnitude and additional research is needed to better understand the consequences of social media usage for “young” vs. “old” adolescents.

Gugushvili et al. (2025) recently conducted a scoping review of 30 studies examining user characteristics moderating the relationship between (overall, active and passive) social media usage and mental health. A total of 24 user characteristics were studied including age and gender. Most findings were mixed with one notable exception: people who tend to compare themselves to others are especially vulnerable when engaging in passive social media usage. Gugushvili’s review was not restricted to studies with adolescents, but this finding is relevant as adolescents are especially prone to engage in social comparison (Buunk et al., 2020). Aside from social comparison orientations, other personality dimensions likely play a role as well (Sala et al., 2024) but additional research is necessary before making strong claims.

d) When is much too much? Mundane digital harms and excessive media use

When focusing on **distal** (mental) health and general well-being outcomes such as depression or life satisfaction, focusing on the aggregate construct of 'screen time’ often does not lead to conclusive evidence because it ignores usage types and user characteristics. Yet, it is relevant to focus on the actual amount and frequency of digital media use, when considering **proximal** outcomes that are likely to be affected by time online (disregarding the activity or content).

Two ‘mundane’ harms that are relevant to discuss in this context are time displacement (‘wasting time online’) and interference (‘distraction’). In addition, screen time can also become so excessive that it becomes problematic, showing similar characteristics to other behavioral addictions such as a severe loss of control over the media behavior and the behavior creating significant functional impairment in daily life. In the current section, we first focus on the evidence in relation to the *mundane* harm of spending too much time online. Then we discuss the evidence in relation to problematic media use.

Mundane digital harms: Time Displacement and Interference

Time displacement. Time displacement, as a mundane digital harm, refers to the harm of digital media use taking time away from other activities that are considered more conducive

to mental health, such as sleeping or studying (Cocchi et al., 2025). Given that there are only 24 hours in a day, the more time that children and adolescents allocate to electronic screens, the less time they will spend on these alternative activities. In discussions over time displacement, it is essential to contrast actual research evidence on the time displacement effect with subjective experiences of time displacement, i.e. feelings of 'having wasted time online' (Cocchi et al., 2025).

With respect to actual research evidence, it is noticeable that there are very few studies based on time-use data that have systematically examined the time displacement effect, especially across various life domains. Overall, however, evidence on time displacement mostly points towards **'substitution' effects**, meaning that the time that is allocated to digital media use is mostly substituting the time that used to be allocated to other forms of media use, most notably television viewing (Lee & Leung, 2008). Röhlke (2025) for instance, found that, when adolescents receive their first mobile phone, their television consumption drops drastically, while phone use increases substantially. A recent experimental study by Hall et al. (2019), further supports the substitution effect. Hall et al. (2021) had young individuals abstain from social media use for a period of one to four weeks, to examine what participants would do with the time they used to spend on social media. The findings show mostly substitution (spending more time doing other things on the internet), together with spending a little more time on 'fringe activities' such as cleaning.

The observation that digital media use does not substantially displace time spent on other, often deemed 'superior' activities is corroborated by studies looking at specific forms of time displacement: A recent study by Reinhardt et al. (2023), for instance, examined if between 1993 and 2013 the time spent on digital media use has displaced the time that adolescents allocate to schoolwork. This study found that "although digital media use considerably increased over time, **the effects on school-related obligation time remained largely stable and, most importantly, small**" (p. 633). Similarly, Röhlke (2025) found no evidence in a German sample for digital media use displacing time spent on 'enriching activities' such as reading, doing homework, or engaging in cultural activities. With respect to social time displacement, a recent review by Hall and Liu (2022) similarly found there to be **little causal evidence of social media time displacing face-to-face time with family and friends**. Also, on the time spent engaging in physical exercise, there is no strong evidence for a time displacement effect taking place over time (Röhlke, 2025). For sleep, the evidence is more mixed (see further below).

Although time budget research does not warrant major concern over actual time displacement effects taking place, studies examining how digital media time use is subjectively experienced, do point towards especially social media use being the culprit of making young people feel **they have wasted time** (e.g., Kleeberg-Niepage & Degen, 2022). Research attributes these feelings to digital media being 'addictively designed', bringing users into a reduced state of awareness which may hamper with their experiences of user agency (Baym et al., 2020), but also sees it as the result of adolescents internalising broader societal discourses over screen time being a 'bad' and 'unproductive' use of their time (Jansson et al., 2025).

Interference. The evidence on interference effects is very strong. Building on the well-established multi-tasking literature that exists in the field of psychology, review studies show **smartphones to be a major cause of distraction, hampering psychological processes of attention, working memory and inhibition** (Liebherr et al., 2020). The evidence for the distracting effect of social media in particular is also strong. At the within-person level, 83% of adolescents find that social media distracts them in the moment, albeit the effect remains weak-to-moderate. Overall, **research findings support banning digital distractions during learning activities that require focused attention** (Liao & Wu, 2022).

The evidence mostly supports momentary effects; evidence on longer-term changes, i.e. of true **longer-term changes in the brain, is mixed or lacking** (Liebherr et al., 2020). Despite the strong evidence on the 'in-the-moment' effects of digital distraction on learning, studies examining between-person associations between smartphone/social media use, and academic performance show more mixed findings. Several studies find negative associations (e.g., Amez et al., 2021), but other work suggests that **at the between-person level, user characteristics play a key role in determining the direction and size of the association** (Kessel et al., 2020).

In sum, with respect to more mundane digital harm of time displacement, the evidence suggests that although there is little evidence for digital media use displacing 'healthier' activities, young people may subjectively experience their digital media use time as time that is 'not well spent'. With respect to interference effects, the well-established literature on multi-tasking and distraction provide strong evidence that digital distractions can impair attention and hamper (educational) performance.

Excessive or problematic media use ('media addiction')

Thus far, we have focused mostly on harm experiences that many individuals experience on a daily basis, which is why we refer to them as 'mundane harm experiences'. Yet, the pervasive presence of smartphones and social media in everyday life, combined with their built-in design elements with psychological mechanisms to prolong app usage, raises concerns from a public health perspective that usage can become so excessive that it results in a 'media addiction' (also referred to as excessive or problematic media usage).

When reading the existing literature, negative associations are mentioned in relation to the excessive use of smartphones, social media and video gaming, even though causality is not always clearly established. While spending much time is a component of addictive social media usage, addictive usage encompasses many additional features (e.g. resorting to social media/smartphones/video gaming to regulate emotions). Moreover, there is substantial criticism on the concept of a digital media addiction (e.g. to "diagnose" such a media addiction, the media usage should interfere with one's functioning and, hence, observed negative relations between media addiction and mental health are largely tautological).

Given that, at the moment, smartphone, social media and video game addiction are popular terms that cause widespread concern in society, we wrote a separate section on them below. It is important to note, however, that the parallels between these media addictions and other forms of media addictions are very high.

Smartphone addiction has increasingly attracted scientific attention over the last decade. There is a continued academic debate regarding the validity of smartphone addiction as a distinct disorder. Articles on smartphone addiction typically start from the assumption that it constitutes an addiction and structure their research accordingly, whereas other studies tend to explore arguments as to why such use does not fully satisfy the criteria required to define it as a true addiction (Yu & Sussman, 2020).

Billieux (2012) defined it as *"an inability to regulate one's mobile phone use, which eventually leads to negative consequences in daily life."* A recent systematic review reported that excessive smartphone use is associated with a broad spectrum of physical, psychological, and neurological outcomes (Ratan et al., 2021).

From a biopsychosocial perspective, the development of smartphone problematic use results from the interplay of biological, psychological, and social factors. Identified risk factors include female adolescence, predominant use for gaming or social networking, low self-control, low

self-esteem, depression and strict parental practices. Conversely, strong peer relationships, high academic motivation, and good academic performance appear to function as protective factors (Fischer-Grote et al., 2019).

A critical issue remains whether the excessive use of the smartphone is primarily driven by the device itself or the applications installed on it. Within the current economic model, where personal data are exchanged for free access, many applications are intentionally designed to maximize engagement. They leverage cognitive and social mechanisms such as the mere-exposure effect[7], endowment effect[8], Zeigarnik effect[9], social comparison, endless scrolling/streaming and social pressure (Montag et al., 2019). Consequently, understanding excessive smartphone use requires an analysis of both the device and the specific applications involved, as well as the user and the use context, among other issues.

Social media addiction. Empirical evidence indicates that social media use - now widespread across all age groups - can evolve into what some categorize as a behavioral addiction when use becomes excessive (Cudo et al., 2022). Online social network site addiction is characterized by persistent engagement with social networking platforms, resulting in adverse physical, social, and mental health outcomes (Andreassen, 2015). Neuroimaging studies, although limited, suggest parallels with other behavioral and substance addictions, including impairments in inhibitory control and reductions in gray matter volume in key reward-related brain regions such as the nucleus accumbens, amygdala, and insula (Weinstein, 2023).

Problematic social media use (PSMU) has been linked to both cognitive and affective disturbances. Symptoms include loss of control, social withdrawal, decreased interest in other activities. Main problems correlated are low self-esteem, stress, anxiety, depression, loneliness, and academic underachievement (Bozzola et al., 2022). Montag et al. (2024) additionally reported attentional difficulties, impulsivity problems, anxiety, depressive mood, lower academic performance, and reduced life satisfaction. A meta-review of 28 studies concluded that digital addictions may impair prefrontal cortex functioning, a key region for cognitive control (Ding et al., 2023). From a neuropsychological perspective, social media and smartphone-apps work similarly to addictive substances. They use operant conditioning to hold their users' attention. Unexpected stimuli increase dopamine levels in the brain. Digital technologies in this way activate the same reward circuits in the brain as those involved in gambling or drug use. Over time, this disrupts the reward system and leads to habit formation. Meanwhile, the strong urge causes behavior to be driven automatically and unconsciously, while conscious control weakens. Although there is still little long-term research on the effects of these technologies, it is clear that the adolescent brain – which is still in full development – is particularly sensitive to these influences.

Epidemiological evidence also supports a growing prevalence of these phenomena. The Health Behaviour in School-aged Children (HBSC) study reported that in 2022, 11% of adolescents exhibited PSMU - an increase compared with 2018 - with higher prevalence among girls (Boniel-Nissim et al., 2024). This gender difference may reflect a greater need for social connectedness (Montag et al., 2024). Personality traits such as high neuroticism, low conscientiousness, and reduced self-control and more psychosocial problems and early adolescence exposure are also associated with increased risk (Montag et al., 2024). Jo &

[7] People tend to like posts, influencers, or brands more simply because they see them repeatedly in their feed.
[8] The tendency for individuals to assign greater value to digital items, profiles, or content they perceive as their own, compared to similar items not personally owned or created.
[9] Unfinished or interrupted interactions, such as waiting for replies, likes, or new notifications, keep users mentally engaged and returning to the platform.

Baek (2023) highlighted that perceived enjoyment, socially reinforced habit formation, and the experience of flow are key triggers of addictive use. In contrast, clear parental rules in a positive parenting climate regarding social media can serve as protective factors (Montag et al., 2024).

Another way to approach this question is by having individuals self-assess the extent to which they experience their digital behavior as problematic. According to the latest data from the Digimeter study, 26% of Flemish people describe themselves as addicted to their smartphone. Among the 18- to 24-year-olds, half of them (49%) report feeling addicted (De Marez et al., 2025), although this could also be interpreted as the result of adolescents internalising broader societal discourses over screen time being a 'bad' (see above).

Despite these findings, smartphone and social media addictions are not yet formally recognised as distinct disorders in the ICD-11 or DSM-5. Current evidence suggests they may represent subtypes of Internet or gaming disorders rather than independent clinical entities. Heterogeneous diagnostic criteria limit comparability across studies, underscoring the urgent need for standardised and objective assessment tools, ideally integrating real-world usage data (James et al., 2023). More recent contributions have further emphasized risks of overpathologising everyday behaviours: for example, Satchell et al. (2021) demonstrated that addiction scales could just as easily classify offline social interactions as addictive, while Davidson et al. (2022) and Fourniet et al. (2023) showed that current measurement tools often capture overlapping constructs rather than a unitary phenomenon. Similarly, Cataldo et al. (2022) concluded that existing scales fail to distinguish intensive but healthy use from dysfunctional use. In line with this, Orben et al. (2024) suggested shifting the focus away from the mere tool (social media) to the mechanisms through which it may affect developmental processes and mental health outcomes. This focus, not on the tool *per se*, but on the mechanisms that may lead to pathological outcomes (Moretta et al., 2022), might help overcoming current issues in the social media addiction field and reduce the risk of overpathologisation while giving relevant tools to accompany young people facing intensive usage leading to negative outcomes or to advise social media companies on how to adapt their tools for younger users.

Video game addiction. Concerning video games, one can refer to the advisory report "Gaming disorder" of the SHC (SHC 9526, 2020), according to which 3% of players risk losing control over their gaming, leading to significant personal, social, or professional impairments. The main risks identified include gaming disorder, influenced by individual, game-related, and environmental factors, as well as the potential blurring of boundaries between gaming and gambling.

The SHC recommends a bio-psycho-social approach along a continuum from prevention to treatment, with an emphasis on selective prevention and early intervention. Parents should be supported to set limits, and professionals (teachers, primary care providers, school services) trained to detect risk behaviors using appropriate screening tools.

Treatment should be accessible, tailored, and evidence-informed, with current recommendations including family therapy, motivational interviewing, and cognitive-behavioral therapy, though more research is needed to establish evidence-based guidelines. The Council further calls for structural measures, including an independent regulatory body to oversee industry practices and ensure a clear separation between gaming and online gambling.

In sum, the amount and frequency of using electronic media can be associated with many risks and opportunities that are dependent on many variables related to the person, the use of the media, the interactions, the context, the content … This calls for exploring these factors more in-depth and going beyond only measuring the time spent on media, although, on the one hand, increasing this time also increases the positive or negative consequences, and, on the other hand, spending an excessive time on media is associated with more negative consequences.

However, the research field, like any research field, suffers from limitations. In particular, most of the research conducted so far is cross-sectional, and this holds true even when considering only review and meta-analyses made after 2015 (Sala et al., 2024). This does not allow for strong inferences regarding the directions of the associations observed and makes the work of establishing unbiased recommendations harder. In addition, self-reports limit the possibility to understand 'true social media behaviors'. The Digital Services Act (DSA) offers new research opportunities to access and link directly social media user data to users' personal well-being. Yet such research initiatives are highly demanding and typically not feasible within the contemporary research context.

In their umbrella review cited above, Sala et al. (2024) suggested several ways of mitigating risks identified by reviewed authors that stem from the amount and frequency of digital media use. Three levels were identified: educational interventions, clinical implications, and platforms' preventive measures.

1. Educational interventions were identified as protective and should address a number of aspects, such as digital competences, socio-emotional skills, intentional promotion of self-acceptance and body positivity, strategies to cope with and prevent cyberbullying, promoting mental health literacy, and increased education to (mental) health professionals, teachers, parents and caregivers.

2. Clinical implications that focus on including questions on social media usage in assessment, offering online psychological support and increasing the presence and engagement of mental health professionals on social media to promote reliable information.

3. Platforms' preventive measures included the censorship of risk-related content (such as suicidal ideation, pro-eating disorders, pro-self-harm), facilitating signalling and removing content, or removing the "like" feature. Here it is key to both not present inappropriate content to minors *as well as* to ensure when adolescents seek information on mental health (e.g., self-harm) that they receive age-appropriate, high quality information. For this purpose, platforms should support users' mental health, adopt specific codes of conduct, and involve mental health specialists and young people in designing their interfaces in order to promote well-being, as well as removing ads and digital marketing of unhealthy food or products targeting minors.

Platforms should also limit the use of addictive design features, among which the auto-play content (videos or audio clips that start playing automatically without the user actively selecting them), the use of playful elements that motivate users to do something by presenting artificial progress, the pull to refresh to tease surprise, and encouraging to check the next batch of content. Similarly, the "double tick" function, which shows that a message has been received (one tick) and read (two ticks) might increase the pressure to respond quickly, coupled with the push notifications that prompt users.

Finally, there is valid critique on the business models of the most popular platforms, where transparency about the use of personal data is largely lacking. Adherence and enforcement of the DSA is crucial in this context.

2.2.2. Psychological impact of content

a) Introduction

Digital media are used to fulfill a variety of needs by minors and their parents, resulting in a variety of digital media activities, such as connecting to friends/other parents (social gratification), scanning online information (information gratification) and watching movies (entertainment/escapism purposes) (Ehrenreich et al., 2021; Schnauber-Stockmann et al., 2021).

Within the current report section, **psychological outcomes** are captured in content sensitive research by indicators of psychological well-being which has been defined as "optimal psychological functioning and experience" (Ryan & Deci, 2001, p. 142). Following Meier and Reinecke's (2021) topical work on the Extended Two-Continua Model of Mental Health for Digital Media Uses, such psychological well-being outcomes refer within literature on the content effects of digital uses (i.e. communication centered approach) usually to hedonic and eudaimonic well-being as well as a series of psychological risk and resilience well-being factors. Topical examples of risk factors are depressive symptoms, loneliness, narcissism, poor educational achievement and negative body image. Topical examples of resilience factors are social support, self-esteem and positive body image (Meier & Reinecke, 2021; Appel et al., 2020; Maes, 2022). As noted above, well-being has been too often treated as an umbrella concept, yet measures such as simply "feeling good" are considered too broad to capture the complex processes shaped by digital media use and its outcomes. More specific indicators-such as body dissatisfaction, sleep disturbances, gender-stereotypical traits, sexualization, loneliness, and experiences of sexism-are viewed as more appropriate for study, as they are directly connected to particular patterns of digital media use (Valkenburg, 2022; Parry et al., 2022; Meier & Reinecke, 2021; Rosic, 2025). Especially when such digital media presents more and more content based on use-patterns (Rosic, 2025).

Content themes in screen media activities typically refer, within the research field of digital media and its consequences, to antisocial vs prosocial content messages present in different media activities (Maes, 2022). *Antisocial content* is considered present when the mediated content contains potential to increase psychological risk factors and harm users' hedonic and eudaimonic well-being (Maes, 2022). *Prosocial content* is considered present when the mediated content contains potential to increase psychological resilience factors and empower users' hedonic and eudaimonic well-being (Maes, 2022). Note that most mediated content does not only include either prosocial vs antisocial content, typically both content cues co-occur and are inter-twined, for instance, within a broader narrative (e.g. TV story on how body shaming resulted in body empowerment) or algorithmic reality (e.g. recommendation systems will push appearance content to appearance focused users and such content may contain elements promoting both a prosocial and antisocial body image; Maes, 2022). These content themes can occur in a variety of interactions in which users are engaging when using screens. Alone for social media, self-posting, liking, commenting, chatting, or scrolling are some examples in which, for instance, an appearance-focused content media use practice can take place (Vandenbosch et al., 2022). Some of these actions are more active in nature while other are considered to be more passive activities.

Note that Valkenburg (2022) especially highlighted such content elements need to be mapped to understand the effect on users' psychological well-being. "*Timebased predictors may simply be too coarse to lead to meaningful associations with well- and ill-being components ... But since well- and ill-being may be more amenable to the valence of SM interactions (cf. humor vs hate, support vs neglect) than to their duration, a second important step for future research is to pay more attention to content-based social media use predictors*"

Below the research on the links between prosocial and antisocial screen content activities and users' psychological outcomes is reviewed per medium and per developmental period. Before reviewing screen content use effects, a brief observation is given on *the prevalence* of different antisocial and prosocial messages in the different media targeted at different developmental groups. Insights are given on what pro-social/anti-social means within different media contexts. Next, a broader view is given for each media activity/developmental period by reviewing existing meta-analyses and literature reviews if available. Here, (preferable) European/Belgian recent research is reviewed for each age group/developmental activity with particular attention to time sensitive designs for quantitative research (if available).

At the end of each subpart, a conclusion is added with concrete answers on what the evidence suggests in terms of effects of content and psychological well-being and minors.

b) Content: Televised media

Prosocial screen activities refer within television research to the promotion of themes while viewing television such as social capital, altruistic behavior, counter-stereotypical behavior, positive emotions (e.g. joy), positive body image and sexuality (Coyne et al., 2018; Mares & Woodward, 2010; Maes, 2022). Antisocial screen activities refer within television research to the promotion of themes while viewing television such as aggression, stereotypical behavior, negative emotions (e.g. fear), negative body image and sexuality (Coyne et al., 2018; Mares & Woodward, 2010; Maes, 2022).

Content analyses show that in TV shows targeted at children, typically **low levels** of prosocial and educational content prevail: most content is fantastical (Taggart et al., 2019). TV shows targeting teens have been noted to have higher levels of antisocial messages given their appeal to adolescents (Maes, 2022). Yet, recent content analyses focusing in particular on pro/antisocial themes for body image and sexuality in televised series popular with Belgian adolescents nuanced that the levels of antisocial/prosocial content messages are highly similar (Maes, 2022). It is unclear whether such balance also exists in televised content popular for babies, toddlers, and children.

Two key remarks need to be made in terms of television viewing research. First, scholars have noted that the scholarship distinguishing between prosocial and antisocial messages in television content is somewhat artificial as a naturalistic viewing context typically includes especially with content focusing on 12+ audiences, fragments that contain both antisocial and prosocial messages. The selective attention that a viewer is giving to these double layered television messages together with its resonance potential is considered to be key to understand when prosocial vs antisocial television viewing effects may be expected (Maes, 2022; Carbone, 2024).
Second, while television scholarship traditionally gave insight into the effects of traditional television viewing contexts, the shift in recent social media towards more professionally produced content being offered instead of user generated content (e.g. for you pages on TikTok, YouTube) have given renewed relevance to this literature to understand the potential effects of different types of scrolling activities (Gonzalez, 2025).

<u>Babies & Toddlers</u>

Prosocial screen activities

Prosocial effects of television appear only after about age three and strengthen through middle childhood (Mares & Woodard, 2005). Nonetheless, context matters: a longitudinal UK study found that toddlers who favored slow-paced, prosocial programs displayed gains in sharing behaviors, whereas overall screen time did not predict prosocial outcomes (McHarg & Hughes,

2021). A recent synthesis highlights that television can foster prosocial learning when both program design and social context are optimized. Effective features include slow pacing, explicit modeling of prosocial behaviors (e.g. sharing, helping), and clear contextual cues to emphasize intended lessons. However, adult co-viewing and active mediation remain crucial: caregivers can help children interpret, reinforce, and apply on-screen behaviors to real-life contexts (Cios et al., 2023).

Antisocial screen activities

Research in preschool years is scarce, but the available longitudinal studies do seem to suggest that violent television viewing during preschool is associated with antisocial behavior during school age.

Findings from the Generation R cohort showed that children exposed to violent television or video content at age 5 were at significantly greater risk of becoming bullies in early elementary school; by contrast, associations between total television viewing time at ages 2–5 and bullying attenuated after adjustment, underscoring that it is content, not quantity, that matters (Verlinden et al.,2014). Complementing this, a U.S. longitudinal study likewise reported that preschoolers (ages 2–5) who viewed violent television programming were more likely to show antisocial behavior at ages 7–10, particularly among boys (Zimmerman & Christakis, 2007).

Children

Prosocial screen activities:

A meta-analysis studying children and adolescents has found that children seem more susceptible than adolescents to the endorsement of prosocial messages on helping others distributed in passive media such as television (Coyne et al., 2018). Moreover, this study also showed that a passive media format such as television is more successful in promoting such prosocial content than more active media formats (e.g. videogames) and that short-term effects were more substantial than long-term effects. Another meta-analysis of the positive effects of television on children's social interactions, levels of aggression, altruism, and levels of stereotyping (a total of 108 effect sizes, 5,473 children) showed consistent moderate positive effects for those who watched prosocial content in experimental settings compared to control groups or those who watched antisocial content (Mares & Woodard, 2010). Moreover, the positive effect of self-selected exposure to prosocial content was as strong as the negative effect of self-selected exposure to violent content. Effects were largest for depictions of altruism, primarily because such content tended to involve explicit modelling of desired behaviours. Strong negative effects occurred in the few studies where children watched aggressive prosocial content.

In their systematic review focusing on experimental trials for the effects of TV content viewed by children during their first 5 years of life (with all papers included except one having studied children older than 3 years old), Thakkar et al. (2006)’s findings suggested that educational programs (as compared to entertainment programs or to no television) were positively linked to inclusive racial attitudes, imaginativeness, and learning (with insufficient evidence regarding prosocial behaviour). A recent systematic review and PRISMA meta-analysis addressing screen use in general during early childhood found that the benefits of educational and prosocial content for enhanced literacy and socioemotional competence was strongly supported (Mallawaarachchi et al., 2024). The positive link between educational content and literacy was also reported in a recent umbrella review of meta-analyses which focused on screen use in general by 0-18 years old youths (Sanders et al., 2024). Again, in both papers, other factors than content, such as co-viewing played an important role.

Experimental research on prosocial news (The Netherlands) and educational gender counter stereotypical television content (Belgium) among children (9-13 years old) has further confirmed these meta-analytical trends on positive outcomes (de Leeuw et al., 2015; Laporte, 2024). Two experimental studies in the Netherlands with children aged 4 to 6 found that exposure to prosocial television content had little effect on inclusion judgments or

stigmatization beliefs. However, adding explicit inserts to reinforce the inclusion message slightly improved moral lesson comprehension, especially among children with lower Theory of Mind, and enhanced their prosocial intentions (Cingel et al., 2017; 2019).Note that research has mainly been conducted within traditional broadcasting contexts and that newer streaming activities are missing in research.
As for susceptibility groups, a meta-analysis on experiments found no gender differences, yet prosocial television viewing appeared to result in more substantial positive effects in children from higher SES as compared to those from a lower SES (Mares & Woodard, 2005). Moreover, as for age, this study documented "*The effect of prosocial content increased sharply between the ages of 3-7, peaked at age 7, declined steeply until age 12, and then declined more gradually after that*" (Mares & Woodard, 2005, p. 315) aligning with the observation of another meta-analysis that especially children seem to be most susceptible to the effects of prosocial television content (Coyne et al., 2018). In the experimental study reported in The Netherlands, age differences also occurred, like that 6-year-old children who watched the content with a close friend condition demonstrated greater stigmatisation beliefs toward other children, compared to 5-year-olds in the same condition, or all children in the other conditions (Cingel et al, 2017).

There is a notable lack of longitudinal studies examining how exposure to specific types of prosocial television content (beyond mere screen time) relates to children's development.

Antisocial screen activities:
A systematic review and meta-analysis of 16,200 participants (28.65 % female; *M*age = 14.26; range = 4.74–17.92) and 27 studies conducted in North America, Europe, Asia, and Africa showed significant associations between exposure to non-violent and violent/live sexual content, such as online pornography, and likelihood of engaging in problematic sexual behaviours in children (and adolescents). Sex emerged as a moderator of the association between exposure to non-violent sexual content and PSB, such that the association was stronger in studies with a greater proportion of females (Mori et al., 2023).
A meta-analysis on experiments studying children documented that the effect of antisocial television viewing is similar in strength than the effect of prosocial television viewing. The study in particular showed antisocial television viewing boosted outcomes such as aggression substantially while it harmed outcomes such as altruism, counter-stereotypical attitudes, and social interactions as compared to prosocial television viewing (Mares & Woodard, 2005). Another meta-analysis in children has further found that 'scary' television content resulted in a relatively small effect on young users' level of fear, anxiety and sadness regardless of whether the scary news is included in a factual or fictional context or whether it included aggressive messages (Pearce & Field, 2016). Scary television had thus a relatively small link with children's internalizing emotions (r = .18) overall, and this association was not significantly moderated by whether the televised material was factual (e.g. news) or fictional or contained violence. Children under 10 were more susceptible to scary TV (Pearce & Field, 2016). Similarly, the meta-analysis cited above (Mallawaarachchi et al., 2024) found that greater exposure to age-inappropriate content was associated with poorer psychological outcomes.
Such meta-analytical trends are further reflected in the separate studies examining antisocial television viewing. For instance, a cross-sectional study among the US parents and children dyads investigating the correlation between exposure to television violence, family communication patterns, and parents' moral reasoning on the moral reasoning of children. Television violence was negatively associated with children's moral reasoning. Perspective taking mediated the link between exposure to fantasy violence and children's moral reasoning about justified violence, such that more exposure to fantasy violence was associated with less advanced perspective taking which was associated with less advanced moral reasoning (Krcmar & Vieira, 2005). Even when the age of the child was controlled, parents' moral reasoning was unrelated to that of their children. Another cross-sectional study among UK children aged 9-13 on the exposure and susceptibility to advertising, belief that purchased

products will lead to happiness (materialism), and poor mental well-being, considering the role of children's SES, showed that children from deprived backgrounds were more materialistic than children from affluent homes, and that this was the result of both higher exposure to advertising and higher belief in the credibility of advertising (Nairn & Opree, 2020). At the same time, they found that children from affluent backgrounds were more susceptible to advertising's reinforcing effect on materialism, whereas children from deprived backgrounds were more susceptible to materialism's detrimental effect on self-esteem. Two different dynamics appear to be at play in the two groups. This adds a new dimension to our understanding of the role of advertising in a society with high levels of inequality.

An experimental study among German 10-11-year-old children examining the role of watching stereotypes about gender roles (e.g. regarding math) embedded in television on girls' and boys' performance, motivational dispositions, or attitudes showed that watching gender stereotypes embedded in television programs increased boys' and girls' stereotype endorsement. Boys reported a higher sense of belonging but lower utility value after watching the video with the stereotypes (Wille et al., 2018). Boys' other outcome variables were not affected, and there were also no effects on girls' performance, motivational dispositions, or attitudes.
One longitudinal study in children in the Netherlands further explored the relationship between viewing violent television content and Attention-Deficit/Hyperactivity Disorder (ADHD)-related behaviors and found ADHD-related behaviors predicted increases in the viewing of violent mediated messages (in both TV and videogames) over time (Beyens et al., 2020). No support over time was found for the media effect relationship.
As for susceptibility groups, the younger the child (i.e. under ten), the more susceptible they are to feeling negative emotions after viewing scary television (Perce & Field, 2016).

Overall, content type, child age, and context of viewing (e.g. co-viewing) play a crucial role in shaping the positive or negative impacts of screen activities.
Research shows that prosocial screen content-especially educational programs viewed on passive media like television-has a positive short-term impact on children's language, learning, and socioemotional skills. These effects are stronger in younger children and in those from higher socioeconomic backgrounds. Co-viewing with adults enhances these benefits.
Conversely, antisocial or age-inappropriate content is associated with poorer psychological outcomes, and negative emotions, particularly in younger children. While violent content was linked to ADHD-related behaviors, evidence suggests the relationship may reflect children's pre-existing tendencies more than media effects.
The impact of media content on children's social and emotional development is also complex and context-dependent. Prosocial content alone does not necessarily foster inclusive or empathetic attitudes, and its effectiveness seems to depend on factors such as age, social context during viewing, and cognitive abilities.
In contrast, antisocial content shows more consistent associations with negative outcomes, including increased stigma, emotional distress, problematic behaviors, and reinforcement of stereotypes or materialistic values. These effects are further shaped by gender and socioeconomic factors. This highlights the need for nuanced media policies and interventions that go beyond simple exposure measures, focusing instead on content, context, and children's individual characteristics.

Adolescents

Prosocial screen activities:
Similar conclusions though with less strong effects were made in the meta-analysis of Coyne et al. (2018) in regard to adolescent viewers as compared to child viewers: the endorsement of prosocial televised messages on helping others is successful, especially in a short-time interval. Longitudinal research in US adolescents further showed that the presence of

prosocial messages in adolescents' consumed television shows directly predicted lower levels of aggression, and marginally higher levels of prosocial behavior toward family 2 years later (Padilla-Walker et al., 2015).
Among Belgian adolescents, experimental research has shown that television series containing inspirational messages on one's educational potential can empower adolescents' academic self-concept. Yet the authors also warned that this empowerment comes together with academic performance pressure (Devos et al., 2024).
Longitudinal research among Belgian adolescents further documented that pro-social sexual televised content correlated with the endorsement of supportive behavior regarding LGBTQ+. No within-person over time links between this television variable and the respectful approach to different sexual expressions were found suggesting the relationships are stable over time (Maes & Vandenbosch, 2024). Similarly, null findings emerged for the longitudinal paths in other longitudinal studies on Belgian adolescents, prosocial television, positive sexuality (Maes et al., 2023) and reduced sexism (Vranken et al., 2023). Albeit, the effects of viewing prosocial television content seem limited over a longer time period. Do note that consistent between-person findings emerged in these studies stressing that the effects likely can be found in shorter time intervals or choosing different time effect models.
A qualitative study in Belgium showed that career-related narratives in entertainment TV help adolescents develop intrinsic (e.g. ambition, work ethic) and extrinsic work values (Vranken & Vandenbosch, 2022).

Antisocial screen activities:
A cross-sectional study showed that materialistic values in children and young adolescents (9-13 years old), especially from lower SES backgrounds, are positively associated with exposure to TV advertising (Nairn & Opree, 2020).

A longitudinal study among Dutch adolescents found that violent media use (including both television and videogames) predicted over time lower levels of sympathy, but not aggression (Vossen & Fikkers, 2021). Other longitudinal research in the Netherlands did not confirm longitudinal links between antisocial television content and adolescents' level of aggression (Van der Wal et al., 2022). Linkage research in the Netherlands further revealed that boys and aggressive teens typically prefer more physical aggression covered in television shows as compared to girls and less aggressive teens (Van der Wal et al., 2020). Other research in the Netherlands noted that the predictive link over time from viewing aggressive television and aggression did occur in families with high levels of conflict (Fikkers et al., 2013). The amount of aggressive television content consumed as well as level of aggression further is related to parents' mediation of media with autonomy supportive styles evoking less of these variables and inconsistent restriction supporting their occurrence (Fikkers et al., 2017).
A longitudinal study showed that watching sexually explicit TV content is associated with more permissive attitudes toward uncommitted sexual exploration, moderated by sensation seeking and gender (Vandenbosch & Beyens, 2014).
Longitudinal research on the promotion of appearance ideals and objectification of women in popular TV series has further shown that these TV variables predicted over time negative body image outcomes such as self-objectification in Belgian adolescents (Vandenbosch & Eggermont, 2014). The latter body image outcomes are, in turn, shown to predict over time acceptance of gendered sexual roles (Vandenbosch & Eggermont, 2014). A Belgian cross-sectional study further showed that boys who use appearance focused media (including television) predicts their intention to use anabolic-androgenic steroids in the future (Frison et al., 2013). Experiments have further shown the power of romantic movies to endorse unrealistic romantic expectations in teens (Vandenbosch et al., 2012; Driesmans et al., 2016). An experimental study also showed that viewing stereotypical gender role movies increases sexual stereotypes and rape myth acceptance in Belgian adolescents (Polo-Alonso et al., 2018).
Overall concurrent paths and short-term small relationships are present with mixed support for long-term links depending on the type of well-being area that is chosen (e.g. appearance-

related outcome, sexuality related outcome, aggression etc.). Studies adopting a causal effect heterogeneity approach have only rarely been conducted. A three-wave panel study on television viewing among Belgian, Slovenian, and French adolescents found two distinct groups of teens in how they relate to achievement-oriented TV role models and their own performance self-concept. (Chen et al., submitted). In the first group no relationship emerges between this television diet and viewer identity, yet in the second group (e.g. approximately half of the adolescents) adolescents are high at baseline in their performance-oriented self-concept and continue to rise in seeking out achievement-oriented TV characters over the course of a year. A stabilization of the identity seems present while selective attention processes continue to grow.

Several susceptibility groups have been identified in research. For instance, deprived children (low SES) have higher advertising exposure and credibility belief, making them more materialistic (Nairn & Opree, 2020). Adolescents with high sensation seeking (especially girls) and low sensation seeking boys are more prone to permissive sexual attitudes influenced by sexual TV content (Vandenbosch & Beyens, 2014). Younger adolescents (vs. emerging adults) are more susceptible to accepting gender stereotypes and rape myths from stereotypical films (Polo-Alonso et al., 2018).

Several mechanisms were identified to explain the above reported TV relationships.: Advertising credibility and lack of purchasing power mediate the link between materialism and low self-esteem in deprived children (Nairn & Opree, 2020).

Social learning theory and media priming explain how repeated exposure to stereotypical media normalizes harmful gender and sexual attitudes (Polo-Alonso et al., 2018).

Sensation seeking moderates sexual TV content effects differently by gender: increasing vulnerability in girls but buffering boys (Vandenbosch & Beyens, 2014).

Overall, effects of media exposure on adolescents are context-dependent, content-specific, and heterogeneous across subgroups. Short term positive effects are generally weaker than in children. Media promoting appearance ideals and gender stereotypes is for example associated with negative body image, self-objectification, and acceptance of gendered sexual roles over time. Romantic media can reinforce unrealistic expectations in teens. Longitudinal evidence remains limited and variable, underscoring the importance of individual, familial, and social factors in shaping outcomes. The evidence from Belgian and European longitudinal, experimental and qualitative studies underscores a nuanced picture of how adolescents' exposure to sexual and career-related screen content fosters prosocial societal beliefs, while exposure to materialistic advertising, stereotypical gender portrayals, and sexualized media may reinforce antisocial societal beliefs. Critical factors include for example SES, sensation seeking, gender, and the perceived realism or resonance of media content. Such factors vary depending on the outcomes being studied as well as the content interactions under scrutiny

c) Content : videogames

Prosocial screen activities refer within videogame research to activities that, for instance, promote emotion regulation, basic psychological needs, social capital (e.g. cooperation, empathy), increased physical activity (e.g. body mass index (BMI) and weight reduction), identity exploration, eudaimonia, and hedonic enjoyment (Alanko, 2023; Ballou et al., 2025).

Antisocial screen activities refer within videogame research to activities that, for instance, promote aggression (e.g. yelling, pushing), stress, anxiety, depression, loneliness, sexualization, suicidal ideation, low self-esteem, gaming disorder (e.g. withdrawal, tolerance), decreased physical activity (e.g. sedentarism), disrupted sleep (e.g. longer time to fall asleep, decreased total sleep), unhealthy eating (e.g. more fatty foods and sugary beverages), cyberbullying and toxic communication (e.g. using insults, making threats) (Alanko, 2023; Ballou et al., 2025).

Content analyses of videogames mostly focused on antisocial topics, such as violence, substance use, stereotypical gender representations, and hyper-sexuality. Studies focusing on teen-rated video games indicate that violence was widely depicted, sexual themes and profanity were less but regularly present, and that depictions of substance use were sparse (Haninger & Thompson, 2004). Moreover, idealized versions of male (muscular) and female (thin) characters were more likely to be found in games for children than for adults (Martins et al., 2009, 2011). In teen-rated videogames, female characters were more likely to be hypersexualized (partially nude) (Lynch et al., 2016) and shown in secondary roles (De La Torre-Sierra & Guichot-Reina, 2025). Sexualization and related sexism practices have been widely documented in videogame research (Noon et al., 2025). Videogame uses and effects studies in children and adolescents also focused on prosocial videogames, generally classified as those games where players need to help others or collaborate during the game (Harrington & O'Connell, 2016), as well as on eudaimonic and hedonic experiences (Oliver et al., 2016).

Ferguson (2015) conducted an overall meta-analysis on children and adolescents 10 years ago encompassing mostly older studies. This research found that the playing of antisocial (i.e. violent) videogames had small relationships with aggression, decreased prosocial behaviour, and reduced academic performance and no relationship existed with depression. Initial meta-analyses observed an association between playing violent video games and antisocial behavior (Calvert et al., 2015). However, a re-evaluation of the American Psychological Association's 2015 Task Force meta-analysis found negligible relationships between violent video games and aggressive or prosocial behavior (Ferguson et al., 2020). This analysis suggested that previous effect sizes might have been inflated due to non-optimal methods and researcher-expectancy effects, particularly in experimental studies. Causal effect heterogeneity was not examined.

Babies & Toddlers

Prosocial screen activities:
European evidence on prosocial video games in the preschool years is still emerging, but available findings consistently point toward beneficial social outcomes. In Germany, an experimental study with 4–6-year-olds showed that brief exposure to a prosocial game significantly reduced aggressive behaviour, partly through lowering revenge motivation (Li et al., 2025). A virtual reality (VR)-based intervention in Israel likewise found that preschoolers who played a prosocial game were more likely to help in real tasks and to share rewards with peers immediately afterward, compared to children in neutral or violent conditions, with positive emotions mediating these associations (Shoshani, 2022). At the same time, population-based work in Turkey suggests that general video game play in 2–6-year-olds was not linked to elevated social or emotional problems, underscoring that content, not mere exposure, might be important (Tezol et al., 2022).

Antisocial screen activities:
Direct evidence on violent video games in the preschool years is limited, but the available studies point to consistent short-term effects. In a classic laboratory experiment, 4- to 6-year-old children who played a violent video game subsequently engaged in significantly more aggressive play themes than peers in a nonviolent condition (Silvern & Williamson, 1987). This suggests that even brief exposure at preschool age can shape how children act and imagine in their immediate play. Beyond overt aggression, research on children's emotional reactions to media shows that 3- to 5-year-olds are especially susceptible to fear, nightmares, and anxiety when exposed to violent or frightening content, due to their limited ability to distinguish fantasy from reality (Cantor, 1998).

Taken together, the limited available evidence for preschoolers indicates that violent video game exposure can elicit immediate increases in aggressive play and provoke fear and anxiety responses. What is missing, however, are large-scale longitudinal studies beginning in the preschool years, leaving open questions about longer-term developmental consequences of early exposure.

Children

Prosocial videogame playing:
Meta-analyses studying children found that active videogame play has a moderate positive effect on BMI and weight reduction (Oliveira et al., 2020) as well as on increased energy expenditure and heart rate (Gao et al., 2015). Playing “exergames”, involving the exertion of physical activities (e.g. running, dancing), has been shown to be beneficial for weight loss, fulfillment of basic psychological needs, and decreases in depression (Alanko, 2023). Systematic reviews of the prosocial effects of video game playing show positive effects on children’s offline cooperation, sharing, and maintenance of positive relationships (& Lee et al., 2019; Saleme et al., 2020) as well as positive bystander behaviour in bullying (Saleme et al., 2020). A systematic review on videogames for emotion regulation further showed positive associations over time between videogame playing with intrapersonal abilities, stress management skills, and global emotional quotient (Villani et al., 2018).
So far, no moderation analysis was conducted to assess differences across susceptibility groups or examine causal effect heterogeneity more in depth.

Antisocial videogame playing:
The American Psychological Association’s resolution on violent videogames recognized a small but statistically significant link between violent videogame playing and increased aggressive outcomes among children and adolescents, such as hostile thoughts, affect, and mild aggressive behaviours (e.g., pushing, yelling), but explicitly stated that this does not extend to severe violent acts or criminal behaviour (American Psychological Association, 2020). This nuanced view was further supported by a subsequent meta-analysis studying children and adolescents, which found that videogame play has a small effect on children aggressive behaviours (kicking, hitting), which tends to increase from childhood into adolescence, becoming of medium size between the ages of 13 and 14 years old (Burkhardt & Lenhard, 2022). Two other meta-analyses found small to negligible effects of videogame playing on aggressive and prosocial behaviour, depressive and attention deficit symptoms (Ferguson, 2015; Furuya-Kanamori & Doi, 2016). A meta-analysis on Problematic Gaming Behaviour (PGB) found a small effect size with depression and anxiety (Männikkö et al., 2020) and a systematic review on videogames for emotion regulation showed negative associations over time between videogame playing, anxiety, and depressive symptoms (Villani et al., 2018). A longitudinal study among Dutch adolescents found that competitive gaming was associated with lower levels of prosocial behaviours over time (Lobel et al., 2017).
Identified susceptibility groups are male children with a problematic gamer profile or with a high level of stress (Pallavicini et al., 2022). A longitudinal study among Dutch adolescents found that frequency of videogame playing was related to stronger antisocial effects, particularly of decreased prosocial behaviours (Lobel et al., 2017).

Adolescents

Prosocial videogame playing:
Meta-analyses studying adolescents found that active videogame play has a moderate effect on BMI and weight reduction (Oliveira et al., 2020) as well as on increased energy expenditure and heart rate (Gao et al., 2015). Playing “exergames”, where gamers need to exert physical activities (e.g. running, dancing) regularly, has been shown to be beneficial for weight loss, fulfillment of basic psychological needs, and decrease in depression (Alanko, 2023). A

systematic review showed that across ages videogame playing was associated with the development of social connections and communication skills, online cooperation, the maintenance of existing family and friend relationships, as well as the formation of new meaningful friendships (Raith et al., 2021). The same study further found evidence of increased self-esteem, decrease in loneliness, and decrease in stress (Raith et al., 2021). Another systematic review found positive effects on global empathy and prosocial skills, but found more mixed results when it came to actual positive bystander behaviour in cyberbullying contexts (Saleme et al., 2020).
As for susceptibility groups, a longitudinal study among Belgian adolescents did not find differences between adolescents boys and girls (Noon et al., 2024). Moreover, the study examined whether video gameplay motivated out of self-determination needs of autonomy, competence and social capital longitudinally related to successful gratification of these needs. No within-person relationships emerged in the research (Noon et al., 2024). In addition, negative between-person links occurred (see below).

Antisocial videogame playing:
Meta-analyses studying adolescents antisocial videogame playing found a small effect size in relation to aggression (Burkhardt & Lenhard, 2022; Ferguson, 2015; Furuya-Kanamori & Doi, 2016). A meta-analysis on Problematic Gaming Behaviour (i.e., excessive and uncontrolled; PGB) found a relationship characterized by a small effect size with depression and anxiety (Männikkö et al., 2020). A review found that playing videogames in the evening is linked to longer times to fall asleep, decreased total sleep, and disruptions in rapid eye movement sleep (Alanko, 2023). A cross-sectional study with a nationally representative sample of the Italian adolescent population showed that engaging in PGB increases the chances of experiencing negative well-being, particularly poor sleep quality, loneliness, and life satisfaction (Canale et al., 2025). A longitudinal study among Norwegian adolescents further found that video game addiction was related to depression and conduct problems (e.g. aggression, vandalism) (Brunborg et al., 2014). Another longitudinal study among Belgian adolescents also pointed to between person links emerged with more in-game relatedness linked to less offline relatedness satisfaction and more offline relatedness linked to less in-game relatedness satisfaction (Noon et al., 2024). Moreover, another three-wave panel study among Belgian adolescents showed that receiving performance feedback when playing videogames related to increases in players' performance-oriented self-concept (within-person link over time: Noon et al., 2025).
Identified susceptibility groups are male adolescents with a problematic gamer profile or with a high level of stress (Pallavicini et al., 2022). A meta-analysis also found stronger effects for Western compared to Eastern and Latin/Hispanic samples and no differences between boys and girls (Ferguson, 2015). A cross-sectional study among Italian adolescents found that the group most at risk of engaging in PGB and suffering from antisocial well-being was composed by adolescents who were males, young (11 year-old), and living in single-parent households (Canale et al., 2025).

In sum, content analyses show that videogames are often dominated by antisocial elements-particularly violence, gender stereotypes, and sexualization. Prosocial content remains less frequent but can have protective and beneficial effects when present. Prosocial gaming can promote well-being, while antisocial gaming may increase risks, and similar to other digital media use sub-areas, effect sizes are often small to moderate. Outcomes depend strongly on content, context of play, player characteristics, and developmental stage, highlighting the importance of targeted interventions and media literacy strategies.

d) Content : social Media

Prosocial screen activities refer within social media research to social media interactions (including posting, exposure/scrolling, liking and commenting) with, for instance, counter-

stereotypical/inspirational content (e.g. body positivity, #metoo and black lives matters), civic participatory content (e.g. news, environmental content), educational content (e.g. sex education, school information), connectedness supporting content, authenticity supporting content and enjoyment content (Rosic et al., 2024).
Antisocial screen activities refer within social media research to social media interactions (including posting, exposure, liking and commenting) with, for instance, stereotypical content (e.g. racist messages, appearance/sexualized ideals, manosphere, prescriptive femininity), unauthentic content (e.g. positivity bias), uncivil participatory content (e.g. fakenews), and aggressive/risk content (e.g. TikTok risky challenges, automutilation supporting content) (Rosic, 2025; Schreurs, 2022).
Algorithmic audit studies have revealed antisocial content is regularly suggested to 8- and 16-year-old users of social media. Various algorithm audit studies have been done, in which researchers simulate the scrolling behaviour of users aged 8, 12, or 16 on platforms such as Instagram and TikTok (see e.g. Digitalt Ansvar, 2024[10]; Hilbert et al., 2023). For example, 80% of the content suggested by the algorithm to an 8-year-old user was found to be inappropriate for children. Adolescents who struggle with their mental well-being and, for instance, spend more time engaging with videos related to mental health are subsequently shown up to 70% more disturbing content-such as videos promoting extreme dieting, self-harm, and similar topics (Hilbert et al., 2023).
In qualitative research among Belgian adolescents, young people themselves report being exposed to non-child-friendly content on social media, including sexually explicit videos, unrealistic body ideals, violence, misinformation, drugs, vaping, smoking, alcohol, self-harm, grooming, hate speech, risk challenges, and more (Schreurs & Vandenbosch, 2022; Vanherle & Beullens, 2023; Maes et al., 2025). Recent surveys among Belgian youth align with these qualitative findings: more than 50% of adolescents report seeing racist or body-ideal-glorifying content occasionally to frequently. Additionally, nearly 4 in 10 adolescents in Flanders (Vanwynsberghe et al., 2024) and around 3 in 10 in Wallonia (Média Animation, 2024) report regularly encountering self-harm glorification.
Some of this content appears in posts created by the adolescents themselves or by their peers - for example, portraying a “perfect” life. This is confirmed by data donation studies analyzing the types of content Belgian and other European adolescents post on platforms like Snapchat, TikTok, and Instagram (e.g. Fitzgerald & Vandenbosch, 2024; Vandenbosch et al., 2025). Other problematic content appears to be disproportionately present in influencer content, such as unrealistic beauty standards-reported in nearly 100% of influencers across several studies (e.g. Devos et al., 2023; Gonzalez, 2025).

A rich number of meta-analyses has summarized the effects of social media uses (Valkenburg, 2022). Yet most meta-analyses on social media did not specify (causal effect) results for different developmental groups or gave attention to the type of social media activity in terms of content (prosocial vs antisocial). Among the few meta-analyses that did focus on content in mostly adult samples, prosocial social media activities were shown to promote academic achievement (i.e., for school purposes social media uses, Appel et al., 2020), positive body image (i.e., for body positivity, De la Rosa et al., 2026), and social capital (i.e., active social media use; Appel et al., 2020).
A meta-analysis on experimental and longitudinal body image research found that exposure to appearance-focused social media content (e.g. influencer photos, posts promoting skincare products) can negatively affect body image, with substantial stronger effects on the short-term than over a longer-term period (de Valle et al., 2021). A recent meta-analysis adds that interacting with appearance-focused content such as selfies (e.g. liking or commenting on them) has a significantly stronger negative impact than mere passive exposure to appearance-focused content on social media (de La Rosa et al., 2025).

[10] https://www.digitaltansvar.dk/aktuelt/aret-der-gik-2024

Babies & Toddlers

Given that research among babies and toddlers is highly limited as for them predominantly social media, such as TikTok and YouTube are used for viewing televised content. The effects of viewing televised contents on such platforms may be intensified when algorithms increasingly suggest higher pro- vs anti-social contents, yet no research has further examined this to date. The effects of viewing prosocial and antisocial contents discussed earlier can be seen as a proxy for which effects can be expected following from viewing clips in social media environments.

The wellbeing of babies and young children is highly intertwined with the wellbeing of parents. Accordingly, research has started to document how parents use social media for mental health support, parental information and advice, and inspiration with mum/dad influencers. Antisocial social media interactions can emerge when such social media experiences are intertwined with content including, for instance, (gender) stereotypical parental messages on toddlers/babies, performance pressure endorsing messages, and fake information (e.g. incorrect health advice on baby sleeping patterns). Prosocial social media interaction can emerge when such social media counter (gender) stereotypical parental messages on toddlers/babies, empowering/inspirational parental messages, and correct information (e.g. useful health advice on baby sleeping patterns) (Chen et al., 2025).

Prosocial screen activities:
Parents engage with physical health-related topics online (e.g. healthy food choices) and the extent to which they do is related to their knowledge on these subjects as well as feeling connected to other parents (Conrad, 2022). Interestingly, other literature suggests parents also search for other types of non-clinical/physical health related information (e.g. how to deal with a baby that hurts another child) yet research on these subjects is highly underdeveloped (Chen et al., 2025). Such research may also take into account that social media as algorithms typically guide (perinatal) parents to parental information, memes and influencers (e.g. Ouvrein, 2022; Germic et al., 2021) Moreover, AI chatbots seem a likely source for parents to consult in view of parental related questions, yet research is lacking (Chen et al., 2025). Overall, most research has focused on mothers, leaving fathers as a highly understudied population (Satir, 2023; Chen et al., unpublished).

Antisocial screen activities:
Parents engagement with physical health-related topics online (e.g. healthy food choices) has also been discussed in literature as an antisocial screen activity given that especially first time parents sometimes lack the necessary knowledge to identify misinformation and evaluate the quality of online information (Kubb & Foran, 2022). Given the amount of information present online, information overload has also been suggested a risk for young parents' online information seeking behaviour (Ruthven, 2018). Moreover, envy evoking comparisons with parental influencers has been found in an experiment with young mothers to relate to negative well-being outcomes (Kirkpatrick & Lee, 2022).

Children

There is a notable lack of meta-analyses and systematic reviews examining how exposure to specific types of social media content (beyond mere screen time) relates to children's psychological well-being. In existing reviews focusing on time spent using social media (and not the content), children are aggregated with adolescents and young adults (ages 5–18 or even under 25) (e.g. Hilty et al., 2023; Piteo & Ward, 2020; Saleem et al., 2024).
The studies examining the effects of children's social media uses on psychological well-being are scarce. Most studies exploring this age group focus on children older than 8 years and rely mainly on cross-sectional designs (e.g. McDool et al., 2016). A qualitative study examined

perceived online opportunities and challenges among preadolescents aged 9–12, focusing on general digital experiences rather than social media specifically (Chuck et al., 2024).
The gap in the literature is problematic, given that the average age of the first smartphone acquisition has dropped to an average age of 8 years (Vanwynsberghe et al., 2024). Children are a growing demographic for social media platforms use, yet they are also the most inexperienced and vulnerable users, susceptible to both the positive and negative effects of digital engagement (Magis-Weinberg et al., 2021).

Prosocial screen activities:
Research on children's exposure to prosocial social media content is extremely limited. A recent scoping review concluded that only 3% of samples in studies on social media and morality explicitly included children (Neumann & Rhodes, 2024). While adolescents and young adults have been examined more often, children remain largely absent from this body of work.
One exception is a cross-sectional study examining YouTube Kids use among primary school children through reports from their parents, which found positive associations between children's prosocial screen activities on YouTube kids and parents' perceived prosocial outcomes for their children (Dewi et al., 2019). Beyond this, studies on children's engagement in online activism and civic participation remain scarce, with most research focusing instead on adolescents (Neag et al., 2024). A cross-sectional study conducted in the UK on a representative sample of children and adolescents aged 10 to 15 found that using social media for social purposes-measured by time spent chatting on social media websites-was associated with reduced satisfaction across most aspects of life, except for friendships. Notably, girls appeared to suffer more adverse effects than boys (McDool et al., 2016).
In a qualitative study, children aged 9 to 12 self-perceived opportunities of digital media use related to psychological well-being were personal growth (opportunities to learn, sense of autonomy, inspiration), hedonism (entertainment), social contact (communication and social connection), mood management (passing time, relaxation, regulation of emotional states) (Chuck et al., 2024).
Considering that very few young children actively use social media and that available data on this age group remain limited, research on children is still scarce, with most existing studies focusing on content analyses or classifications of YouTube Kids material, alongside qualitative work in which children describe the content they watch (e.g. Choi & Kim, 2024; O'Connor et al., 2025; Papadampu et al., 2020).

Antisocial screen activities:
Children experiencing **cyberbullying** (see chapter 2.3.1) had high odds of experiencing depression, suicidal ideation, self-harm, and suicide attempts. Those children experiencing a combination of cyberbullying and traditional bullying had even higher odds of experiencing these risks (Li et al., 2022).
A two-wave longitudinal study of 151 preadolescent girls (ages 8–12) explored the relationship between **social media use and body image**. While no significant differences in body image were found between users and non-users of social media, the type of content mattered: girls who focused on **appearance-related content** experienced more negative body image concerns, whereas **communication-focused use** did not experience such concerns. Both positive and negative aspects of body image are associated with the type of social media use (Markey & Danels, 2022).
Systematic narrative reviews on the relationships between social networking sites and depressive and anxiety symptoms in the child and adolescent population (5-18 years) indicate that **problematic and addictive behavior on social networking sites** was significantly associated with higher levels of depressive symptoms (Piteo & Ward, 2020; Saleem et al., 2024). These associations may be explained by confounding factors such as perceived social support, social comparison, and fear of missing out (FoMO). Although a relationship between social networking site use and anxiety or depression is evident, the effect sizes are generally small and based on studies of limited quality, warranting cautious interpretation (Piteo & Ward, 2020), including the direction of the relationship.

Descriptive surveys and reports further provide some indication of children's exposure to harmful or antisocial content. The EU Kids Online survey documented children's encounters with violent, sexual, hateful, and idealised body appearance content across European countries (Smahel et al., 2020). Some research has focused on misinformation and has highlighted children's particular vulnerability, though most of this work is based on qualitative data, a lot from the United States and does not always specify age groups (Shtulman, 2024).
In a cross-sectional study involving 13,871 children aged 9 to 12, **heavy digital media use** (defined as (almost) on daily basis and 'more than 3 h') was found to be negatively related to psychological well-being, whereas mild use had a minimal role (Bruggeman et al., 2019). Similarly, data from seven waves of the UK Household Longitudinal Study (n = 7596) examining children aged 10 to 15 showed that moderate social media use played a little role in overall life satisfaction. However, higher levels of use were linked to lower happiness, particularly among girls, though not necessarily to worsening life satisfaction trajectories. Gender emerged as the most consistent factor, with girls experiencing the steepest declines in happiness and being more likely to follow negative trajectories over time. Other influential factors included parental mental health, household support, and income, suggesting that policy responses should consider demographic and familial contexts alongside digital behavior (Twigg et al., 2020).
Finally, qualitative research has highlighted a range of challenges that children aged 9–12 face online: online security and privacy, social interactions (predatory online interactions, digital hostility, non-responsiveness of others), addiction, content (discomforting content, scary content, content saturation and overload, mis- and disinformation), restriction (parental mediation, platform moderation), failures (defeat in games) (Chuck et al., 2024).
Qualitative workshops in the UK further showed that children report exposure to violent content as early as primary school, describing it as "unavoidable" across group chats, livestreams, and ephemeral social media content (Oxfom, 2024). Children perceived repeated exposure as leading to desensitization to violence, heightened feelings of unsafety, and in some cases carrying knives themselves when going outside. Vulnerability to harm was identified by professionals as greater among children with limited parental oversight, unstable family contexts, marginalized backgrounds, or pre-existing trauma and mental health issues.

Despite these findings, the literature on children is mostly descriptive, with very little causal research establishing how exposure to prosocial or antisocial social media content shapes societal outcomes, or on how social media use may lead to pro social and antisocial outcomes. Moreover, there is a clear lack of studies in Europe-and in Belgium specifically- that examine these issues in younger populations.

Adolescents

A recent umbrella review encompassing systematic, scoping and narrative literature reviews and meta-analyses (Sala et al., 2024) regarding social media use and adolescents' mental health and wellbeing identified opportunities and risks of social media use. Opportunities or prosocial screen activities were, for example, interactions stimulating identity development, online social support, social capital, promotion of health behaviors, and access to online professional support. Risks or antisocial screen activities were for instance interactions with content containing violence, sexualization, positivity bias, stereotypes, which could further relate to depressive and anxious symptoms, problematic social media use, eating behaviors and body image concerns, as well as deliberate self-harm and suicidality. These risks and opportunities were influenced by several factors, such as individual and psycho-socio characteristics, individual use of social media, and, relevant to this part, social media content and design.

Prosocial screen activities:
The recent umbrella review cited above (Sala et al., 2024) found that "positive" content was shown to be inspirational, and to promote learning/access to information regarding a vast

variety of topics, including mental health issues (breaking the stigma, creating a support network, contributing to preventing relapse...). Another review pointed out that the evidence is scarce as they identified only two studies explicitly investigating links between social media and online prosocial outcomes in adolescents, both cross-sectional (Lysenstøen et al., 2021). Yet our own review does identify several studies which are reviewed below per prosocial domain they examined.
One cross-sectional study in Germany further found that adolescents' social media literacy components of knowledge, abilities, and motivation predicted higher levels of participatory-moral and educational activity, with motivation playing the strongest role (Festl, 2021). Belgian cross-sectional surveys further showed that adolescents' social media use was strongly associated with performing and receiving online prosocial behaviors (Erreygers et al., 2017, 2019). As for environment and public participation, a two-wave Belgian panel study found no longitudinal links between exposure to environmental content on social media and pro-environmental norms or behaviors, though attitudes were predicted by liking such content over time (Gonzalez et al., 2023). Broader scoping reviews suggest that social media can support civic participation and activism among adolescents, but research remains primarily qualitative (Neag et al., 2024). Exceptions are a three wave panel study in France that has found between-person level associations between exposure to social media influencers' political content and political interest (Gonzalez et al., 2025), and a two-wave panel study in Germany that found the same association with political self-efficacy and political participation (Harff & Schmuck, 2023). Experimental evidence is scarce but growing. In two laboratory experiments, adolescents exposed to short prosocial videos subsequently displayed more prosocial behavior than peers exposed to neutral content, though the effect was strongest among individuals with prosocial value orientations (Li & Li, 2024).

Several studies have shown that **body-positive** posts, particularly those featuring plus-size models, are positively associated with body satisfaction (de Lenne et al., 2023). Warning labels added to images-alerting viewers that they have been filtered or manipulated-generally have no significant effect (Vandenbosch et al., 2022). A recent European ESM study (Maes et al., 2025) found that on days when French adolescents viewed body-positive posts, they reported feeling more comfortable in their own body. A three-wave panel study found that exposure to positive body content predicted appearance-related prosocial tendencies at the between-person level but not within-person over time (Kvardova et al., 2025)
Numerous studies have demonstrated that representation of **diverse sexual orientation**s on social media is associated with sexually empowering outcomes (e.g. Maes & Vandenbosch, 2022). A recent study in the UK and Poland, for example, found that participation in support groups on Instagram was linked to reduced perceived social stigma among sexual minority youth. This positive relationship was also shown to be stable over time (Noon et al., 2024; Maes et al., 2023).
A longitudinal study among more than 1,000 Belgian adolescents found that moderately **active social media use**-that is, adolescents who use social media at an average level compared to their peers, primarily to chat with friends and respond to their posts-reduces emotional and social loneliness over time (Wang et al., 2018). These long-term effects are consistent with findings on how Belgian adolescents benefit from interactions with friends in the short term (ESM study; Vanherle & Beullens, 2025).
Social media posts featuring **inspiring or aspirational activities** have further been shown to promote feelings of ambition and personal growth among adolescents on a short term basis in a Belgian ESM study (Devos et al., 2023).
Belgian ESM research has further shown that on days when adolescents feel they experience more benefits than drawbacks from their smartphone use in terms of using it to communicate about school, to friends or to entertain themselves, they also report **higher self-esteem** and positive well-being (Rosic & Vandenbosch, 2025). Additionally, longitudinal research suggests that adolescents who are able to regulate themselves emotionally after experiencing positive or negative emotions due to interactions with positively biased social media content tend to develop higher self-confidence over time under some conditions (Schreurs & Vandenbosch,

2023). Finally, longitudinal research among Belgian adolescents applying a causal effect heterogeneity approach found that among approximately half of adolescents, friendship-focused social media posting co-develops with decreased worries about one's friends over the period of a year (Vanhoffelen et al., 2025).

Taken together, the findings suggest that prosocial social media is related to prosocial orientations and behaviors in adolescence, particularly in the areas of identity, civic participation, and interpersonal exchanges.

Antisocial screen activities:
The recent umbrella review cited above (Sala et al., 2024) observed that non-reliable health-related information can be shared on social media and promote unhealthy habits (such as unhealthy eating attitudes when being exposed to anorexic, bulimic or thin ideals content). Similarly, being exposed to distressing news, violent content or unwanted sexual content is associated with lower well-being, and negative mood and behavior. Research has also shown that more than half of adolescents who self-harm has first sought online self-injury material. In addition, the "like mechanisms" of social platforms are (tangentially) associated with excessive social comparison, rumination, and increasing anxious symptoms. This review (Sala et al., 2024) has nevertheless observed that, among other important limits, most of the research on some antisocial themes such as automutilation is cross-sectional and does not allow for causal conclusions. For instance, it can be hypothesized that watching content promoting self-harm increases the risk of desensitization and normalization of such behaviors. It can be equally hypothesized that the suffering at the source of self-harming might lead adolescents to search for self-harming content. The relation might also be bidirectional. At the same time, social networks might provide, as identified by this umbrella review, social support and even professional support. This might help increase well-being and decrease self-harm. In their review, Sala et al. (2024) found that the relationship's direction (and strength) changed depending on the presence of different variables. Thus, arguing in favor of censuring any self-harm content (or other ones seen as negative), in addition to raising many ethical questions, might also have negative consequences in terms of finding appropriate support, and thus be counterproductive, if at the same time no better information and online support sources are provided for self-harm individuals. This illustrates the complexity that is at stage when people engage on social networks, going beyond viewing them as homogeneous and standard tools that would influence all users the same way, but calls for considering the many variables at play, among which the type of content being of importance.
A cross-sectional study of 14- to 19-year-old students in Massachusetts showed that exposure to online hate messages was associated with time spent online, lower academic performance, communicating with strangers on social media, and benign online disinhibition, highlighting demographic, behavioral, and parental supervision factors as key susceptibility predictors (Harriman et al., 2020). A Belgian longitudinal study found that when adolescents feel that their smartphone use causes them stress when interacting online with their friends, viewing content for entertainment reasons or using it for educational purposes, their self-confidence is lower-a between-person relationship that also remains stable over time and is not significant at the within-person level (Rosic & Vandenbosch, 2025). Below we discuss studies that were conducted regarding loneliness, appearance, sexuality, positivity bias, well-being in terms of self-esteem, affect and self-harm and misinformation.
A longitudinal study among Belgian adolescents further indicated that those who use social media very intensively (i.e., significantly more active use compared to peers) tend to develop stronger feelings of **emotional and social loneliness** over time (Wang et al., 2018).
Cross-sectional research among Belgian adolescents found that using filters to conform to prevailing **beauty** standards is linked to increased acceptance of, and intent to, undergo cosmetic surgery (Maes & de Lenne, 2022). Longitudinal research among Belgian adolescents applying a causal effect heterogeneity approach found that among approximately half of adolescents, appearance-focused social media posting co-develops with worries about one's appearance over the period of a year (Vanhoffelen et al., 2025).

Various studies have further explored how social media can play a problematic role in youth **sexual development,** particularly in relation to grooming, sexualization, and gender stereotyping. A qualitative study among Belgian adults convicted for pedophilia revealed that social media (and digital media such as pornography) plays a crucial role in approaching and manipulating victims-through tactics like grooming or threats to share sexting content without consent (Jeandarme et al., 2022). Other studies highlight the high levels of sexualization in adolescents' social media environments, including self-presentation as sexual objects and the promotion of sexualized beauty ideals (Konings et al., 2025; Vandenbosch et al., 2025). The extent to which Dutch adolescents view and post sexy selfies is predicted by the degree to which they themselves adhere to gender-stereotypical roles over time (Van Oosten & Vandenbosch, 2017). Recent research among Belgian youth adds that the extent to which their favorite influencer promotes gender-stereotypical roles on social media is linked to how strongly they identify with such roles. This between-person relationship does not emerge at the within-person level over time (Laporte et al., 2025). Other research has examined exposure to misogynistic or gendered content, with a review identifying five quantitative studies linking social media use to sexist attitudes in boys; however, results were inconsistent and partially explained by contextual factors such as peer norms and family background (Koester & Marcus, 2024). Other Belgian research found that exposure to sexualizing online material was associated with resistance to the #MeToo movement and greater acceptance of rape myths (Maes et al., 2019).

An ESM study among Belgian adolescents further found that when youth are exposed to **positively biased posts** regarding adventures and relationships on days when they feel they are not performing well, tend to experience increased pressure to perform (Devos et al., 2023). Another longitudinal study among Belgian, French and Slovenian adolescents reported that exposure to perfect lives on social media is associated with higher levels of perfectionism (Vanhoffelen et al., 2025). These relationships occurred at the between-person level and were not found at the within-person level. As for self-esteem and overall well-being, a cross-sectional study among Belgian adolescents indicated that comparing oneself to others who are doing better on BeReal is linked to lower self-confidence (Van Hoffelen et al., 2024). However, another longitudinal study found no longitudinal within-person relationship between posting idealized content on social media and adolescents' self-confidence (Schreurs & Vandenbosch, 2023).

Finally, a series of short-term causal effect heterogeneity studies conducted in the Netherlands further stress the relevance of identifying different effect patterns in different groups of adolescents to avoid leveling out effects when taking average effect sizes. In one of these studies the authors explain how 20% of users experience a negative effect of browsing on well-being while the same number of users is empowered and shows a positive effect of browsing on their well-being (Valkenburg et al., 2024).

Finally, Obermayer & Schmuck (2022) found that adolescents from marginalized groups-based on gender, religion, or migration background-were more vulnerable to online hate speech victimization. On other fronts, correlational studies indicate that information-oriented social media use is associated with lower political cynicism, whereas exposure to extremist political content predicts higher levels of political cynicism (Schmuck et al., 2022). Cross-sectional research among Nigerian adolescents further suggests a link between violent content exposure and antisocial behaviors (Wordu et al., 2021). Adolescents are also particularly vulnerable to misinformation. They often share fake news impulsively, motivated by social inclusion needs, even when they doubt its accuracy (Beyens et al., 2016; Herrero-Diz et al., 2020, 2021; Notley & Dezuanni, 2019). However, most research on misinformation still focuses on adults (Pennycook & Rand, 2021), and adolescent-focused findings remain inconsistent and largely non-causal (Paciello et al., 2023). Experimental evidence on antisocial outcomes is rare given ethical reasons. One study found that higher levels of state anger in peer-rejected adolescents led to more tolerant moral judgments of antisocial media content, which in turn increased their preference for antisocial YouTube videos (Konijn et al., 2013). Broader reviews suggest that social media simultaneously enables positive social

connectedness and community-building while also fostering alienation and ostracism (Allen et al., 2014).

In sum, recent research on social media highlights a crucial distinction between prosocial activities (educational, inspiring, connective, and inclusive content) and antisocial activities (stereotyped, violent, sexualized, misleading, or risk-promoting content), which differentially affect users' well-being depending on their interaction level, age, context, and context/platform cues included in the type of content that is encountered. Studies indicate that algorithms frequently expose children and adolescents to inappropriate content, sometimes as early as the age of eight. This early exposure to violent, sexualized, or stereotyped material poses heightened risks for young audiences, who are particularly sensitive to the influence of role models and social comparison, though research allowing for more time sensitive conclusions is missing here.

Among infants and toddlers, research remains limited; however, recommendation algorithms on platforms such as YouTube may, through parents who use social media to seek information, share experiences, and find support, can amplify polarization toward either prosocial content (parental support, reliable information sharing) or antisocial content (misinformation, performance pressure, social comparison). Parents' level of digital and media literacy influences their ability to discern reliable from misleading content, underlining the need to strengthen their critical evaluation skills, especially as such information may affect their young babies' health. Yet such responsibility may not only be put with parents, more efforts could be taken by platforms to label misinformation or to activate critical thinking skills when parents are scrolling.

Among school-aged children, studies also reveal distinct effects depending on content type: prosocial content can promote communication, emotional regulation, and learning, whereas antisocial content (social comparison, misinformation, appearance ideals, violence, automutilation) is associated with depressive symptoms, body dissatisfaction, reduced well-being and other problematic ill-being outcomes. Girls appear for some ill-being areas more vulnerable to the negative effects linked to comparison and social pressure.

Some groups of adolescents tend to benefit psychologically from moderate and relational uses of social media - such as social support, learning, and self-expression. Some groups of adolescents are further more adversely affected by intensive or appearance-focused engagement. Violent, sexualized, or biased content has potential to foster rumination, social comparison, and loss of a variety of well-being outcomes – whereas body-positive or diversity-supportive content can promote in some users' self-acceptance and a sense of belonging.

The effects of social media use are heterogeneous: some adolescents derive emotional benefits as well as harmful consequences, and this balance differs between individuals and their individual vulnerabilities. The relationships between exposure and outcomes are therefore multidirectional and context-dependent. Social media are neither inherently beneficial nor inherently harmful; their effects depend primarily on the type of content, the mode of engagement, the user's social and developmental context, and their capacity for self-regulation. At present, however, the online environment predominantly exposes users to antisocial rather than prosocial interactions. Moreover, some adolescents seem to *not* experience benefits from their social media uses and thus experience no advantages or even worse only negative effects. For children and adolescents, guided, critical, and supervised exposure is essential to maximize prosocial effects and mitigate antisocial ones, while accounting for the diversity of developmental trajectories and individual vulnerabilities. At the same time, social media space should provide more opportunities to flourish so that *all* adolescent users experience at least one benefit from their social media activities.

2.3. Conduct and contact risks

Conduct risks are risks linked to online interactions with peers (cyberbullying, sexting). They differ from contact risks, which are linked to contacts initiated by adults (such as grooming) (OECD, 2021).

2.3.1. Cyberbullying

a) Definition, prevalence, roles

Cyberbullying is described as one of the main 'conduct risks' for young people.
Cyberbullying is often defined as "An aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself" (Smith et al., 2008, p. 376). Cyberbullying is therefore a specific form of online aggression, which differs from one-off aggression (no repetition), online jokes (no intention to hurt) and online conflicts or arguments between (former) friends (no power imbalance) (Vandebosch & Van Cleemput, 2008). Cyberbullying can occur on various devices (laptops, smartphones, tablets, etc.) and via all possible linked applications (messenger apps, social media platforms, gaming environments, e-mail, text-messaging, etc.) (Chun et al., 2020; Ybarra & Mitchell, 2008). Cyberbullying can also take various forms. It can range from threatening and insulting to spreading intimate information, embarrassing photos and false rumours, creating hate profiles, excluding certain individuals online, misleading victims or falsely impersonating them, etc. (Vandebosch & Pabian, 2022; Vandebosch & Van Cleemput, 2009).

The prevalence rates for cyberbullying vary greatly between studies, depending on the specific questions used in surveys, the population studied (e.g. children versus adolescents) and the time frame taken into account (e.g. whether young people are asked if they have been cyberbullied in the last three months or ever in their lives) (Chun et al., 2020; Vivolo-Kantor et al., 2014; Zych et al., 2015). Drawing firm conclusions about whether cyberbullying has decreased, remained stable, or increased over time is therefore also difficult: there is a lack of research that has monitored it systematically across comparable samples using consistent measurement approaches over a long period of time. However, what is clear from scientific research (for more information, see the meta-analysis conducted by Li et al., 2024) is that:

1) Cyberbullying occurs to a considerable extent, but is less prevalent than traditional bullying. A meta-analysis of studies on the combined effects of cyberbullying and traditional bullying forms of bullying on children's and adolescents' (8-20 years) adverse psychological outcomes revealed that traditional bullying had a mean victimization rate of 24.32%, while cyberbullying affected 11.10% of youth.

2) Cyberbullying is often an extension of traditional bullying: those who are bullied online are often also victims offline. Roughly one-third of traditional bullying victims also experienced cyberbullying, and only one-third of cyberbullying victims were free from traditional bullying (approximately 6.76% of young people experienced both types of bullying).

3) The number of young people who are only bullied online is small (3.95%). However, the reverse is not true: not everyone who is traditionally bullied is also an online victim; there is a large group of young people who are only bullied offline (15.50%).

Young people can not only be victims, but also perpetrators or bystanders (Vandebosch, 2020). What is more, these different roles are also interconnected. For instance, extensive research indicates that there is a strong link between cyberbullying victimization and cyberbullying perpetration (Lozano-Blasco et al., 2020). Although most research has focused on the relationship between cyberbullying victimization and the (mental) health of young

people (see the meta-analyses conducted by: Fisher et al., 2016; Gini et al., 2018; Hamm et al., 2015; Hu et al., 2021; Kasturiratna et al., 2024; Kwan et al., 2020; Lee et al., 2025; Li et al., 2024; Moore et al., 2017; Tran et al., 2023; Yuchang et al., 2019), there is also scientific research that looks at the relationship between perpetration (see the meta-analyses conducted by: John et al., 2018; Kim et al., 2025; Marciano et al., 2020) and bystander behaviour (see for instance: Wright & Wachs, 2023) and these health indicators. An important point to note here is that a possible association may mean that involvement in cyberbullying leads to certain health outcomes (e.g. victims become depressed), but also the reverse: involvement in cyberbullying may be the result of certain health conditions (e.g. depressed young people may also be more likely to become cyberbullied). Furthermore, it cannot be ruled out that the correlation found is a spurious one, caused by a third variable (for example, the strong correlation with traditional bullying might lead to the incorrect conclusion that cyberbullying leads to a certain outcome, when in fact it is traditional bullying that explains it).

b) The impact of cyberbullying on the (mental) health of young people

Based on the GRADE approach, we attempt to map out the existing scientific evidence on cyberbullying and mental health.

Step 1: Research questions (PICO framework):

- Population (P): Children (up to 11 years old) and adolescents (12-18 years old), both boys and girls.
- Intervention/Exposure (I): Involvement in (a specific form of) cyberbullying as a victim, perpetrator or bystander
- Comparator (C): No (or lower) involvement in cyberbullying (as a victim, perpetrator and/or bystander), involvement in traditional bullying, involvement in a specific type of cyberbullying or cyberbullying via a specific device/platform
- Outcome (O): (Mental) health outcomes (e.g., depression, anxiety, self-harm, suicidality, sleep problems)
- How does involvement in cyberbullying (as a victim, perpetrator or bystander, or in a combined role) influence scores for depression, anxiety, self-harm, suicidality and sleep problems (compared to no or less involvement in cyberbullying, or compared to involvement in traditional bullying) in children up to 11 years of age and in adolescents aged 12-18 years? Is the impact different for younger or older youths and for boys and girls, and does the impact also depend on the form of cyberbullying and the platform/device used for it?

Step 2: Collection and summary of scientific evidence

Cyberbullying victimization and (mental) health outcomes

For this report we will start from the meta-analysis of Li et al. (2024), as this work is of a recent date and explicitly explores the unique and combined effects of cyberbullying (CB) and traditional bullying (TB) victimization on four adverse psychological outcomes (depression, self-harm, suicidal ideation, suicidal attempts). These insights will be complemented with information from other meta-analyses, for instance, regarding other outcomes for victims (e.g. anxiety). As many meta-analyses include mostly cross-sectional studies, special attention will be paid to meta-analyses of longitudinal studies (which provide more insights into the potential causal relationships).

The meta-analysis of Li et al. (2024) reports the relationships found in previous studies between CB victimization, TB victimization, and combined victimization, on the one hand, and psychological outcomes, on the other hand. The studies included in this meta-analysis focused on children and youth ages 8 to 20 (from the general population, excluding, for instance, clinical populations), had to have self-report measures of peer victimization with both TB and

CB; and had to report the correlation of TB or CB victimization experiences with one of the following outcomes: self-harm, suicidal behavior (suicide attempts, suicidal ideation, or suicide plans), and mental health problems (depression, anxiety, etc.).

The main findings are presented in two different figures: the first figure includes the results of studies with respectively a two-group (TB and CB) design, the second includes the results of studies with a three-group design (TB, CB and combined). The authors (Li et al., 2024; p. 2901) concluded from these that: "*(4) Suicidal ideations, suicide attempts, and self-harm are at higher risk with CB than with TB. (5) Victims who experienced both TB and CB had a substantial increase in both suicide-related and depression risks.*" In contrast, in a qualitative research interviewing victims of both TB and CB, the majority of victims reported TB to be more hurtful (Corby et al., 2016). The factors identified in the data to explain the varying perceptions of victims were grouped into categories, which included: the perpetrator, the bystanders, how the bullying was characterized, how the victim was emotionally impacted, and how the victim had the ability to respond.

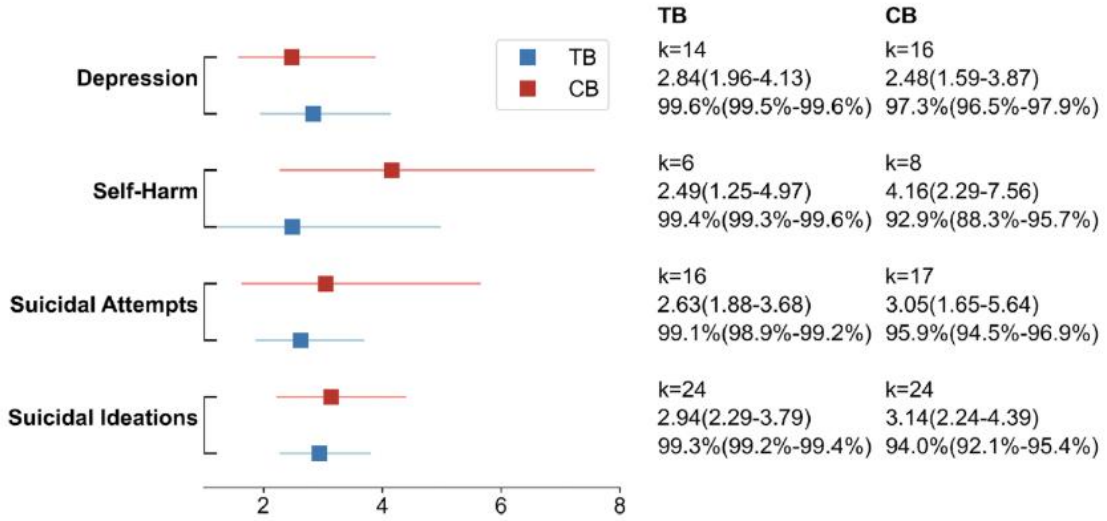
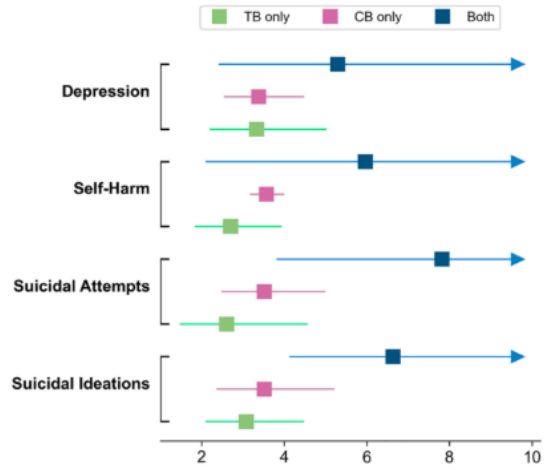


Fig. 4 The plot showed the estimated ORs of the main psychological problems in studies reported in a two groups (TB and CB) design. The OR and 95% CI, the number of effect sizes, I^2 and its 95% CI were shown on the plot. All results were based on the random-effect model and significant at $p<0.001$

Source: Li et al., 2024, p. 2904



	TB only	CB only	Both
Depression	k=6	k=6	k=6
	3.33(2.22-5.00)	3.38(2.57-4.46)	5.30(2.43-11.58)
	98.1%(97.2%-98.7%)	78.3%(52.2%-90.2%)	98.9%(98.5%-99.2%)
Self-Harm	k=5	k=5	k=5
	2.70(1.86-3.91)	3.57(3.20-3.98)	5.97(2.11-16.85)
	82.7%(60.4%-92.4%)	0.0%(0.0%-79.2%)	93.4%(87.5%-96.5%)
Suicidal Attempts	k=8	k=8	k=8
	2.61(1.50-4.55)	3.52(2.50-4.98)	7.82(3.83-15.93)
	96.9%(95.5%-97.9%)	63.7%(22.2%-83.1%)	97.8%(97.0%-98.5%)
Suicidal Ideations	k=9	k=9	k=9
	3.08(2.12-4.46)	3.52(2.38-5.20)	6.64(4.14-10.64)
	97.6%(96.6%-98.3%)	90.4%(84.1%-94.2%)	98.4%(97.9%-98.8%)

Fig. 5 The plot showed the estimated ORs of the main psychological problems in studies reported in a three-group (TB only, CB only and Both) design. The OR and 95% CI, the number of effect sizes, I^2 and its 95% CI were shown on the plot. All results were based on the random-effect model and significant at p <0.01

Source: Li et al., 2024, p. 2905

The findings of this meta-analysis corroborate the findings of other (earlier) meta-analyses that looked at the relationships between CB victimization (compared to TB victimization) and self-harm and suicide (Heerde & Hemphill, 2019; van Geel et al., 2014). They also align with the results from the meta-analysis of Hu et al. (2021), which focused on studies examining the relationship between CB victimization and depression, and also concluded that there was a significant positive correlation between CB victimization and depression (r = .291). In addition, these authors found significant moderating effects for age, gender and publication year (with the impact of CB victimization on depression increasing with age, being stronger among girls, and having increased over time), but no moderation effect of the country of origin.

Other meta-analyses also found significant relationships between CB victimization and other outcome variables (often, but not always, after controlling for TB victimization, and sometimes, but not always, comparing the (partial) correlations between CB victimization and health outcomes with those for TB and health outcomes). In the study of Barlett et al. (2024), for instance, CB victimization and 9 (out of 11) outcome variables (anxiety, depression, drug use, high self-esteem, loneliness, poor health, skipping school, stress, suicide) were significantly related (in the expected direction) after controlling for TB victimization (no significant relationship was observed for shame and poor sleep). Age only moderated the relationship between CB victimization and (a) drug use and (b) shame. As age increased, the correlation between CB victimization drug use decreased, and shame increased (the authors suggest that the absence of more moderation effects of age, might be due to the fact that most of the included studies focused on youth in middle and high school, while studies assessing emerging adults and younger child samples are scarce). No other moderators were investigated in this study. In the meta-analysis of Fisher et al. (2016) CB victimization amongst adolescents was significantly related to a range of internalizing problems (including suicidal ideation (r = .32), depression (r = .32), anxiety (r = .31), low self-esteem (r = .21), and physical symptoms (r = .21)) and externalizing problems (self-harm (r = .34), substance use (r = .18) and social problems (r = .14)). The relationship between peer CB victimization and overall internalizing problems was larger in older samples. Other moderator variables, including publication status, the gender composition of the sample, and the percentage of White adolescents in the sample demonstrated no moderating effect. This led the authors to conclude that (p.1739): "*Together, the general pattern of results from the moderator analyses indicate that the relationships between peer cybervictimization and various internalizing and externalizing problems are robust across several study- and sample-level characteristics*". The meta-analysis of Gini et al. (2018) confirmed the relationship between CB victimization and

internalizing problems, even after controlling for TB victimization (sr = .12). The difference in the relations between each type of victimization and internalizing problems was small (differential *d* = .06) and not statistically significant (*p* = .053). The moderator analyses revealed that the link between cyber-victimization and internalizing problems became stronger with age. Gender and location did not have a moderating effect.

Most of the existing meta-analyses on the relationship between CB victimization and (mental) health outcomes (including those mentioned above), looked at the evidence resulting from both cross-sectional studies as well as longitudinal studies (with the majority of them being cross-sectional studies). A limited number of meta-analyses have only focused on **longitudinal studies**, as these allow to provide insights in whether the CB victimization leads to (mental) health issues, or rather the other way around (although, as already stated, longitudinal studies do not necessarily allow for causal conclusions, might be influenced by non-included variables, and might identify only partially relationships that are complex and multidirectional). The meta-analysis of longitudinal studies by Marciano et al., (2020) shows that there are indeed reciprocal effects: CB victimization constitutes a risk factor of internalizing problems, such as depression and anxiety. Conversely, depression and anxiety also predict CB victimization over time.

In the most recent meta-analysis of longitudinal studies on CB victimization and mental health symptoms among children and adolescents, Lee et al. (2025) also found a positive correlation between CB victimization and negative effects on children and adolescents' overall mental health over time (). With regard to the individual outcomes, there was only a significant and positive correlation between CB victimization and depression , and between CB victimization and anxiety . There were no significant associations between CB victimization and the other mental health outcomes, including loneliness, body image/negative cognition/low self-esteem/psychological distress, and somatic complaints/sleep/stress due to the small sample sizes. Moderation analyses showed that the longitudinal impact of CB victimization on mental health is larger among older children, children groups consisting of more males, and among more recent publications. The study by Lee et al. (2025) did not investigate the potential effect of mental health indicators on CB victimization.

Cyberbullying perpetration and health outcomes

Meta-analyses on the (causal) relationship between CB perpetration and (mental) health outcomes amongst children and adolescents are much more scarce than meta-analyses on the (causal) relationship between CB victimization and (mental) health outcomes. Heerde and Hemphill (2019) were unable to examine the association between CB perpetration and deliberate self-harm because there were no retrieved studies examining this association. John et al. (2018) did examine the relationship between CB perpetration and suicide and found that CB perpetrators were 1.21 times more likely to exhibit suicidal behaviors and 1.23 times more likely to experience suicidal ideation than non-perpetrators (in comparison, this study found that CB victims were 2.10 times as likely to exhibit suicidal behaviors, 2.57 times more likely to attempt suicide, and 2.15 times more likely to have suicidal thoughts than non-victims). In their meta-analysis, Kim et al. (2025) reported a pooled effect size for CB perpetration and marijuana use of 1.245 (while this was 0.902 for traditional perpetration). Marciano et al. (2020), who conducted a meta-analysis of longitudinal studies (see supra), concluded that their meta-analytic result (including 6 studies and 5,954 adolescents) showed a small and positive effect of CB perpetration at T1 on depression on T2 (but no significant effect of other internalising problems, e.g. anxiety). With regard to externalizing problem behaviors, CB perpetration at T1 significantly positively predicted substance use. Internalising problems at T1 (e.g. anxiety, depression, empathy, self-esteem, and the quality of the relationship with peers) were not significantly related to CB perpetration at T2. However, behavioral problems at T1 significantly positively predicted CB perpetration at T2 .

Cyberbullying bystandership and health outcomes

To the best of our knowledge, there are currently no meta-analyses available on the possible relationships between CB bystandership and (mental) health outcomes. Nonetheless, individual studies reveal that also witnessing CB might have a negative impact on young people's mental health. Wright and Wachs (2023), for instance, conducted a longitudinal study amongst 1,067 adolescents between 12 and 15 years. Their analyses showed that witnessing CB at T1 was related positively to subjective health complaints, suicidal ideation, and non-suicidal self-harm, measured at T2 (one year later) and while controlling for previous levels of these health issues.

Step 3. Assessment of the certainty of the evidence

In this assessment we only focus on the "risk of bias" and "inconsistency". For the other GRADE elements ("indirectness", "imprecision" and "publication bias") we would like to refer to the individual meta-analyses mentioned in this document, and to the systematic map of systematic reviews by Kwan et al. (2020) and the umbrella review of meta-analyses by Kasturiratna et al. (2024).

Risk of Bias: study design and confounders

The meta-analyses that were described earlier, often mention that the majority of the included studies had a cross-sectional design and therefore warned for drawing conclusions about causality (e.g., Barlett et al., 2024; Fisher et al., 2016; Li et al., 2024).

The meta-analyses that only focused on longitudinal studies (see supra) did provide evidence for reciprocal effects: CB victimization may lead to negative mental health outcomes (i.e. depression and anxiety), but youngsters with mental health issues (i.e. depression and anxiety) may also be more likely to become cybervictims.

As mentioned earlier, CB involvement is positively related to involvement in TB, and CB victimization is positively related to CB perpetration. To estimate the (unique) impact of, for instance, CB victimization on (mental) health outcomes, it is therefore important to control for TB victimization and CB perpetration. While not all meta-analyses control for all possible confounders, those who do (see for instance, Barlett et al., 2024; Li et al., 2024; Marciano et al., 2020), still find statistically significant (partial) correlations between CB involvement and (mental) health outcomes.

Inconsistency

CB is typically measured via self-reports, which may be subject to recall bias. Moreover, there is a huge variation in measurements used across individual studies (Li et al., 2024). For example, some of them use single-item measures, while others rely on multiple checklists; some define bullying before asking the respondents to complete the scale, while others do not; some mention a short reference period (e.g. in the past 3 or 6 months) while others refer to "have you ever". Some meta-analyses (see, for instance, Gini et al., 2018) show that the variations in the measurements used, may also impact the strength of the relationships found. Meta-analyses often also report the heterogeneity in effect sizes they found in the individual studies they included (and which vary from low to high), as well as (potential) moderating variables (e.g. related to characteristics of the study population, such as age, gender, country of origin, or related to the study design, such as the measurement used, cf supra). Several meta-analyses suggest that with increasing age the impact of CB victimization on (mental) health (especially depression) becomes stronger (Fisher et al., 2016; Gini et al., 2018; Hu et al., 2021; Kim et al., 2025), while others did not find such a moderating effect (Barlett et al., 2024).The same holds for the variable "gender": while some find a stronger effect on girls' mental health (Hu et al., 2021) others found a stronger effect for boys (Lee et al., 2025), and still others concluded there was no moderating effect of gender (Gini et al., 2018).

As CB can take place via different devices (smartphones, laptops,…) and related applications (messenger apps, social media, gaming platforms…) with different technical features and affordances (e.g. anonymity), and can take many different (behavioral) forms (e.g. insulting, threatening, ….), it is striking that meta-analyses typically do not investigate their (potentially different) impact on mental health outcomes. Earlier research suggests the impact of CB might vary according to: the specific application used (e.g. social media, Giumetti & Kowalski, 2022), the number of perpetrators and the repetition involved (Mitchell et al., 2014; Papadamou et al., 2022), the type of message created (e.g. text versus picture/video) (Smith et al., 2008), the private versus public character of the cyberbullying, and whether it is performed anonymously or not (Sticca & Perren, 2013). Lee et al. (2025, p.11) therefore also conclude their meta-analysis with the following suggestion: *"Because technological advancement leads to varied platforms for cyberbullying, a more nuanced explanation and comprehension of the experiences of different kinds of online bullying is needed and can aid in the design of more effective cyberbullying interventions (Khan et al., 2020). Primary studies should consider these factors when investigating this association."*

Step 4: Conclusions

Although there are inconsistencies (mostly with regard to the strength of the effects, and the role of potential moderators), there seems to be scientific consensus – especially thanks to the growing number of longitudinal studies - about the negative mental health impact of CB (especially for victims). However, mental health issues also make young people more vulnerable for CB victimization. This is also the conclusion of a recent umbrella review of meta-analyses on the risk factors, protective factors, consequences and interventions of cyberbullying victimization conducted by Kasturiratna et al. (2024, p. 102): "… *another essential question within cyberbullying literature pertains to understanding the consequences of online victimization. Mental health problems such as depression, anxiety and suicidal ideation are commonly identified as psychological consequences of cyberbullying victimization. Research indicates that this relationship between psychological problems and cyberbullying victimization is bidirectional, as individuals with pre-existing conditions are more vulnerable to cyberbullying, which in turn exacerbates their symptoms*."
Nonetheless, it should be noted that the current evidence base is still largely dominated by cross-sectional studies, which primarily capture short-term associations rather than long-term trajectories. Although longitudinal research is increasing and has provided stronger indications of bidirectional and enduring effects, further high-quality longitudinal and experimental studies are needed to better understand the temporal dynamics and causal pathways involved.

Step 5: Policy recommendations
CB is a problem that is neither an "epidemic" nor rare. It has mostly been investigated amongst adolescents, and peaks around the ages of 12-15. Contrary to popular perception, CB is less prevalent than TB. CB is also closely linked to TB. In fact, the number of young people who have only been cyberbullied is low, and mostly children or adolescents involved in bullying know each other, often from school (Blaya, 2018; Galand, 2021; Juvonen & Gross, 2008). Looking at the impact of CB, it is clear that it may have similar (or even stronger, although some victims of both type of bullying might report TB as worse than CB depending on many factors, Corby et al., 2016) effects than TB on (mental) health outcomes. For instance, the literature suggests a stronger link between CB victimization and self-harm and suicidal ideation and attempts, and a similar link with depression, compared to TB victimization. Other (longitudinal and cross-sectional) relationships have been found between CB victimization and anxiety. Research also indicates that CB perpetration and CB bystandership might adversely impact young people' (mental) health. In the first case, meta-analyses point, for instance, to the link between perpetration and externalising problems, such as substance abuse. The scientific evidence base for the impact on bystandership on (mental) health is currently very scarce, but individual (longitudinal) studies do reveal a possible negative impact. The mental health impact of CB might also vary according to the concrete experiences victims went

through (e.g. did the CB take place in front of a large audience?, did it include pictures or videos?, was it performed anonymously?), which might also be related to the specific features or affordances of certain devices and applications or platforms. However, the current CB measures often do not take these specific situational characteristics into account.
While CB thus causes relatively few "new" bullying victims, the average impact of this form of CB is bigger than the average impact of TB. What is more, those who experience both TB and CB, are also significantly more affected than those who experience either form.
Therefore, it is important to maximize efforts to prevent CB, to detect/report CB and to adequately address CB when it has taken place. This requires a multi-stakeholder approach, as earlier described and applied to the Belgian and Flemish context by (Vandebosch, 2014, 2019; Vandebosch et al., 2012; Vandebosch & Pabian, 2023; Vandebosch & Pabian, 2025). Young people, parents, schools, but also the broader environment (the police, health providers, technology developers/social media platforms, mass media, scientists) should be involved (see also appendix 1 for more details). Below we provide recommendations for these different contexts and actors.

Schools

Schools are thought to be an important actor in anti-CB programs, as CB often originates from TB in the school context, and also impacts the social relationships and the learning outcomes there.
Schools can undertake several actions to promote a positive school climate and reduce (the prevalence and impact of) negative social behaviours such as TB. Indirectly – since CB is often an extension of TB (cf supra) – this may also affect the prevalence of CB amongst pupils. However, the specific characteristics of CB, also require specific attention. Schools should raise awareness about CB (what is it?, what are its causes and effects?, and what can be done about it?) amongst their pupils (and the parents of their pupils), promote reporting cases of CB to the school staff, and try to adequately deal with CB incidents that occur.

Parents

Parents also play a role in CB prevention, detection/reporting and intervention. They should guide their children's online media use, be aware of signals that might indicate their child's involvement in CB (either as a victim, bully, or bystander) although those signals are not specific to CB, react appropriately when they are aware of CB targeted at, caused or witnessed by their children. Moreover, parents should not only mediate their child's online media use, but also set a good (online) example themselves.

Young people
As potential victims, young people should learn:

- How to best protect themselves online (e.g. by using privacy settings, by not putting sensitive information online, by being cautious by mastering media and relational tools…). In addition, studies indicate that promoting online media literacy is an important component of anti-CB (school) interventions.
- How to best cope with CB victimization (e.g. by not "bullying back", by talking to a trusted person such as a friend, a parent, a teacher, a health professional, or an online help platform…). To facilitate effective help-seeking, it is essential to acknowledge and address young people's fears, perceptions, and other barriers, thereby increasing the likelihood that adolescents will perceive adults as relevant and helpful resources in such situations.

As potential perpetrators, young people should learn:

- How to deal adequately with negative emotions such as anger and boredom, that CB is not socially accepted, what the negative impact of cyberbullying is on the victim,

what negative repercussions perpetrators might face (punishment by parents/school, exclusion from online services, legal consequences,…), etc.
- How they can engage in restorative actions (e.g. delete harmful messages, apologize towards the victims, etcetera) (Hendry et al., 2023).

As potential bystanders of cyberbullying, young people should learn:
- Not to (seemingly) approve/reinforce the actions of a person who engages in CB (e.g. by liking, commenting, or sharing a post) or to remain passive (i.e. not reacting) and to support the victim.

The police

Although there are a number of arguments that would plea against the involvement of the police in CB amongst youngsters (e.g. offenders should not be criminalised, and the fact that not all forms of CB (e.g. massively defriending someone) constitute a criminal offence), there are also some arguments that plea in favour. As mentioned before, since most CB takes place from outside school and outside school hours, it may not always be so evident for schools to mediate between, for instance, the victim and the perpetrator (and their respective parents). Hence, the (local) police might fulfil this role. The involvement of the police is also necessary in those cases where CB does represent a serious threat to the mental and/or physical health of the victim, and fast cooperation with the ISPs is needed to identify the perpetrator and to stop the crime. To summarize: the police should be contacted when the CB is (expected to constitute) a criminal offense (for more information on the legal qualification of different types of cyberbullying in different countries, see : Shariff, 2008; Walrave et al., 2009), and could be contacted for more ambiguous cases (and for tips on how to prevent all types of CB).

Social media platforms

Over time, social media platforms have shifted their stance on responsibility for addressing CB and other online aggression. Initially emphasizing users' responsibility, later they acknowledged their own role and framed the issue as requiring multi-stakeholder collaboration (Dubois & Reepschlager, 2024). Policymakers followed a similar trajectory, moving from self-regulation to legal frameworks such as the *Digital Services Act* (2022), which imposes specific duties on very large online platforms (VLOPs).
Major companies like Meta have since invested in prevention, detection, and response measures. Prevention includes awareness campaigns, *safety-by-design* features, and *nudging* strategies (e.g. private default settings for young users). Detection relies on automated monitoring and reporting systems reviewed by human moderators, who may remove content, block users, or offer support. Automated tools can also prompt bullies to reconsider posts, guide victims to help resources, and encourage bystanders to act.

Traditional (news) media

Analyses of news media coverage show that cyberbullying is framed through various angles - individual cases, research findings, and policy or intervention discussions (Vandebosch et al., 2014). Media often adopt a sensational and alarmist tone, especially when cases involve suicide (Milosevic, 2015; Young et al., 2017), potentially fueling *moral panic* (Cohen, 1972) and calls for punitive or restrictive measures. More educational and trust-based approaches are seen as more effective.
Popular media (films like *Cyberbully* or series like *Glee*) also shape perceptions of cyberbullying, often inaccurately emphasizing suicide, gender stereotypes, or revenge motives (Oppliger, 2013; Scheg, 2015). Such portrayals can raise awareness but also risk normalizing harmful behaviours or ineffective coping strategies. Collaboration between media and health professionals could promote more accurate and beneficial representations, following the *Entertainment-Education* model (Moyer-Gusé, 2008).

In Belgium, for example, the children's channel **Ketnet** partnered with **Awel** to produce *D5R*, a fiction series addressing youth issues such as cyberbullying.

2.3.2. Sexting and image-based sexual abuse

a) Definitions and prevalence

Digital media are used by young people to show romantic interest and sustain intimacy. This may include **sexting**, the sharing of self-made sexually explicit images through electronic means (Madigan et al., 2018). However, the sharing of intimate images may entail *conduct risks*. When entrusted with an intimate image, receivers may choose not to keep it private but instead share it with others, often without the knowledge or consent of the individual portrayed. This leads to the **non-consensual distribution of intimate images** (NCDII), which is a form of **image-based sexual abuse**. Moreover, not only can intimate pictures that have been made and shared be abused, but also fake nude images can be produced, using AI, and shared. **Deepnudes** are the result of the creation of realistic but fake nude images or videos of a victim through the application of AI technology (Floridi, 2018).

The **prevalence** rates of sexting differ greatly in published research. A meta-analysis of 28 studies indicates a mean pooled prevalence rate of 19.3% of youth engaging in **sexting** and 34.8% receiving (Mori et al., 2022). This discrepancy may be due to several reasons. Respondents may underreport their active engagement in sexting or overreport their reception of intimate images, some youth may send the same image to multiple receivers, and those who receive a sexting image might not reciprocate the message (Klettke et al., 2014). Differences in prevalence rates between studies are also explained by inconsistencies in how sexting is defined (e.g. sexually explicit pictures, videos and/or also text messages), or which devices are studied (e.g. smartphones or also computers, tablets) (Barrense-Dias et al., 2017). Research also indicates that prevalence rates are similar over time (when comparing research up to 2015 and between 2016 and 2020). While research conducted between 2009 and 2015 showed an increase in teen sexting, more recent research (2016-2020) shows a stabilisation of youth's sexting behaviour (Mori et al., 2022). Scarce research focused on the development of sexting among youth in Belgium. One cohort study among adolescents found a significant increase in sending sexts, from 8.3% (in 2015) to 12.1% (in 2017) (Van Ouytsel et al., 2020). In general, studies indicate that no more than one-third of young people engage in sexting, whether by sending sexts themselves or by forwarding them. Prevalence rates vary as a function of age, with older adolescents engaging more frequently in sending sexts, which reflect trends of adolescents' sexual and relational development (Madigan et al., 2018; Mori et al., 2022). Also, peer group pressure and acceptance of sexting play a role. As social norms among youth's peers are positive concerning sexting, adolescents are more inclined to engage in sexting (Walrave et al., 2014). Regarding gender differences, the media often portray girls as senders of pictures and boys as the recipients; however, a meta-analysis found no significant gender differences in the rates of sending or receiving sexts (Madigan et al., 2018).

Regarding the prevalence of **NCDII**, meta-analyses found that 7 to 14.5% of youth (up to 18 years old) forwarded received sexts without consent of the depicted person (Madigan et al., 2018; Molla-Esparza et al., 2020; Mori et al., 2022). This prevalence increased with age, however, no gender differences appeared (Mori et al., 2022).

Concerning the more recent creation and dissemination of **deepnudes**, a study among youth (10- to 18-year-olds) found that 2.77% reported to have created a deepnude picture or video. Boys were more likely to have used deepnude apps to create a fake nude image. Also age differences were found (Kopecký & Voráč, 2025). In Belgium, higher prevalence rates were found. A study among 12- to 18-year-olds found that 7.8% already used a deepnude app to create deepnudes. One in four youngsters (23.1%) state to have seen a deepnude. A total of

13.8% had already received a deepnude, significantly more boys than girls. Deepnudes were forwarded by friends or were seen on specific social media (Szyf et al., 2024).

b) Influence of sexting and image-based sexual abuse on young people's mental health

Applying the GRADE approach, the scientific evidence on the relationship between sexting and mental health is analysed. Moreover, abuses related to the production or sharing of sexual images and how they impact victims of these forms of image-based sexual abuse are summarised.

Step 1. Research questions (PICO framework):

- Population (P): children (up to 11 years old) and adolescent boys and girls (12- till 18-year-olds).
- Intervention/exposure (I): Involvement as sender/receiver of sexting images, perpetrator or victim of image-based sexual abuse.
- Comparator (C): No involvement in sexting, no involvement in image-based sexual abuse
- Outcome (O): Impact on mental health

In what ways are young people's involvement in sexting and in related abuses associated with mental health outcomes? How does the impact possibly differ between children (up to 11 years old) and adolescents (12-18-year-olds), and between girls and boys?

Step 2. Collection and summary of the evidence

Sexting and (mental) health outcomes

A sizable minority of youth engage in sexting. Therefore, research on the psychosocial consequences is important to understand the impact of youth sexting. Review studies found that the outcomes of sexting for minors are wide-ranging. While some outcomes are positive and could be seen as desirable for young people, other outcomes are negative and unwanted for the persons involved (Doyle et al., 2021). Nevertheless, the discourse around sexting is often framed negatively, focusing on sexting's potential unwanted outcomes, while sexting can also be considered part of young people's sexual development and a normal form of communication in contemporary romantic and sexual relationships (Symons et al., 2018). Do note that several scholars question this normativity as the framework of a positive sexuality (Impett, et al., 2013 ; Maes et al., 2022) expect users to be able to show respect for sexual partners and this positive sexuality dimension only gradually matures during adolescence. Given that mediated sexual actions such as sexting are often considered as more volatile, less serious, it is especially challenging for adolescents to show respect for others in the online sexual content as this positive sexuality dimension is still developing and the environment does not support such attitude (Konings, 2024; Willems et al., 2025; Vandenbosch, 2025).
A review focusing on teenage sexting found that most papers (79%) address adolescent sexting as risky behaviour and link it to sexual objectification, sexual risk behaviour and violence, such as bullying by peers. In opposition to this deviance discourse, a normalcy discourse in the literature interprets sexting as normal intimate communication within romantic and sexual relationships (Döring, 2014). From this viewpoint, sexting is not necessarily harmful in itself; its implications largely depend on the surrounding context of the interaction, particularly whether the exchange occurs with or without consent or pressure (Englander, 2019). However, the risk perspective is dominant in the literature, which is attributed to the potential harm of the non-consensual forwarding of sexting messages (Krieger, 2017).
Recently scholars also shed light from a positive sexuality developmental perspective on why sexting may come with responsibilities adolescents are not ready to face. Such scholars

highlight that it should not be sufficient to do sexting without risks on forwarding, yet should also contribute users' positive sexuality (e.g., Vandenbosch, 2025). Nevertheless, research has also focused on the benefits of sexting that can be categorised in three main topics:
First, personal gains directly linked to the act of sexting (such as exploring and experimenting with sexuality, experiencing sexual pleasure, or even deriving non-sexual enjoyment); second, personal benefits derived from the partner's response (including effects on body and self-image, feelings of sexual autonomy, and a sense of validation), and, third, relational advantages of sexting (for instance, fostering emotional and sexual intimacy or using it as a means of strengthening connections) (Van Dijck et al., 2025). Such benefits are especially identified based on sought gratifications in sexting. Research examining whether such gratifications have been obtained after sexting could not always support that sexting for instance empowered users' body image (e.g., Willems et al., 2025).
However, engaging in sexting entails a level of risk that has been found to be associated with victimisation of different forms of online violence. Adolescents who had either engaged in sexting or had a sexually explicit image of themselves shared without consent were found to be about three times more likely to experience emotional **dating and relationship violence** (DRV), a pattern observed for both boys and girls (Couturiaux et al., 2021). Sending sexting images has also been related to **cyberbullying** and traditional bullying victimisation (Navarro et al., 2020; Van Ouytsel et al., 2020). Consent breaches are sometimes at the core, as bullying followed the unauthorised distribution of intimate images (Doyle et al., 2021)(cf. infra, NCDII).
Concerning the relation between sexting, **sexual and other risk behaviours**, associations were found. Compared to their peers who do not sext, adolescents who do have higher levels of delinquent behaviour, are more likely to be sexually active, have multiple partners, engage in unprotected sex and are more prone to substance use (Mori et al., 2019). The disinhibitory effect of alcohol and drugs may contribute to a greater tendency to engage in sexting and other risky behaviours (e.g., drunk texting/sexting, lack of contraception use) (Van Ouytsel et al., 2018). Moreover, the relation between sexting and risk behaviours (such as having multiple partners, engaging in substance use) is more pronounced among younger adolescents than older ones. This suggests that sexting may be relatively less risky for adolescents who are older and more mature (Mori et al., 2019).
While sexual exploration tends to become a more normative aspect of development as adolescents grow older, younger adolescents may be particularly vulnerable to the risks tied to sexting (e.g., sexting under pressure, NCDII) due to their relative immaturity (Mori et al., 2019).
More specifically, regarding sexting and **mental health**, research found a relationship between engaging in sexting and psychological difficulties. Research among adolescents found that psychosocial problems were more frequently observed in teens who had sent or shown sexts of themselves. In addition, they found that high self-esteem was negatively associated with having sent or shown sexual pictures. For girls, sexting was associated with depressive symptoms (Ybarra & Mitchell, 2014). A longitudinal study found that adolescents' engagement in sexting was related with subsequent feelings of anxiety and symptoms of depression (Chaudhary et al., 2018). Research in Belgian adolescents associated sexting with lower levels of body satisfaction and positive sexuality dimensions (Willems et al., 2025). Also other research among adolescents found that involvement in sexting was related to higher levels of stress, depression, anxiety and other emotional problems (Dodaj et al., 2020; Gamez-Guadix et al., 2022; Mori et al., 2019; Ševčíková, 2016), while some research did not find that adolescents' sexting was a marker of mental health (Burić et al., 2021; Temple et al., 2014). Analysed together in a review study, a majority of studies found positive associations between sexting and depressive symptoms (twelve of the fourteen analysed studies) (Gassó et al., 2019). This was also found in research in Belgium (Van Ouytsel et al., 2014). Young people with symptoms of depression, are emotionally more vulnerable, and need to be accepted by others and, therefore, may engage in consensual sexting due to feelings of powerlessness and lower self-esteem (Klettke et al., 2014). Moreover, individuals with depressive symptoms

may experience difficulties in decision-making, which can increase their likelihood of engaging in sexting, disregarding their personal boundaries (Van Ouytsel et al., 2014).
The same holds for the relationship between sexting and anxiety: a majority of studies (seven out of eight) found a positive association between sexting and anxiety (Gassó et al., 2019). One explanation is that the relationship between sexting and anxiety may be due to online or offline victimisation, as engaging in sexting increases the risk of being victimised, not only by the direct receiver of the sext but by anyone who might have access to it as the original message may have been transmitted to others (cf. infra, NCDII) (Medrano et al., 2018). Moreover, consensual sexting has been found to be associated with young people's difficulty in controlling their emotions (i.e., low emotional skills). Therefore, emotional motivations (e.g. sadness, attention seeking, feeling lonely) were related to engaging in sexting behaviour (Barroso, 2022).

In sum, the findings seem to point towards the presence of mental health symptomatology, particularly depression and anxiety, in the adolescent population when related to sexting behaviours. However, this relation might be mediated by coercion when engaging in sexting, or by victimisation in the context of image-based sexual abuse.

Image-based sexual abuse and (mental) health impact

One form of image-based sexual abuse is the non-consensual distribution of intimate images (NCDII), defined as sexual images taken or shared (physically shown to others, forwarded or made public online) without the consent of the depicted person (Krieger, 2017). Differences in definitions and studied populations explain rates significantly varying across studies and ranging between 2.7% and 28.0% of victims of sharing intimate images without their consent (Henry & Beard, 2024). From a review of the literature, the following topics emerged. First, sexting is framed as including a risk of the image being forwarded. Non-consensual distribution is therefore seen as inevitable or at least a high risk of engaging in sexting. This is often related to victim-blaming. Victims of the non-consensual forwarding are held responsible for the image's subsequent use (such as forwarding it or posting the image online). Moreover, victims are blamed for not applying safer sexting strategies, such as not being recognizable on the picture. Research found that only a minority of youth (36.8%) sent identifiable pictures, indicating that a considerable number of teenagers do engage in safer sexting practices (Van Ouytsel et al., 2020). Victim blaming is also related to minimising the actions of people who engaged in forwarding the image, downplaying the potential harm. By contrast, some literature sees non-consensual distribution of sexting as a form of bullying or categorises non-consensual distribution of sexting as part of a continuum of technology-facilitated sexual violence, more particularly a gender-based violence, targeting especially girls and women (Krieger, 2017).
Victimisation of NCDII was found to correspond with negative psychological outcomes, including feelings of sadness, anger, and anxiety disorders (Cooper et al., 2016). More recently, a positive relationship between non-consensual and pressured sexting and both depressive symptoms and non-suicidal self-harm was found (Wachs et al., 2021). Concerning psychological and, more particularly, emotional outcomes, reviews of the literature reported a broad range of feelings ranging from feelings of unpleasantness, anger, anxiety, distress, self-blame/guilt, negative changes in self-confidence, to depression, sleep disorders, post-traumatic stress disorder and even suicidal ideation. Similar psychological impacts were found for victimisation of sextortion, when perpetrators threaten to share nude images to coerce the victim into complying with certain demands, such as paying a ransom, sharing intimate images, or engaging in unwanted (sexual) acts (Ray & Henry, 2025). A study comparing the impact of consensual and non-consensual sexting (in its broadest sense: receiving unsolicited sexts, forwarding sexts without consent, requesting sexts, and being solicited for sexts) on young people's psychosocial health indicated that only non-consensual forms of sexting were associated with poorer psychosocial health (Lu et al., 2021).

Overall, these results highlight the wide-ranging and potentially profound psychological and emotional consequences it can have on victims (Hellevik et al., 2025; Paradiso et al., 2024). Moreover, some studies stress that these psychological problems sometimes lead to social withdrawal, leading to isolation and not reaching out to friends and family for support (Paradiso et al., 2024).
Moreover, a literature review indicated a link between adolescents with histories of childhood trauma (such as neglect, physical abuse, or sexual abuse) and involvement in non-consensual sexting (Barroso et al., 2021). Experience such as trauma can leave adolescents in a more vulnerable position, leading them to pursue intimate connections with others through inappropriate or pressured sexual messaging (Mitchell et al., 2012). While most research focused on prevalence and correlates of abuse victimisation, some studies focused on victims' help-seeking behaviour. Research has shown that victims draw on both informal and formal sources of support, such as friends, family members, social media platforms, and law enforcement, with informal avenues generally being the most frequently utilised. Studies further point to several obstacles that discourage help-seeking, including feelings of shame, concerns about negative social reactions, and limited confidence in formal services. At the same time, certain factors encourage victims to seek assistance, particularly the pursuit of justice and the removal of images that were shared without consent (Pijlman et al., 2025).
Research in Belgian adolescents has further identified that NCII is facilitated because of the high levels of victim blaming and low levels of bystander actions that exist within contemporary Belgian adolescents (Maes et al., 2023; Maes et al., 2024).
Few studies focused on offenders' motivations for engaging in NCII. Some studies found that the primary reason for sharing sexual images without consent was related to "social rewards" or "individual benefits", to show off to peers, trading images, or even embarrassing or getting back at the person (Henry et al., 2020). Also other reasons were given, to be funny, as the person was hot, to brag or gossip, or even just for amusement (Clancy et al., 2019; Parton & Rogers, 2025).
The perpetration of NCDII was also found to be related to impulsiveness, narcissism, and lower levels of empathy. Moreover, the need for popularity, social reinforcement or recognition, and being accepted by peers, were also associated with the perpetration of non-consensual sexting (Barroso, 2022). Research also found that some Dark Tetrad traits related positively to the nonconsensual dissemination of sexts. More particularly, narcissism, psychopathy, and sadism, but not Machiavellianism, were associated with NCII (Karasavva & Forth, 2022). Also, other studies found that dark personality traits (including also Machiavellianism) were associated with greater proclivity of image-based sexual abuse (Parton & Rogers, 2025). The reputational impact following the non-consensual disclosure of intimate images has been found to be different between girls and boys. While males may risk damaging their social standing by engaging in sexting, particularly when creating and sending sexually explicit content, they can also gain status by obtaining, viewing, and sharing images of young women. In contrast, the reputational consequences of sexting for females are often negative, with peers expressing disapproval. Some young women have reported being shamed and socially ostracized after their sexual images were shared (Setty, 2019, 2020).

Deepnudes and (mental) health outcomes

Although adolescents may be harmed through the abuse of their self-made sexual images, the rise of Generative AI has introduced additional risks. Nude images can be generated without having a nude image of the victim. AI applications offer the possibility to create fake but realistic nude images from existing photographs of a person (e.g., a fully clothed picture of a person) that can be found online (Kopecký & Voráč, 2025) or taken by the perpetrator, even without consent or consciousness of the victim. These images are called deepnudes, referring to deepfakes, AI- or machine learning–produced media that, with differing levels of technical refinement, create highly convincing representations of real people engaged in actions or speech that never actually occurred (Maras & Logie, 2024). Deepnudes can have important psychological and social consequences for victims. Scarce research has been

conducted on this emerging risk. In Belgium, research among adolescents and emerging adults (15-25-year-olds) found that 41.9% of people had heard of deepnudes, 23.1% had already seen a deep nude, and 12.8% were familiar with deep nude apps, with 7.6% possessing a deepnude on their smartphone (Institute for the Equality of Women and Men; 2024). Research in the UK, New-Zealand and Australia found that 5.4% already made a deepnude picture (among a population of 16- to 64-year-olds) (Flynn et al., 2022). These manipulated sexual images are primarily created and disseminated for purposes of sexual gratification rather than for emotional manipulation or defamation (Williams, 2023). However, other contexts also exist in which victims are blackmailed with such material, as in cases of sextortion. A further motivation is the perpetrators' desire to experiment with the technology itself. In such instances, the behaviour is often trivialised and perceived not as a criminal act but rather as a form of entertainment or amusement. Research among male offenders indicates that peer reinforcement is more strongly associated with achieving status and reputation within a male social circle than with sexual conquest, largely driven by approval and validation of their abusive actions (Flynn et al., 2025).
Research among Belgian youngsters who possess a deepnude app, some youth declare using it to create deepnudes to take revenge (23.7%), to gain status in the peer group (21.9%), and to a lesser degree, for fun (17.4%) or to humiliate someone (14.6%) (Szyf et al., 2024). Deepnudes can have serious impacts on victims, including feelings of depression, post-traumatic stress syndrome, anxiety but also lack of self-confidence and suicidal thoughts (Szyf et al., 2024). The impact is similar to the psychosocial impact victims are experiencing when non-manipulated sexting images are abused. Not only does the violation of one's sexual identity contribute to the harm experienced by victims, but also the accompanying fear that such images may be disseminated or resurface later (Delfino, 2019).

Step 3. Assessment of the certainty of the evidence (GRADE)

This assessment focuses on "the risk of bias" and on possible "inconsistency". For these and other GRADE aspects we also refer to the meta-analyses that are integrated in this report.

Risk of bias

Most research integrated in this report, but also most research analysed in meta-analyses or reviews of the literature are cross-sectional studies. Only few studies (e.g., (Burić et al., 2021; Chaudhary et al., 2018; Ojeda et al., 2019; Van Ouytsel et al., 2019) have investigated the impact of sexting among youth using a longitudinal survey design. Most cross-sectional studies highlight that based on the associations that were found between, for instance, sexting and various phenomena, no conclusions can be made concerning causality. Therefore, because confounding factors may produce misleading associations, the results of current studies ought to be interpreted with caution (Doyle et al., 2021). An analysis that concentrated on longitudinal studies found that such research on sexting remains limited, and inconsistencies in definitions, measured constructs, associated factors that are studied, and sample characteristics have made it difficult to reach agreement across studies. For instance, evidence regarding the causal links between sexting, bullying or cyberbullying, and mental health outcomes has been inconclusive. Few studies differentiate between consensual and non-consensual sexting, making it difficult to compare the outcomes of specific types of sexting behaviour. While cross-sectional studies generally point to a link between sexting and experiences of bullying or cyberbullying victimisation, longitudinal evidence is less consistent. For instance, research found that sexting was more prevalent among socially popular adolescents, which could potentially reduce their likelihood of being bullied (Alonso & Romero, 2019). By contrast, other researchers argued that sexting might expose adolescents to risky situations, such as the non-consensual distribution of their intimate images, which could subsequently increase their vulnerability to bullying victimisation (Van Ouytsel et al., 2019). In sum, some research has demonstrated a significant relationship between sexting and cyberbullying victimisation, whereas other studies found no such association. Moreover,

findings diverge regarding the connection between sexting and offline bullying victimisation (Hu et al., 2023). Differences in results also relate to inconsistencies in measuring key variables and other study characteristics.

Inconsistency

Research investigating sexting and image-based sexual abuse relies on self-reports, introducing the possibility of reporting bias related to social desirability. Moreover, some studies use single items or not validated instruments or instruments with psychometric limitations. In some studies, concepts like sexting were referred to using broad terms or descriptions rather than by specifying particular behaviours. This lack of precision in wording may have led participants to interpret the survey items in different ways. In addition, the evidence is constrained because many of the studies failed to account for the social context or circumstances surrounding these behaviours. In numerous instances, the studies relied on convenience samples, which restricts the extent to which their findings can be generalised beyond the specific regional, national or cultural settings in which they were carried out. The variation in age ranges across surveys hinders comparison of findings. Moreover, most research is conducted in the United States or Europe, so there is a lack of research among culturally diverse contexts (Doyle et al., 2021; Henry & Beard, 2024; Hu et al., 2023; Parton & Rogers, 2025).

Step 4. Conclusions

Consensual sexting refers to the voluntary exchange of sexually explicit material-such as messages, images, or videos-between individuals through digital technologies. When such exchanges occur without the permission of one of the parties involved the behaviour is classified as non-consensual sexting and is part of image-based sexual abuse. Increasingly, scholars conceptualise consensual sexting as an element of contemporary adolescent romantic and sexual relationships, suggesting that it may serve a role in expressing intimacy or sustaining romantic bonds when conducted with mutual agreement. Other scholars currently question whether the developmental period of adolescence allows to engage in sexting with outcomes related to a positive sexuality framework: especially early and middle adolescents may developmentally not be ready to show the high level of sexual respect necessary to ensure a positive sexuality interaction occurs in a sexting context. In contrast, when entrusted sexting messages are disseminated with the intention of harming, humiliating, or violating another individual's privacy, the practice shifts into the realm of aggression. Empirical evidence indicates that personality traits, experiences of coercion, and exposure to violence are linked to mental health consequences in this context. Moreover, adolescents, but also their key socialization agents (i.e., parents) have high levels of victim blaming while showing low bystander intentions. Collectively, these insights provide a more comprehensive understanding of both consensual and non-consensual sexting, while highlighting the particularly harmful and problematic implications non-consensual sexting as a form of image-based sexual abuse.

Step 5. Translation of the evidence into policy recommendations to address image-based sexual abuse, including NCDII

Recommendations for research:

- Definitions of sexting, image-based sexual abuse and other related topics are still a gray area. **Clear definitions and standardised measuring instruments** are needed to improve the validity and comparability of findings from different studies. Specific reviews have examined the different definitions used in the literature and their correlates. For instance, several elements of the definition of sexting were assessed: actions (sending, receiving, and forwarding); media types (text, images, and videos); sexual characteristics; and transmission modes (Barrense-Dias et al., 2017). Clear

definitions in research are important to measure and compare prevalence and other research results (Van Ouytsel et al., 2020). Differentiation is needed between active sexting (i.e., sending of sexually explicit images, videos or text messages) and passive sexting (i.e., receipt of sexually explicit images, videos or text messages), and between consensual sexting (i.e., voluntary sending of sexual content) and non-consensual sexting (i.e., when an image is sent without permission of the receiver) (Barrense-Dias et al., 2017).

- Conduct **more research on understudied populations** among youth: cultural background of youth, LGBTQI+ youth (Van Ouytsel et al., 2018).
- Invest in **further research on the underpinnings of coping mechanisms** of victims of non-consensual distribution of intimate images (either real or AI-generated) to better understand support needs. Conduct research to identify and understand **trends and new forms of digital (sexual) violence**. Longitudinal studies make it possible to examine causal relationships, enabling researchers both to explore the effects of digital (sexual) violence and the coping strategies victims employ-including help-seeking-and to assess the long-term consequences, thereby contributing to stronger and more effective support for those affected. Moreover such research is necessary to capture when adolescents are developmentally ready to engage in sexting from a positive sexuality perspective.

Recommendations for education:

- Develop **educational programs for potential victims** so that they can recognize signs of abuse, develop strategies to deal with it, and know where to go for support. Moreover such programs should also address the problematic high levels of victim blaming and low levels of bystander intention in the Belgian population.
- Research found that a number of adolescents engage in safer sexting, not sending identifiable pictures (based on a Belgian study, one third of youth sent identifiable pictures (Van Ouytsel et al., 2020)). In addition to these safer sexting practices, education should also focus on consent and respecting the confidentiality of the entrusted picture (Clancy et al., 2023). Moreover, they should implement tools for adolescents to check whether they are developmentally ready to engage in sexting from a positive sexuality perspective.
- Related to NCDII, it would be beneficial to focus on prevention efforts for consensual intimate image sharing, emphasizing the roles, responsibilities, and boundaries of each partner involved. It is necessary to question the responsibility or lack thereof of the individual who shares their own photo and to identify the potential implications of this type of sharing. In an educational context, it could be interesting to initiate a discussion about the responsibility and the consequences for the perpetrators, victims, and bystanders. Relatedly, education in schools needs to be fostered on online boundaries, understanding of what constitutes NCII and the impact of these behaviours (Walrave et al., 2023).
- Research shows that adolescents only scarcely reach out for **professional help** (e.g., victim support organisations or police). In turn, victim support organisations indicate that adolescents and young adults will not easily reach out to them. Rather, adolescents and young adults will discuss their experiences with their peers and to a lesser extent with their relatives (e.g., parents). As such, it is advisable to improve the knowledge of adolescents on the potential of support organisations. Therefore, it is important to invest in wider communication, particularly to young people in school and to parents, on coping and support (Walrave et al., 2023).Victims often feel ashamed and guilty and often seek help reluctantly. Organisations need to take this into account in their communication and approach (e.g., anonymity).
- Creating a **non-judgmental and supportive environment** can act as a protective factor when intimate images are shared without consent, helping to reduce feelings of shame and guilt and encouraging victims to seek help: it is advisable to implement a

comprehensive support strategy for victims, which explicitly includes combating victim-blaming attitudes and negative judgments.

- Given that peers are often the first contact for victims, it is worth to invest in active **bystanding programmes for adolescents**, where they learn how to support and inform victims. Moreover, many adolescents receive non-consensual sexting message yet never confront the sender with this behavior. Support active bystandership online so that witnesses of cyberviolence (e.g., NCII, deepnudes or other forms of image-based sexual abuse) can act, to decrease perpetration and support the victim. Improve in this regard knowledge and competences for effective bystanding (Walrave et al., 2023).
- Create specific training programs for young people on recognising and preventing digital sexual violence. Develop specific lessons within education on relationship formation and sexuality around digital forms of violence within intimate relationships (including e.g., NCII, deepnudes, sextortion).
- Different outcome categories can be derived from (adolescent) sexting, namely, *psychological* (victimisation: sexual abuse/victimisation; mental health and quality of life; and emotional outcomes), *behavioural* (sexual activity, risk behaviours, and victimisation/perpetration of abuse and harassment), *relational* (personal connections with others & reputational outcomes), and *systems-level* (outcomes that go beyond the young person(s) involved in the sexting behavior, e.g., distribution/public exposure of sexting content) (Doyle et al., 2021). Educational initiatives could focus on the different forms of positive and negative impact that sexting involvement can have.

Recommendations for parents:

- **Inform and sensitize parents** on the positive and negative aspects of sexting, on new forms of image-based sexual abuse, on victim blaming, bystander engagement, developmental readiness for sexting and other forms of digital (sexual) violence. Stimulate them to discuss these topics within their family and inform them about resources and help organizations for more information and support.

Recommendations for health care, help organizations, and media:

- Group and coordinate the various areas of expertise in the context of a **center for digital violence**, following the example of the Care Centers for Sexual Violence. Provide a standardized action plan for the various parties, e.g., when an alarming situation is identified and the situation is immediately reported to the public prosecutor's office (Walrave et al., 2023).
- When intimate images are non-consensually spread online, a **rapid and efficient intervention by online service providers** (OSPs) to take down the content is essential. An important step to further ensure that support organizations have sufficient budget and capacity to meet the requirements of acting as trusted flaggers, i.e., hotlines with a prioritized connection to OSPs. This would mean that, when these organizations flag unlawful content, OSPs are required to act quickly. Moreover, they have to ensure qualitative and efficient hotlines, which are only possible with the necessary investments in human resources and technical capacity (Walrave et al., 2023).
- Ensure that **helplines and organizations are published** so that the general public and specific target groups know where to go for support and advice. Convince media to include the contacts of support organizations when publishing articles on image-based sexual abuse.
- **Inform** primary and secondary care and other **professionals** about the forms and signs of image-based abuse, as they are seen by victims as the first point of contact, such as general practitioners, psychologists, police, and social services. Review training courses for magistrates, lawyers, police, health services, etc. on topics such as image-based abuse and other forms of digital sexual violence, and examine how

digital forms of violence are included or can be further integrated. Integrate these forms of violence into compulsory and optional training courses for health professionals, police (including reception staff), magistrates, and lawyers. Develop a clear list of organizations where victims can go for assistance and help, and provide this list to professionals who are in contact with victims (Walrave et al., 2023).

Recommendations for the police:

- **Improve skills** and appreciation of law enforcement on image-based sexual abuse via training and guidelines.
- Invest in capacity of **specialized police** to investigate and act against these forms of abuse.
- Help offenders avoid reoffending by referring them to the appropriate agencies, rather than only prosecuting them. Develop and apply alternatives to classic punishments, such as prison sentences, for perpetration of image-based abuse. Develop in this respect a compulsory course specific for perpetrators within the framework of probation or mediation (Walrave et al., 2023).

Recommendations for online service providers (OSPs):

- Convince OSPs to **publish a list of trusted flaggers** on their website, redirecting victims and bystanders to national expertise centres and victim support organizations. Invest in capacity for and coordination among victim support organizations for their role in supporting victims and as trusted flaggers (Szyf et al., 2024).
- **Combat** the widespread presence and promotion of **deepnude apps**, focus on regulation or self-regulation of these applications, search engines and social media to find and promote these apps (Szyf et al., 2024).
- Develop and implement **technological tools that can help victims**, such as alarm buttons and apps for immediate assistance. Implement technological innovations that can help prevent forms of violence. This could be done, for example, by integrating *reflective interfaces* that encourage users of social media, dating apps, and other digital media to think about their communications and possibly edit or delete them (text, pictures) before they are sent to the recipient or made public (Van Royen et al., 2017).

2.3.3. Online friendships

It is often argued that social media may also offer potential benefits, allowing young people the opportunity for online friendships or online social support. In this section, we highlight the current evidence-base.

Online friendships (or virtual friendships) are relationships, often characterized as close, that are made through online conversations. While online contacts may offer opportunities for connections and can foster self-disclosure, they are sometimes perceived by individuals as more shallow relationships which can be superficial and easily broken (Lyrra et al., 2018). Online friendships may nevertheless be facilitated by the internet's anonymity and reduced auditory and visual cues, which can encourage self-disclosure and help to compensate for lacking social skills (Peter et al., 2005). This dynamic can be better understood through Hyperpersonal Theory (Walther, 1995, 1996), which proposes that the asynchronous and reduced-cue nature of online interactions fosters feelings of disinhibition and increases self-disclosure. As self-disclosure is central to intimacy development, social media may provide adolescents with unique opportunities to strengthen connections and access support in ways not always available offline (Quinn, 2018). Friendships, however, do not need to be necessarily either online or offline, but can also be a combination of both (Anthony et al., 2023). Online friendships among youth are common practice, especially these extending an offline friendship (with rates ranging from 60-80%). Fully online friendship are less frequent, but still common (rates ranging around 10 to 35%) (Lyrra et al., 2022).

Online support, in turn, can be defined as the provision of social support via online means (Zhou & Cheng, 2022). Often primarily informal support generated within social media platforms is considered, and it typically excludes support provided through formal means like online mental health services or peer support groups (Ma et al., 2025). The distinction is sometimes made between received support, which reflects actual support one receives online and perceived support, which more represents the personal interpretation of supportive transactions and the meaning attached to them (Zhou & Cheng, 2022). As there is not one single definition of online support, prevalence rates vary. However, at least one in five of young people seems to share concerns online, especially girls (Lyrra et al., 2022).

Based on the GRADE approach, we attempt to map out recent scientific evidence on online friendships as well as online support on the effects on (mental) health of young people.

Step 1: Research questions (PICO framework)

- Population (P): Adolescents (12-18 years old), both boys and girls.
- Intervention/Exposure (I): Online friendships, online peer relationships, or receiving online support
- Comparator (C): No online friendships/support, Offline friendships only, or lower levels of online support/friendship
- Outcome (O): Mental health (e.g., depression, anxiety, well-being, loneliness, resilience) and social health (e.g., perceived social support, social capital, sense of belonging)
- How do online friendships and support influence mental, physical and social health in adolescents aged 12-18 years? Is the impact different for boys and girls? Is the impact different for informal or formal support?

Step 2: Collection and summary of scientific evidence

The current evidence suggests a nuanced and complex role for online friendships, with outcomes largely depending on whether the digital interaction is used to maintain existing real-life relationships or involves newly formed virtual friends or unknown online acquaintances (Lyyra et al., 2022). Frequent online communication with established friendships (such as close friends or larger friend groups) is associated with beneficial outcomes, including higher mental well-being, increased life satisfaction, and decreased loneliness (Lyyra et al., 2022). This goes in line with the most recent #Génération 2024 survey (Média Animation, 2024), which reports that 62% of adolescents do meet unknown people online, and that these relationships can become very meaningful (close friends, lovers…). Conversely, intensive communication with purely virtual friends or unknown people is associated with negative well-being indicators, such as lower life satisfaction, poorer self-rated health, higher rates of loneliness, and increased problematic social media use (Anthony et al., 2023; Lyyra et al., 2022); Specifically, this negative association concerning virtual friendships appears to be stronger for girls compared to boys (Anthony et al., 2023).

Zooming in on one particular systematic review and meta-analysis by Zhou and Cheng (2022), (only) 14 international studies were found on the relationship between social support derived from social networking sites and adolescents' mental health. Results showed that online social support was moderately correlated with self-esteem. No correlation was found with depression. A sensitivity analysis nevertheless indicated that social support from acquaintances on the internet may not be as beneficial as from real-life acquaintances. Additionally, a lack of other specific mental health outcomes did not allow to conduct additional quantitative analyses, but individual studies did suggest that online social support may be associated with increased self-identity and life satisfaction, decreased loneliness and social anxiety. Additionally, it might also counteract the negative effect of stress and cyberbullying on mental health. Longitudinal studies would, however, be required to gain more insights. In

that regard, Steinsbekk et al. (2024) examined two common hypotheses on social media's impact on Swedish children's and adolescents' social skills in such a longitudinal study: the displacement hypothesis (suggesting online use reduces offline contact and harms skills) and the compensation hypothesis (suggesting online use can complement offline contact and improve skills). Their findings showed no general link between social media use and social skills. However, for those with higher levels of social anxiety, more social media use was also associated with poorer social skills.

Step 3. Assessment of the certainty of the evidence

Given the limited and heterogeneous body of research on online friendships and online support, a formal GRADE assessment could not be conducted.

Step 4: Conclusions

Alongside these findings on the impact of online friendships and support on the (mental) health of young people we should also take formal online support in consideration. This is a practice which is particularly established in Belgium. The organisations offering these services can sometimes – but not always – be reached via the telephone, but increasingly and sometimes exclusively through anonymous online services. These range from crisis support, to primary care services with a main focus on mental health and well-being, up to the online equivalent of outpatient mental health services. Despite limited research on the overall effectiveness of such chat services, figures do indicate frequent usage, with online access being the main way through which users, including young people, rely on these services (Beelen et al., 2025). Given that anonymity and reduced stigma are often cited as some of the main reasons why they opt for these online services rather than their conventional counterparts, it should be noted that restricting private or unsupervised access online, also has the potential to result in less opportunities for young people to reach out to these services.

2.3.4. Grooming

a) An evolving phenomenon

Online grooming refers to the process by which an adult deliberately approaches and manipulates minors for sexual purposes. Based on victims' experiences, Child Focus distinguishes two main forms of grooming:

- **Content-based grooming:** The offender usually pretends to be a peer in order to obtain intimate images, often for personal use or to add to a collection of child sexual abuse material (CSAM). This process can escalate rapidly - sometimes within minutes or hours after first contact - a phenomenon known as *speed grooming*. Offenders exploit anonymity through encryption, VPNs, and encrypted messaging services.
- **Contact grooming:** Here, the goal is not to collect images but to facilitate physical sexual abuse. The offender often reveals their real age (sometimes only slightly older) since the victim must be able to recognize them later in person. Because of the increased risk for the offender, this type of grooming typically unfolds more slowly, but the emotional manipulation and trust-building phase can still occur within just a few hours.

While legal definitions of grooming often emphasize criminal acts during the preparatory phase of sexual abuse, Child Focus deliberately adopts a broader behavioral definition: what matters is the process of influence and manipulation that structurally destabilizes victims - whether or not physical contact or explicit crimes have occurred.

Although current public debate strongly focuses on social media platforms, Child Focus reports show that grooming is not limited to environments such as Instagram, TikTok or Snapchat. Offenders also approach young people through online games, chat forums, dating apps, Discord servers, and live-streaming platforms.

Young people's digital world is vast, fluid, and multiplatform. While adults may distinguish between social media and gaming environments, young people perceive it as a single, continuous digital space where they communicate, create, and interact.

b) Trends

Child Focus has observed a **significant increase in reports of sexual manipulation**. This trend is quite steep and alarming. While the growing attention to the problem is a positive aspect, the underlying trend is cause for concern.

One striking trend is the **decreasing age of victims**. Today, one in two victims is 12 years old or younger, meaning more and more primary school children are being targeted online. This is alarming: children who are just learning to communicate online are already exposed to manipulation and sexually inappropriate behavior. Therefore, digital education and resilience must begin with their very first steps online.
It is important to note that both boys and girls are at risk. While girls are still slightly more likely to be victims (around 60%), boys (around 40%) represent a large and growing group. Particularly in gaming contexts and on less moderated platforms, boys are exposed to psychological manipulation that often goes unnoticed.
The acceleration of grooming - *speed grooming* - presents new challenges for support and prevention services. Whereas building trust in the past took weeks of time, the transition from first contact to explicit inappropriate behavior can now occur during a single chat session.

c) Impact on young people

The psychological impact of grooming is profound. Victims often experience shame, guilt, and a loss of trust in adults and in their own judgment. Grooming is therefore not only a safety issue but also a public health concern, with consequences at the intersection of mental and physical health, identity, and self-image.
Awareness of having been manipulated often emerges only later, leading to delayed help-seeking, feelings of isolation, and prolonged stress reactions. Shame and guilt can also reduce help-seeking behavior. Prevention must therefore focus not only on digital risks but also on emotional resilience, relational development, and resistance to manipulation.
Encouraging children and young people to seek help when conversations turn harmful is essential. The presence of a trusted adult - "a Max" - can serve as a crucial bridge to effective support through Child Focus (116000).

d) Recommendations

The responsibility lies with online environments themselves to adapt their platforms to children's developmental needs. These platforms allow very young children to access their services, yet often do little or nothing to increase protections.
According to Child Focus, "*this complicated and serious problem requires careful consideration. A simple ban on social media for young people risks may create a false sense of security. It not only deprives children of a vital part of their social and cultural space but could also push grooming further underground, into less visible and less regulated areas of the internet.*
We owe it to our children not to take away their online world, but to make it safer. This does not mean increasing control over young people but increasing the responsibility of platforms. Companies that profit from children's attention and creativity should be legally required to

structurally guarantee their safety by reinforcing child-centered safety mechanisms, reporting tools, age verification, and human moderation.
Responsibility should not rest solely on parents and schools. Digital safety can only be achieved when platforms themselves are transparent, accountable, and proactive in preventing and detecting abuse. Platforms must make it harder for predators to contact and exploit minors".

Child Focus therefore recommends to:

1. "*Require platforms to proactively detect and remove grooming behaviors, including in encrypted environments.*
2. *Strengthen digital and media literacy and resilience among parents and within the education system, emphasizing emotional manipulation and power dynamics, not just technical risks. Specific learning goals related to grooming (starting in primary school) would make this even more concrete.*
3. *Invest in promoting accessible support services (such as the Child Focus helpline) and prevention tools for young people uncertain about online interactions - without stigma or fear of blame.*
4. *Enhance the capacity of law enforcement and prosecutors, not only for investigation but also for knowledge development, victim support, and prevention of secondary victimization.*
5. *Promote structural collaboration between health, education, and youth sectors, as grooming is not just a law enforcement issue but also a psychological and educational one.*
6. *Implement evidence-based policies that acknowledge the risks of social media without denying its social and developmental value. A ban may be considered a solution but could push grooming to less regulated platforms and spaces and may come with unintended side effects. Solutions need to consider child rights, industry accountability, education, and collaboration."*

2.4. Physical / Medical impact

2.4.1. Physical impact of exposure

a) Introduction

This part focuses on the physical health consequences of excessive screen time. Screen time is often used in research as a way to measure sedentary behavior (although some screen-based activities are positively linked with physical activity, such as active video games (AVGs), see below). Therefore, the health consequences of screen time are often related to sedentary behaviour. This has consequences on the following health outcomes: metabolic, cardiovascular, visual, musculoskeletal, skeletal, and other health outcomes. By embedding quantitative estimates from systematic reviews and meta-analyses, the magnitude of risks becomes clearer and more actionable for policy.

b) Physical health consequences of excessive screen time

If we look at sedentary time in general, associations with high adiposity (the state or condition of having excess body fat) and body composition are found (Word Health Organization, 2019). **Adiposity** among school-age children and adolescents has been consistently associated with increased screen time. High screen time is consistently associated with overweight/obesity: adolescents in the highest category of screen time were 1.27 times more likely to develop overweight/obesity (OR=1.273; 95% CI=1.166–1.390) (Haghjoo et al., 2022).
Smartphone use exceeding 2 h/day for gaming doubled the likelihood of overweight/obese BMI status (cross-sectional study).

Television watching shows a linear dose-response for obesity: risk increases 13% per 1 h/day increment (Zhang et al., 2016). Dietary intake is affected: television screentime is associated with increased energy intake, energy-dense foods, and decreased fruit and vegetable consumption (Stiglic & Viner, 2019).
Video game use before bedtime is associated with poorer sleep quality, which mediates increased abdominal adiposity. This relationship is further mediated by sweetened drink consumption during gaming (Turel et al., 2017). Several relevant mechanisms were identified in scientific research.
Poor sleep quality, driven by pre-sleep video gaming, mediates downstream effects on next-day fatigue, cognitive functioning (e.g., verbal memory, sustained attention), and may also influence metabolic regulation, thus linking gaming indirectly to obesity-related outcomes (Peracchia & Curcio, 2018). Concurrent snacking or sugary beverage consumption, particularly during prolonged gaming sessions.

Sleep problems are more frequent in infants and toddlers exposed to higher screen time, confirmed by meta-analysis (Janssen et al., 2020).
Sleep has also been frequently negatively associated with screen time in youth (Alonzo et al., 2021; Cain & Gradisar, 2010). Recently, the National Sleep Foundation in USA convened a panel expert to reach consensus on whether screen-based digital media is linked to negative sleep outcomes based on a review of the literature (Harstein et al., 2024). The panel reached consensus on the negative association between screen time and sleep concerning children and adolescents. However, the panel identified gaps regarding objective measurement, effective intervention, as well as causality. In their recent theoretical review on sleep and technology use, including but not specific to adolescents, Bauducco et al. (2024) suggested that the relationship between the two might be complex and bidirectional. Whereas, as often hypothesized in the literature, the use of screen-based technology may impair sleep, technology before sleep may also be used as a time filler and/or as an emotion regulation strategy by adolescents, for instance by seeking social support when facing sleep-onset difficulties. Technology use in this context may be beneficial for some adolescents but may for others contribute to the perpetuation of sleep difficulties. Suggested risk factors were individual vulnerabilities combined with technological algorithms, risk-taking and ability to self-regulate, flow state, as well as fear of missing out and bedtime procrastination. Suggested protective factors were self-control and technology rules by parents and caregivers.
Lund et al. (2021) have also found an effect of electronic media (social media among them) on sleep in children and adolescents. Across age groups, consistent evidence was found that media use was associated with shorter sleep duration. Interestingly, Bull et al (2020) found that sleep duration is shorter with more screen or television time, but computer use or gaming is not consistently associated (Bull et al., 2020).

Fitness outcomes, including cardiorespiratory fitness and muscular strength/endurance are poorer among children with higher screen time (Bull et al., 2020).
Cardiometabolic health, such as blood pressure, dyslipidaemia, and glucose regulation, is adversely affected by higher screen exposure (Bull et al., 2020). Cardiometabolic risk increases with screen time: each additional hour is associated with higher cardiometabolic risk in children (β = 0.08 [0.01–0.14], P = 0.021) and adolescents (β=0.13 [0.07–0.20], P=0.001), with sleep moderating this association; screen time is also linked to higher predicted cardiovascular risk in adolescence (β = 0.07 [0.01–0.13], P = 0.017) (Horner et al., 2025). Risk of metabolic syndrome is higher with greater screen exposure: OR=1.64 (95% CI: 1.32–2.03) for highest vs. lowest screen time, with a linear dose-response of OR=1.29 (95% CI: 1.12–1.46) per 2 h/day increment (Jahangiry et al., 2022). Hypertension risk increases with screen time: OR=1.15 (95% CI: 1.08–1.23) and systolic BP increases by 1.9 mmHg (weighted mean difference: 1.89; 95% CI: 0.18–3.62; P = 0.030) (Farhangi et al., 2023).

Considering **vision**, the first postnatal year represents a sensitive period, as screen exposure in early life can be significantly and positively associated with myopia in childhood. Children

(<12) spending 3 or more hours daily had a fivefold prevalence of eye impairment (Bozzola et al, 2024). Pre-myopia, myopia, digital eye strain, and acute acquired comitant esotropia (an unusual manifestation of esotropia in older children without limitation of eye movement) are listed as potential and time-related consequences associated with the incorrect use of media devices among children and adolescents. DES or computer vision syndrome is the term used to collectively indicate "dry eyes, impaired vision, near-sightedness, headaches, and eye fatigue" attributed to prolonged usage of desktops, laptops, mobile phones, etc. The main symptoms include blurring, redness, visual disturbance, secretion, inflammation, lacrimation, and dryness. Myopia risk increases with screen time: ORs range from 1.05 (1 h/day) to 1.97 (4 h/day), and categorical comparisons show OR = 2.24 in cross-sectional studies and OR = 2.39 in cohort studies (Ha et al., 2025; Zong et al., 2024; Foreman et al., 2021).

For preschool and early school age children (5–7 years), bone health is negatively associated with screen time, particularly television viewing (de Lamas et al., 2021). Pain, especially neck or upper quadrant musculoskeletal pain, may begin to emerge, but evidence is limited (Brink & Louw, 2013; Stiglic & Viner, 2019).
Musculoskeletal pain in children and adolescents is also associated with upper quadrant pain and low back pain: OR=1.30 for neck pain (Baradaran Mahdavi et al., 2022), and daily computer, mobile, and TV time is associates with low back pain (OR=1.32, 1.05–1.60; OR = 1.32, 1.00–1.64; OR=1.07, 1.04–1.09, respectively) (Yue et al., 2023). Pain from digital media such as social media or video watching in adolescents aged 16–17 shows OR=1.41 (CI 1.09–1.82) for head/neck/shoulder pain (Frielingsdorf et al., 2025). Low back pain is also associated with daily screen use (Yue et al., 2023). There is a positive correlation between daily computer time (OR = 1.32, 1.05-1.60), daily mobile phone time (OR = 1.32, 1.00-1.64), daily TV watching (OR = 1.07, 1.04-1.09) and the risk of low back pain, separately. The dose-response meta-analysis showed that there is a linear relationship between daily computer use and low back pain. The risk of low back pain increased by 8.2% for each 1-hour of daily computer use.

c) Policy recommendations

Excessive screen time and to a larger extent sedentary behaviour have been consistently associated with a range of adverse health outcomes across the lifespan, including impaired motor and cognitive development in young children, obesity, cardiometabolic risk, myopia, musculoskeletal pain, and poor sleep. Policy initiatives should therefore address these risks in an age-specific manner.

For **infants and toddlers (0–4/5 years)**, policies should aim to **minimize total daily screen time and promote caregiver–child interactive activities** such as reading, storytelling, and active play. Integration of **parental education** programs in routine pediatric care is recommended to raise awareness of the developmental risks associated with excessive screen exposure. WHO guidelines states that children under 2 years of age shouldn't have screen time and from 2 until 5 years of age not more than 1 hour per day (WHO, 2019).

For **preschool-aged children (ages 2–5)**, structured behavioral interventions that involve **caregiver education and consistent routines** have demonstrated significant reductions in screen time and improvements in sleep quality (Wu et al., 2025; Martin et al., 2021). Programs combining parent involvement with child-centered activities are more successful than interventions targeting children alone (Wu et al., 2025).

School-based interventions (3-18 years) have been shown to be effective in reducing screen time when they integrate curriculum modifications, teacher-led education, peer engagement, and environmental strategies such as limiting screen access during school hours. **Multi-component** approaches that include goals, feedback and planned behavioral techniques, health education, physical activity promotion, and self-monitoring are associated with stronger reductions in screen use, especially when programs are interactive, developmentally

appropriate, and delivered over several months (Lai et al., 2025; Žmavc et al., 2025; Jones et al., 2021).

Parent- and family-based strategies remain critical across **childhood and adolescence**. Interventions that incorporate goal-setting, screen time monitoring, provision of alternative recreational activities, and parental modeling of healthy behaviors are associated with decreased screen use. Moreover, programs targeting multiple lifestyle behaviors, including diet, physical activity, and screen time, demonstrate additional benefits in reducing obesity risk among children and adolescents (Champion et al., 2022; Zhang et al., 2022; Wu et al., 2025; Lai et al., 2025).

Other meta-analyses add **community- and policy-level** strategies that complement family- and school-based interventions. Public health campaigns, recreational programs, and access to safe play spaces can provide supportive environments that facilitate reduced sedentary behavior. Evidence suggests that combining community, school, and family interventions yields broader and more sustained reductions in screen time (Buchanan et al., 2016; Nguyen et al., 2020; Oh et al., 2022).

Beyond screen reduction, interventions are associated with secondary health benefits, including increased physical activity, improved sleep quality, healthier body composition, and favorable cardiometabolic outcomes in children and adolescents (Martin et al., 2021; Zhang et al., 2022; Oh et al., 2022).

Effective implementation of these interventions depends on multi-component designs, age- and context-appropriate strategies, sustained engagement, and incorporation of monitoring and feedback mechanisms, such as parent logs, teacher tracking, or digital self-monitoring tools (Wu et al., 2025; Lai et al., 2025; Jones et al., 2021; Žmavc et al., 2025). Taken together, these findings support the development of comprehensive, multi-level interventions to reduce screen time and associated health risks in pediatric populations.

Family education on media device exposure and potential risk for children and adolescents' sight in case of prolonged digital/screen exposure is required. During pediatric check controls, a dialogue with families on prolonged media device use at a close distance should be undertaken. Pediatricians and ophthalmologists should consider screen viewing time in case of ocular problems.

d) Conclusion

Together, these measures provide a life-course framework for mitigating the physical health risks associated with excessive screen time. By prioritizing early-life interventions that limit exposure, embedding screen-time reduction strategies within schools and families, and supporting population-wide initiatives that combine regulation, awareness, and environmental change, governments and health systems can create an integrated approach to reducing sedentary behaviour. Quantitative evidence demonstrates that even modest reductions in daily screen exposure can meaningfully lower the odds of obesity, cardiometabolic risk, musculoskeletal disorders, and visual impairment across all age groups. A comprehensive, coordinated strategy that aligns with broader public health goals, including obesity prevention and cardiovascular health promotion ensures that interventions are effective, equitable, and sustainable, ultimately protecting population health throughout the lifespan.

2.4.2. Physical impact of content

a) Introduction

Digital media are used to fulfill a variety of needs by minors and their parents, resulting in a variety of digital media activities, such as connecting to online communities (social gratification), scanning online health information (information gratification) and watching clips (entertainment/escapism purposes) (Ehrenreich et al., 2021; Schnauber-Stockmann et al., 2021). Given the substantial amount of time minors and their primary caregivers spend with media, concern has been raised on its link with minor's psychological and physical outcomes.
Several advisory reports of the SHC have already addressed the impact of the content of the media (and advertising in particular) on several aspects of physical health:
In the advisory report No. 9527, *"Reducing the exposure of children, including adolescents, to unhealthy foods through media and marketing in Belgium"* (2022), the SHC concluded that children are targeted through a wide range of media and various advertising formats by food marketing that primarily promotes unhealthy products, and that such marketing influences children's food preferences, purchase requests, and dietary habits. The SHC recommended that governments at all levels implement comprehensive regulations to protect children up to the age of 18 from the advertising and marketing of unhealthy food products across different media, platforms, and settings, taking into account existing European regulations and guidelines.
The advisory report No. 9781 of the SHC (2024) *"Measures to reduce alcohol-related harm: health warnings in marketing, delaying the age of first alcohol consumption, and minimum alcohol pricing,"* highlighted the impact of advertising on alcohol consumption - particularly among young people - and recommended a total ban on alcohol marketing. This report also highlights the impact of new forms of marketing, particularly via social media, and makes specific recommendations on this subject.
The advisory report No. 9526 on "Video gaming disorders" (2020) recommends maintaining a clear distinction between video games and online gambling to limit early exposure.

Regarding online gambling: SHC advisory report No. 9396 previously concluded that advertising for (online) gambling should be restricted. In addition to the advertising ban, SHC 9396 also recommended other structural measures regarding the supply of gambling.
In particular, it is important to restrict access to online gambling (which is a very high risk type of online context). From SHC 9790: *"Recent scientific studies show a positive relationship between exposure to gambling advertising and attitudes, intentions, and gambling behavior (Bouguettaya et al., 2020; McGrane et al., 2023). These conclusions also apply specifically to studies of adolescents and young adults (e.g., Labrador et al., 2021). It is assumed that there is a dose-response effect: increased exposure to gambling advertising results in higher participation in gambling activities, which increases the risk of harm (McGrane et al., 2023)."*

Within the current report, physical outcomes refer within the research field on screen media *content* and physical outcomes to substance use, sleep problems, obesity, eating disorders, health risk behaviors (e.g. sexual risks, physical risks in risk challenges, risky driving), gambling, executive functioning, academic performance (e.g., language learning, mathematical skills), exercise behavior (e.g., fitness), brain development and vision (Beullens et al., 2025).

Content themes in screen media activities refer within the research field of digital media and its consequences typically to antisocial vs prosocial content messages present in different media activities (Maes, 2022). Antisocial content is considered present when the mediated content contains potential to increase physical risk factors and harm users' physical health (Maes, 2022; Beullens et al., 2025). Prosocial content is considered present when the

mediated content contains potential to increase physical health resilience factors and empower users' physical health (Maes, 2022).
Below the research on the links between prosocial and antisocial screen content activities and users' physical outcomes is reviewed per medium and per developmental period. Before reviewing screen content use effects, a brief observation is given on the prevalence of different antisocial and prosocial messages in the different media targeted at different developmental groups. Insights are given on what pro-social/anti-social means within different media contexts. Next, a broader view is given for each media activity/developmental period by reviewing existing meta-analyses and literature reviews if available. Here, (preferable) European/Belgian recent research is reviewed for each age group/developmental activity with particular attention to time sensitive designs for quantitative research (if available).
At the end of each subpart, a conclusion is added with concrete answers on what the evidence suggests in terms of effects of content & physical consequences and minors.

b) Content : Televised media

Prosocial screen activities refer within television research to scenes in which users are informed on the risks of unhealthy behavior (e.g., substance use, unprotected sexual activity) and are empowered in the route toward healthy behavior (e.g., exercising, healthy food diet, responsible driving).
Antisocial screen activities refer within television research to scenes in which unhealthy behavior is glorified (e.g., substance use, unprotected sexual activity, risky driving) and healthy behavior is being punished (e.g., associating boredom with healthy nutrition).

Babies and Toddlers

Prosocial screen activities:
Literature on prosocial television use and physical health outcomes among infants and toddlers is largely lacking. Contrary to negative physical health outcomes (e.g., Janssen et al., 2020), no positive physical health outcomes have been examined in relation to general television use (i.e., frequency) among this age group. The current literature on television use thus lacks insights into positive physical health outcomes among infants and toddlers.

Antisocial screen activities:
Research on antisocial television content and physical health outcomes among babies is still lacking in the current literature. Limited research has been conducted among toddlers, primarily focusing on food and beverage advertising and its influence on eating behaviors. These studies generally indicate that exposure to such ads increase preferences for and consumption of the advertised products (i.e. nutrient-poor and energy-dense food and beverages), potentially encouraging obeosogenic-eating behaviors (Emond et al., 2016; Harris & Kalnova, 2017). However, this research has been conducted among toddlers and young children (i.e., 2-5 year-olds), with no studies specifically targeting toddlers. In fact, the majority of research on this topic has focused on older developmental age groups, including children and adolescents (e.g., Boyland & Halford, 2013; Tsochantaridou et al., 2023). Moreover, research that specifically focused on television use and negative physical health outcomes among babies and toddlers have generally only looked at the frequency of their television use, rather than on the actual content of this use (e.g., Janssen et al., 2020; Li et al., 2020). As such, infants and toddlers have been (largely) overlooked in research examining antisocial television use and physical health outcomes (a gap that is to some extent logical given that young children, particularly those under the age of two, are highly dependent on caregivers for their diet and overall health behaviors).

Children

Prosocial screen activities:
Healthy eating messages in cartoons have been shown to positively affect children's food choices and preferences, as shown in an experiment by Goncalves et al. (2018).
Further, few studies look at how specific content on TV (social/antisocial) relates to physical health outcomes.

Antisocial screen activities:
Food advertising is linked to increased dietary intake in children, according to a review by Russell et al. (2019). Moreover, unhealthy food advertising on TV increases immediate calorie consumption in children, possibly contributing to obesity in children (Russell et al., 2019).

Adolescents

Prosocial screen activities:
A study examined the impact of a condom-efficacy storyline in an episode of Friends on adolescents' knowledge and attitudes toward condom use (Collins et al., 2003). A national telephone survey of 506 U.S. adolescents aged 12 to 17 who were regular viewers of the show found that 27% had seen the episode, and 65% of them recalled the storyline about condom failure leading to pregnancy. Forty percent watched the episode with an adult, and 10% discussed condom efficacy with an adult afterward. Adolescents who engaged in such discussions were more likely to report learning from the episode and less likely to lower their perceptions of condom effectiveness. These results suggest that entertainment television can play a constructive role in sexual health education, especially when paired with parental communication.

Antisocial screen activities:
For adolescents, again little content-specific research exists on the link between television and physical health. Some older studies have looked at content, such as Strenziok et al. (2010) who found that in male adolescents watching violence on TV is associated with lower lateral orbitofrontal cortex density in the brain. While it does have a measurable physical outcome, this specific brain area is associated with socio-emotional functioning. Chandra et al. (2008) found that watching sexual content on TV is associated with a higher risk of teen pregnancy. Collins et al. (2007) found that early adolescent exposure to alcohol advertisements on TV predicted drinking and drinking intention in later adolescence (2007).

While extensive research exists on the effects of general television viewing time, currently the literature lacks systematic, content-specific investigations linking television content, whether prosocial or antisocial, to physical health outcomes in children and adolescents.

c) Content: Videogames

Babies & Toddlers

To date, no studies have investigated the relationship between exposure to prosocial or antisocial video game content and physical health outcomes among infants and toddlers. Moreover, the current literature lacks insights on general video game use (i.e., frequency) and physical health outcomes within this developmental age group. This absence of literature highlights how infants and toddlers have been largely neglected in video game effects research, revealing a significant gap in the current literature.

Children

Prosocial screen activities:

Health video games have shown positive obesity-related outcomes in approximately 40% of reviewed studies, particularly among overweight or obese children. Most studies used commercial games and were short-term in duration (Lu et al., 2013).

AVGs had positive effects on BMI, body fat percentage, and cardiorespiratory fitness in children/adolescents with overweight or obesity (Comeras-Chueca et al., 2021), particularly when played 1–3 times per week for 10–90 minutes per session (Santos et al., 2021). Effects on muscular fitness and motor competence were less clear (Comeras-Chueca et al., 2021).

Video games addressing physical activity and nutrition showed small positive effects on obesity-related outcomes but did not address psychosocial aspects (Mack et al., 2017). Their role is best considered as a supportive component in prevention/treatment programs.

Serious games were found to significantly increase physical activity levels but had limited effects on body composition or diet. Longer interventions (>3 months) showed stronger but non-significant effects (Liu et al., 2024b).

Several relevant mechanisms were identified.

First, increased physical activity: The most consistently supported mechanism across meta-analyses. Serious and AVGs directly increase physical movement, which mediates improvements in BMI and cardiorespiratory fitness (Comeras-Chueca et al., 2021; Liu et al., 2024b). Second, energy expenditure: suggested as a mediating pathway between AVG use and reductions in body mass and improvements in physical fitness (Santos et al., 2021). Third, self-esteem: suggested as a psychological mediator, especially in AVGs targeting overweight adolescents (Santos et al., 2021). Fourth, game-based motivation and engagement has been suggested as a mechanism supporting behavioral adherence and sustained use, although it has not been quantitatively tested as a formal mediator (Lu et al., 2013; Mack et al., 2017).

Antisocial screen activities:

A systematic review showed exposure to video games before bedtime negatively impacts sleep onset latency, total sleep time, and sleep architecture (notably slow-wave sleep [SWS] and REM). These disruptions are especially pronounced when games are violent, exciting, or competitive and are linked to heightened physiological arousal (e.g., elevated heart rate and respiratory rate) (Peracchia & Curcio, 2018).

Adolescents

Prosocial screen activities:

A systematic review and meta-analysis by Comeras-Chueca et al. (2021) concluded that AVG interventions improved BMI, body fat percentage, and cardiorespiratory fitness (CRF) in children and adolescents compared to control groups. Effects on muscular fitness, fat-free mass, waist circumference, and motor competence were less consistent, but overall, AVGs appear promising as an anti-obesity strategy in adolescence.

Similarly, a meta-analysis by Gao et al. (2015) found that AVGs had substantial positive effects on both physiological and psychological outcomes in children and adolescents. Compared to sedentary activities, AVGs increased heart rate, energy expenditure, VO_2 max, metabolic equivalents (METs), and overall physical activity. They also received high ratings for perceived exertion and enjoyment, suggesting they can effectively replace screen-based sedentary behaviors while keeping adolescents engaged. Thus, AVGs could offer health benefits for children/adolescents comparable to traditional exercise, making them a valuable addition to physical activity routines.

An overview by Santos et al. (2021) further support these findings, indicating that using AVGs 1 to 3 times per week for 10 to 90 minutes per day can lead to improvements in mental health, self-esteem, energy expenditure, physical activity, and BMI in children and adolescents, particularly in home environments.

A network meta-analysis by Ho et al. (2022) showed that AVG groups were more effective in achieving vigorous, moderate-to-vigorous, and moderate physical activity levels, while reducing BMI and body fat. Among different AVG subcategories, rhythmic dance games had the highest probability of being most effective for reducing BMI.
One limitation of these studies is that most evidence focuses on AVGs. Little is known about other types of prosocial gaming content (e.g., games emphasizing cooperation or empathy) and their potential impact on physical health.

Antisocial screen activities:
Ivarsson et al. (2009) found that during violent (vs. nonviolent) video gameplay, adolescent boys showed significantly higher very-low-frequency heart rate variability (HRV) and overall power in HRV. The night following gameplay, very-low, low-, and high-frequency HRV components, as well as total power in HRV, remained elevated in the violent condition compared to the nonviolent condition. However, there were no significant differences among violent, nonviolent, and no-gaming conditions in relation to subjectively reported sleep difficulties, nor were there differences between violent and nonviolent conditions for any single sleep item. In conclusion, violent video games trigger distinct autonomic reactions in boys compared to nonviolent games, both while playing and during the subsequent night, indicating variations in emotional processing. However, a single gaming session does not appear to affect self-reported sleep quality.
In a later study, Ivarsson et al. (2013) examined the interaction between prior exposure to violent video games (low vs. high) and game condition (violent vs. nonviolent). Among participants with low previous exposure, violent games increased heart rate and reduced sleep quality, whereas these effects were absent, or even reversed, among those with high exposure. Emotional outcomes also differed, such as sadness after playing, with low-exposure participants reporting increased sadness after playing. In conclusion, this means that various combinations of prior video game involvement (low vs. high) and experimental exposure to either a violent or nonviolent game are linked to distinct patterns of physiological, emotional, and sleep-related responses.
An experimental study by King et al. (2013) showed that prolonged exposure to violent video games, compared to regular gaming, significantly disrupted adolescent sleep. Objective sleep efficiency decreased by 7%, dropping below the clinical threshold of 85%, and total sleep time was reduced by about 27 minutes, largely due to reduced REM sleep. Participants also reported longer sleep-onset latency (+17 minutes) and poorer subjective sleep quality. Interestingly, heart rate remained stable across conditions during pre-sleep and sleep onset, suggesting that physiological arousal alone does not explain these sleep disturbances. The study highlights that even when gameplay ends at a typical bedtime, prolonged violent gaming can produce clinically significant sleep disruptions in adolescents.
One limitation of these studies pertain to research being heavily focused on violent video games, with little exploration of other types of gaming in relation to physical health outcomes.

Overall: Screen-based interventions (particularly active or serious games) demonstrate modest, short-term benefits in improving physical activity and certain obesity outcomes among youth. However, these benefits depend on frequency, duration, and content design. Conversely, screen overuse, especially around bedtime, may indirectly worsen physical health and obesity risks through poorer sleep quality and unhealthy behaviors.

d) Content: Social Media

<u>Babies & Toddlers</u>

We are not aware of existing articles on social media use of babies themselves and its effects on their health. One study examined parental use of social media to influence infant and child health (Pretorius et al., 2019). This integrative review found that parents use social media to

seek out parental support. Additionally, it found that companies/governments that want to reach parents to promote infant and child health can use social media as an effective communication tool.

Children

Prosocial screen activities:
Hamm et al. (2014) conducted a systematic review examining how social media is used in child health and what factors may influence its effectiveness. The review identified 25 relevant studies, most of which focused on adolescents and used social media primarily for health promotion (e.g., healthy diet and physical activity, sexual health, smoking cessation, and parenting issues). Discussion forums were the most common tool, often integrated into multicomponent interventions. Reported benefits included distraction for younger children and enhanced peer communication for adolescents. While most studies presented positive conclusions, the overall quality of evidence for improved health outcomes remained limited.

Antisocial screen activities:
Several studies examined antisocial screen activities. Bozzola et al. (2022) found several risks in their systematic review. Exposure to advertising is associated with unhealthy behaviors. Exposure to the marketing of unhealthy products on social media is associated with a higher risk of related unhealthy behaviors and obesity. Ads also promote intake of foods that contribute to dental caries. The systematic review by Powell & Pring (2023) revealed that influencer marketing of unhealthy foods significantly increased children's immediate caloric intake, while advertising disclosures did not mitigate this effect. Interestingly, when unhealthy foods were marketed by influencers with an unhealthy appearance, children demonstrated a stronger preference for healthy snacks.
Children are also exposed to gambling adverts using media devices and social media sometimes promote gambling.

In children, greater exposure to social media was not associated with better knowledge about nutrition, but broadcast media did influence nutrition literacy (Sina et al., 2022).

Adolescents

Prosocial screen activities:
Powell & Pring (2023)'s systematic review showed that influencers promoting vegetables showed no measurable impact on intake with adolescents.
A systematic review and meta-analysis by Sequí-Domínguez et al. (2024) found no conclusive evidence on the effectiveness of eHealth interventions (= "*a cost-effective and safe use of information and communication technologies in support of health and health-related domains, enabling better communication between practitioners and patient practitioners, better monitoring and data management, and acting as a vehicle to deliver health information and interventions for prevention and care*") aimed at increasing physical activity (PA) in children and adolescents. However, given the very low certainty of available evidence, these interventions may still help reduce sedentary behavior.

He et al. (2021) conducted a systematic review and meta-analysis indicating that smartphone-based interventions show promise in increasing step counts and total physical activity (TPA) among children and adolescents. However, their effect on moderate-to-vigorous physical activity (MVPA) remains unclear. The analysis included four mobile app interventions, three SMS-based interventions, and two app + SMS combinations, with mobile app–based approaches emerging as the most effective strategy among smartphone technologies. Similarly, in their systematic review and meta-analysis, Baumann et al. (2022) observed that

mobile health (mHealth) interventions could foster moderate reductions in insufficient physical activity (but not sedentary behavior) of adolescents.
While many interventions exist, few studies address spontaneously consumed prosocial content or assess real-world behavioral changes.

Antisocial screen activities:
Existing evidence primarily focuses on cyberbullying and 'problematic' use, with very little research addressing broader connections between social media content and physical health.
A systematic review and meta-analysis by Purba et al. (2023) demonstrated that adolescents exposed to social media content portraying health risk behaviors were more likely to use electronic nicotine delivery systems, adopt unhealthy dietary habits, and consume alcohol.
A study by Sampasa-Kanyinga et al. (2022) found that involvement in cyberbullying as either a victim, a perpetrator, or both was linked to shorter sleep duration among adolescents.
A study from Graham and Wood (2019) reported that cyberbullying victimization was positively associated with alcohol consumption, drug use, and sexual activity. These associations were stronger when adolescents experienced both cyberbullying and physical bullying. Notably, when comparing both forms, cyberbullying had a stronger relationship with deviant health risk behaviors than physical bullying.
Links to indicators such as BMI/obesity, physical activity, cardiorespiratory fitness, musculoskeletal complaints, and nutrition remain largely unexplored.

2.4.3. The impact of (excessive) screen use on the child's development

A growing body of evidence indicates that the quality and nature of screen content play a more decisive role in children's development than the amount of screen time. Systematic reviews and meta-analyses have consistently shown that educational and age-appropriate media can foster learning, while non-educational or background exposure tends to be detrimental.

a) Motor development

Motor development is negatively affected, with children exposed to excessive screen time more likely to experience fine and gross motor development problems (Li et al., 2020). This was confirmed by a recent systematic review including only studies of sufficient quality according to the Joanna Briggs Institute's (JBI) critical appraisal checklist (Bakht et al., 2025). This systematic review, focusing on 0-7 years old children, also found some research showing no association between the two. The authors hypothesize that the differences in results might be linked to factors such as age-related development stage of the infants and toddlers, types of screen activities, variations in terms of SES or cultural backgrounds, differences in parental involvement, the quality of screen content, individual differences in children's susceptibility to the effects of screen time, as well as inconsistencies in research methods and analysis. Moreover, some research they identified suggests positive association between moderate screen time and fine motor skills development, which might be explained by the potential role of interactive touchscreen devices. This remains to be investigated, as the number of studies included in cited meta-analysis is rather limited.

b) Cognitive development

Across meta-analyses, a robust developmental pattern emerge: infants and very young toddlers show a clear **video deficit**; they learn markedly less from screens than from equivalent live interaction, with meaningful learning from screens increasing progressively until around age six (Strouse & Samson, 2021).
Courage & Howe (2010) noted that infants under six months lack the visual and cognitive abilities to meaningfully process television content; they are mainly attracted by movement and sound. Comprehension of narrative meaning begins to emerge only toward the end of the second year. Likewise, Linebarger and Vaala (2010) showed that infants and toddlers may

benefit from screen use only when content mirrors real-life experiences, includes familiar routines or objects, and is supported by repeated exposure and co-viewing with an engaged adult.
More recent research supports these findings. In a narrative review, Guellai et al. (2022) emphasized that the quality of screen exposure, rather than its quantity, is key during the first three years of life. Child-directed educational programs were linked to better school readiness, executive functions, and language skills. Similarly, a meta-analysis by Strouse and Samson (2021) found that while children can learn from videos, live face-to-face interactions remain more effective, especially in early years. This "video deficit" gradually decreases between ages 0 and 6 and varies by domain-being largest for object retrieval tasks and smaller for language learning or imitation. Some evidence also suggests that the magnitude of this deficit may be overestimated due to publication biases.

Across articles, there was no consistency between the measurement instruments used in the studies to assess cognition. For example, cognitive outcome was measured by Mallawaarachchi et al. (2024) as executive functioning, language, and academic skills, while other studies addressed cognition as a component of executive function measuring working memory, inhibition, attention, cognitive flexibility, and social contingency (Adams et al., 2023). In their scoping review, Adams et al. (2023) examined 10 studies on screen time and cognitive development in young children. Six studies reported negative associations, one reported a positive association, and three found no significant relationship. Among those reporting negative associations, effects were not uniform: in one study, only inhibition was affected, and in another, children with higher screen time still scored within the normal range once confounding factors were adjusted for, with lower cognitive scores observed only for exposure to content designed for older children or adults.

In children younger than 6 years, program viewing and background TV exposure were associated with poorer cognitive outcomes (e.g., working memory, inhibition, and shifting). Screen viewing is associated with lower cognitive development when viewing is unsupervised, when content is not appropriate for the age, or when in the background (Mallawaarachchi et al, 2024; Guellai et al., 2022; Adams et al., 2023).

Although studies relate screen exposure to a lack of **inhibition control**, outcomes are unclear regarding which comes first, innate problems of executive function or the lack of inhibition due to screen exposure. In contrast to negative outcomes, co-use or supervised viewing was positively associated with cognitive outcomes, as well as watching age-appropriate content in the foreground, and using interactive screens, provided they do not interfere with social interactions, especially for young children (Adams et al., 2023; Guellai et al., 2022; Mallawaarachchi et al., 2024).

A meta-analysis and systematic review has argued that children having more screen time had worse **executive function** development (Li et al., 2020). A meta-analysis by Bustamante et al. (2023) concluded to a lack of statistical association between screen time and executive functions in under 6 year-olds, calling for additional research on executive functioning as well as considering contextual-related (e.g., parent interactions, parent education, and family income), developmental-related, and content-related factors (e.g., presentation pace, fantastical vs educational content). Similar conclusions were drawn by Bal et al. (2024) in their systematic review, which observed that moderate screen time could be positively associated with executive function development, but that factors such as content, parent-child interactions, SES and cultural factors played a role.

A systematic review (Kostyrka-Allchorne et al., 2017) studying children's executive function, academic performance, attention, language and play depending on their use of television concluded that (background or foreground) exposure to TV programs targeting adults was associated with negative cognitive outcomes such as problem behaviours or poor attention.

Similarly, watching children's entertainment shows (*i.e.*, not focusing on aid learning) was associated with **attention problems**. In their narrative review, Guellai et al. (2022) also found that poor quality viewing – defined as "*television unintended for children, background television, solitary viewing, and earlier age of viewing*" *(id*., p.5) – was related to negative outcomes, such as poorer performance at school, executive functioning, attentional skills, and poorer language skills. However, the caregiver's behaviour during viewing was noted as an important factor that can mitigate most of all these negative outcomes.
Focusing on longitudinal studies, Kostyrka-Allchorne et al. (2017) further reported that longitudinal relationships between TV and developmental outcomes are complex and may be bidirectional. For instance, a few studies included in this review found that content preferences can be predicted by early behavioural trait and cognitive skills. In other words, for those children, attention difficulties preceded watching TV. This suggests that some children with attention issues may have a particular appetence for TV. Watching TV may also, in turn, prevent some of them from overcoming the said attention difficulties in some cases.
Watching child-directed age-appropriate educational content is significantly and positively associated with language skills (Madigan et al., 2020), and learning in the short-term as well as long-term academic performance (Kostyrka-Allchorne et al., 2017).
Attention has also been given to the effects of fast-paced television content on children. Namazi & Sadeghi (2024) find inconsistent outcomes on the relation between fast-paced TV content and both attention span and executive functioning, with studies showing both slight negative, but also null and even slight positive effects of fast-paced television content.
In sum, meta-analyses on screen technology exposure and infant cognitive development (Adams et al., 2023), on the association of screen time and internal and external behavioral problems (Einrich et al., 2022), and on the relationship between language development, executive function, and screen time (Bal et al., 2024), conclude that program viewing, age-inappropriate content and higher screen time are associated with attention problems, hyperactivity and ADHD symptoms. Attention and hyperactive behavior have a well-documented impact on learning and academic achievements.

c) Language development

The early childhood period, 0 – 6 years, is a critical phase for language development. Piaget's cognitive development theory and Vygotsky's sociocultural approach explain how the language developmental process moreover significantly influences social, emotional, and cognitive development (Bal et al., 2024).

The association between screen use and language development has been extensively studied in recent years, and the resulting articles were gathered in not less than 3 systematic reviews published last year only, in 2024. The World Health Organization defines screen time as "passive exposure to screen based entertainment" (WHO, 2019), but these reviewing authors also distinguish passive media from educational media (Bal et al., 2024).
Bal et al's systematic review of 14 studies in Plos One highlights the complex nature of how screen time influences early language development (Bal et al., 2024). The authors found that passive screen exposure negatively impacts language processing, contrarily to educational and interactive content. The latter is subject to the condition that the exposure follows current screen time guidelines about exposure time and age (WHO, 2019), and that screen time's impact is mediated through social interaction: parent-child interaction is crucial in mitigating negative effects of screen exposure. Moreover, parents' own device use disrupts parent-child interaction, thus also negatively affecting language learning opportunities. On a larger social scale, SES moderates screen time's impact on early language development (Bal et al., 2024).
Massaroni et al.'s systematic review of 18 studies in Brain Sciences found that the higher the television screen time, the more this negatively affects language development (Massaroni et al., 2024). When it comes to interactive media, the presence of an adult as a mediator and the banning of violent content are necessary to have a positive impact. However, this review paper (Massaroni et al., 2024) had a number of notable limitations.

Xie et al's meta-analysis of 28 studies in Early Child Development and Care has a solid methodology comprising descriptive statistics, publication bias, overall meta-analytic effect sizes, and moderator analyses (Xie et al., 2024). Their overall meta-analytic results indicated that screen time was negatively related to language development, whereas co-viewing and later start age of screen exposure were positively related. They found that the association between educational programme viewing and language was non-significant. Strengthened effective caregiver-chil interactions seem crucial to decrease the adverse effects of screen exposure, especially on young children living in socioeconomically disadvantaged families (Xie et al., 2024).
In their recent umbrella review, Sanders et al. (2024) observed that, more than mitigating negative effects, if the screen use involved co-viewing or the content was educational, its association with literacy was positive, although to a small extent.
In 2020, a systematic review and meta-analysis by Madigan et al. (2020), primarily focused on television exposure, found that watching educational content was significantly and positively associated with children's language skills. Programs that encouraged interaction (e.g. prompting the child to respond), labeled objects, or were paced to match developmental needs were particularly beneficial.
A European cohort study reported that having the television on during family meals at age two predicted lower language and verbal IQ scores at ages five of six, suggesting that background or solitary viewing may displace valuable parent child interactions (Martinot et al., 2021).

In conclusion, increased screen exposure to young children is associated with less optimal language development in general, but this association is more positive if some conditions are met, such as co-viewing allowing parent-child interactions, or educational/child-oriented content. **Screen introduction should be at least after 24 months and exposure duration should be restricted**. The major concern about the impact of young children's AND their parents' use of screens on children's language development is the reduction or possibly displacement of real-life caregiver – child interactions, like communicating, reading, and playing (Xie et al., 2024; Alrogi et al., 2023).

d) Screens use and learning & academic outcomes

Considering curiosity as a pre-learning competence and as a stimulating factor for child development, higher curiosity at kindergarten was associated with greater frequency of parent conversation during shared television viewing, with a greater magnitude of association in low-SES families (Chen et al., 2025; van Aswegen & Pendergast, 2023; Shah et al., 2021). The study did not include television program content, digital media use and non-screen time conversation.

Kostyrka-Allchorne et al. (2017) concluded that what children watch-rather than how long they watch-is a better predictor of cognitive and academic outcomes. Age-appropriate educational TV was linked to both short-term learning and long-term academic success. However, for infants and toddlers under three years, such exposure was generally associated with negative developmental outcomes, even when the content was considered educational.

Systematic literature review on the impact of digital devices on children's health, concludes that studies evaluating the directional association between screen time and academic performance reported poor levels of developmental achievement, attention, motivation, and grades with higher screen time. Private speech decreased during digital play sessions, just as passive screen exposure reduced the ability to process verbal information. Studies report better writing performances favored by handwriting training (handwriting with stylus did not significantly differ from the other conditions), with improvement in letter acquisition and visual-spatial skills inducing cognitive development (Presta et al., 2024).

These findings underline the importance of the development of guidelines for the use of screens and media at school, and a limitation of media and screen use to improve educational achievements.

2.4.4. Psychopathology

Also with regard to a causal relationship between screen use and psychopathology, the conclusions of meta-analyses remain inconclusive. The quality of publications is likewise variable, with earlier studies carrying less weight than more recent ones. Several methodological moderators explained between-study heterogeneity, making interpretation and generalization difficult.

Vanderloo et al. (2025) published a systematic review and meta-analysis on screen time among youth and children with disabilities and found that children and youth **with autism spectrum disorder** (ASD) had the highest levels of screen time, followed by children and youth with ADHD.

Regarding ASD, findings remain mixed.
A meta-analysis from 2023 (Ophir et al., 2023) reported that the purported association between screen use and ASD is not sufficiently supported by the existing literature. Although excessive screen use may pose developmental risks, the mixed findings, small effect sizes (particularly in light of observed publication bias), and the correlational nature of the available research call for further scientific investigation.
A meta-analysis on the association between screen exposure and ASD in children by Liu et al. (2024a) cautiously concludes that the development of childhood ASD might be associated with screen exposure. The risk of ASD is higher for those with high screen exposure than for those with low screen exposure. Several research avenues have been proposed to explain this association, which warrant further investigation. One hypothesis is that the electrical and photic stimulation produced by screens could interfere with typical neurological development during infancy, a period of intense neurodevelopmental activity. Another possible mechanism involves the impact of excessive screen time on brain connectivity and frontal lobe maturation; altered development in these regions might, in turn, contribute to the social, emotional, and cognitive difficulties characteristic of ASD. Higher screen use by children with ASD might also be explained by the interest of autistic children in types of information that are free of social bias, which leads autistic children to be more interested in screens and ultimately spend more time on screens per day than children without ASD. These findings also do not exclude the complementary hypothesis that children with ASD may prioritize screen activities as a means of avoiding social challenges.

Another publication (Muris et al., 2025) on the same topic demonstrated that adolescents with an ASD, or those exhibiting a higher number of autistic traits, are more likely to engage in problematic screen use, while at the same time showing less interaction with social media.

With regard to **ADHD**, cross-sectional analyses cannot determine causal relationships between attention deficit, hyperactivity, impulsivity, and problematic internet use (PIU). Nevertheless, a meta-analysis by Augner et al. (2023) concluded that these features of developmental disorders constitute a vulnerability to PIU. An earlier analysis (Wang et al., 2017) found a moderate association between internet addiction (IA) and ADHD, with individuals with IA presenting with more severe ADHD symptoms, including total symptom scores, inattention scores, and hyperactivity/impulsivity scores.
Similarly, the large-scale meta-analysis by Eirich et al. (2022), covering 87 studies (98 independent samples) and 159 425 children aged 12 years or younger, concludes that greater duration of screen time is weakly but significantly correlated with externalizing (e.g. aggression, inattention) and internalizing (e.g. anxiety, depression) behavior problems. The study found a correlation between higher screen time and ADHD symptoms. Results varied

as a function of demographic factors with a stronger correlation between screen time and externalizing problems in boys compared with girls.

As we can conclude that there is an association between screen time and characteristics of ADHD and ASD, where the evidence that screen time use is more excessive and problematic in these groups, it could be useful to include an evaluation of screen exposure in childhood and digital media use within a diagnostic evaluation of ADHD or ASD.

Vannucci et al. (2020) reported small-to-medium positive correlations between social media use and **risky behaviors** in general, risky sexual behaviors, and substance use. There were an insufficient number of independent samples available to conduct random-effects models for violence-related behaviors. Moderator analyses suggested that studies limited to early social media platforms (e.g., Facebook/MySpace) in relation to substance use yielded smaller effect sizes compared to studies assessing a broader range of contemporary platforms. In addition, younger samples demonstrated larger effect sizes in studies focused on social media use and risky sexual behaviors. The positive associations identified between social media and risky behaviors during adolescence in this meta-analysis suggest that developmental theories of risk-taking would benefit from incorporating the social media context. Another meta-analysis by Curtis et al. (2018) on alcohol use and social media found moderate-sized effects across 19 studies: greater alcohol-related social media engagement was correlated with both greater self-reported drinking and alcohol-related problems.

A growing body of research demonstrates an association between the use of smartphones and social media platforms and the emergence of various **addictive behaviors**. These include problematic use of the Internet, substance use (alcohol, tobacco, and illicit drugs), and behavioral addictions such as gaming and gambling (Bozzola et al., 2022).

Social media use has also been implicated in risk-taking behaviors, notably **substance use.** Mechanisms include online peer pressure, social comparison, and repeated exposure to content promoting alcohol, tobacco, or illicit drug use (Bozzola et al., 2022). Exposure to such content may shift perceived social norms and facilitate imitation.
The HBSC study (Boniel-Nissim et al., 2022) demonstrated that problematic social media use correlates with increased alcohol, tobacco, and other substance consumption. This association is amplified by the ubiquity of alcohol marketing on social platforms (e.g., Facebook, Twitter, YouTube). Visually appealing, peer-endorsed content contributes to the normalization of illegal and excessive drinking (Bozzola et al., 2022). In its recent advisory (SHC 9781, 2024), the Superior Health Council (SHC) warned that the current economic model of social media platforms facilitates this normalization and recommended stricter regulation of both user-generated and brand-promoted alcohol content. Research in Belgian adolescents has further repeatedly supported the various short-term and longer term links between different social media interactions regarding substance content (e.g., alcohol, vaping, smoking) and adolescents' favorable attitudes, norms and behaviors in view of substance use (Vranken et al., 2023; Vanherle et al., 2023).

Moreover, social media engagement is associated with a higher risk of **gaming** and **gambling disorders**. A study in Flanders (Grosemans et al., 2024) examined various forms of online simulated gambling, including in-game loot boxes, social casino games, and gambling-related content such as loot box unboxing videos and live gambling streams. Participation in these activities correlated with monetary gambling and may promote early familiarization with gambling behaviors, acting as a gateway to higher-risk gambling in adolescence. In line with these findings, the SHC previously recommended maintaining a clear distinction between video games and online gambling to limit early exposure (SHC 9526, 2020).

According to Li et al. (2025), there is a moderately positive association between internet addiction in adolescents and non-suicidal **self-injurious behavior**. An earlier meta-analysis

by Marchant et al. (2017) showed that the relationship between internet use and self-harm/suicidal behavior was particularly associated with internet addiction, high levels of internet use, and websites with self-harm or suicide-related content. While negative aspects of internet use were evident, potential benefits such as reduction of isolation, outreach, and provision of help and therapy were also identified. There is significant potential for harm from online behavior (e.g., normalization, triggering, competition, contagion), but equally the potential to leverage its benefits (e.g., crisis support, reduction of social isolation, delivery of therapy, outreach). Young people increasingly appear to use social media to communicate distress, particularly to peers.

Cheng et al. (2018), drawing primarily on cross-sectional studies, concluded that individuals with internet addiction exhibited significantly higher rates of suicidal ideation, planning, and attempts, as well as greater severity of suicidal ideation.

A small meta-analysis with a limited number of included studies (Hinojo-Lucena et al., 2019) reported a modest positive correlation between problematic internet use and the development of **eating disorders** in students. Given the limited quality of this meta-analysis, the findings should be interpreted with caution.

Although several studies have failed to establish a clear causal relationship between excessive internet use and the development of **social anxiety disorder**, there is evidence supporting the reverse association: adolescents and young adults with social anxiety disorder appear to be more susceptible to developing problematic internet use (Ding et al., 2023).

Adolescents with **depressive disorders** were found to be at higher risk of internet addiction, according to a meta-analysis by Ye et al. (2023). Conversely, adolescents with internet addiction were at higher risk of developing depressive disorders. In addition, internet addiction exerted a stronger effect on depression risk.

In summary, while the existing body of literature highlights multiple associations between problematic screen or internet use and diverse psychiatric conditions in children and adolescents, the evidence base remains characterized by methodological limitations, small effect sizes, and a predominance of cross-sectional designs. Causal inferences are therefore premature. The online and social media landscape is also rapidly and continuously evolving, warranting the need for additional research. Nonetheless, the consistent identification of vulnerable groups-such as individuals with autism spectrum disorder, ADHD, depressive disorders, or social anxiety disorder-underscores the need for further longitudinal and mechanistic studies. Future research should aim to disentangle directionality, clarify underlying mechanisms, and inform preventive and therapeutic strategies tailored to at-risk populations.

2.5. Open research questions

Although the evidence base on the impact of screen and social media use among children and adolescents has grown substantially in recent years, significant knowledge gaps remain. Current research is often limited by methodological constraints (e.g., reliance on cross-sectional and self-reported data), rapidly evolving technologies, and heterogeneous user populations. As a result, many critical questions concerning causal mechanisms, differential vulnerability, platform-specific effects, and long-term developmental consequences remain unanswered. Addressing these open research questions is essential to move beyond simplistic debates on “screen time” and towards a more nuanced understanding of how digital media use interacts with individual, social, and contextual factors to shape young people’s health and well-being.

The following research questions are, for example, open:

- Building on causal effect heterogeneity and attention for different types of uses and content types, which dynamics exist between differential digital media uses, different well-being outcomes and their mechanisms on the short- and the long-term?
- How do effects differ across platforms (e.g., TikTok, Instagram, Snapchat, YouTube, Twitch, Discord), considering their algorithms and implicit social norms, especially when we take into account the platform data itself (which now should be accessible through the DSA, if efficient procedures and sufficient protections for liability for researchers would be in place)?
- What types of risky online behaviors are most prevalent among children and adolescents, and what are their short- and long-term health impacts?
- How does very early use (before age three) shape language, cognition, attention, and long-term socio-emotional development?
- How does parental smartphone use affect children's mental health, emotional development, and family well-being?
- How do the risks associated with screen time and social media vary across specific demographic groups (e.g., age categories, SES, cultural background, pre-existing conditions)?
- Should so-called "addictive" uses of digital media be conceptualized as a distinct clinical entity, and how can they be measured reliably?
- Which standardized and validated instruments are most appropriate for assessing digital media use and its impacts, beyond self-reported measures?
- What strategies and interventions are most effective in promoting moderate and healthy use of digital technologies among children, adolescents, and parents?
- How can national data sources (e.g., police and justice statistics in Belgium) be used to identify trends and risk patterns related to harmful online behaviors and their impact on health and well-being?
- Under what conditions can social media use have positive effects on psychological well-being, including among vulnerable populations?
- How can screen use add educational value in early childhood or school contexts without compromising cognitive or emotional development?
- In what ways can digital tools and screen-based interventions enhance the effectiveness of blended therapeutic programs?

3. Government actions

3.1. European policy

At the European level, the **Digital Services Act (DSA)**, adopted in October 2022 and progressively enforced since February 2024 constitutes one of the pillars of the European Union's digital regulation framework[11]. Its objective is to create a safer digital space, to protect fundamental rights online, and to establish clear obligations for digital platforms and services. The DSA applies to all providers of 'intermediary' services. This includes services that connect consumers with goods, services, or content (hosting services, marketplaces, social networks, app stores, search engines, etc.), but in a differentiated manner according to the size and role of the actors. The strictest obligations apply to Very Large Online Platforms (VLOPs) and Very Large Online Search Engines (VLOSEs), with more than 45 million active users in the EU.

[11] In addition to the DSA, other legislative instruments (such as the Audiovisual Media Services Directive, which regulates illegal and harmful content on video-sharing platforms, and the Artificial Intelligence Act) and policy documents (such as the Better Internet for Kids + Strategy) also contribute to the protection of minors in the digital environment.

The Act imposes a range of due diligence obligations on online platforms, for instance, regarding **content moderation, including reporting mechanisms, the design of online interfaces, transparency regarding recommender systems, advertising and the protection of minors**.
Specifically with regard to young people, Article 28 of the DSA requires platforms accessible to minors to implement appropriate and proportionate measures to ensure a high level of privacy, safety and security for children. This includes, among other things, reducing exposure to harmful content, harassment, and unsolicited contacts.
To clarify which measures could be taken by platforms to help ensure a high level of privacy, safety and security, on 14 July 2025, the European Commission published guidelines on the protection of minors online under article 28 of the DSA. Although the guidelines are non-binding, their adoption has been considered a milestone in the Commission's efforts to boost online safety for children and young people under the DSA.

As the European Commission states on its website (https://digital-strategy.ec.europa.eu/en/library/commission-publishes-guidelines-protection-minors):

"*The guidelines set out a non-exhaustive list of proportionate and appropriate measures to protect children from online risks such as grooming, harmful content, problematic and addictive behaviours, as well as cyberbullying and harmful commercial practices.*
The guidelines will apply to all online platforms accessible to minors, with the exception of micro and small enterprises. Key recommendations include the following:

- *Setting minors' accounts to private by default so their personal information, data, and social media content is hidden from those they aren't connected with to reduce the risk of unsolicited contact by strangers.*
- *Modifying the platforms' recommender systems to lower the risk of children encountering harmful content or getting stuck in rabbit holes of specific content, including by advising platforms to prioritise explicit signals from children over behavioural signals as well as empowering children to be more in control of their feeds.*
- *Empowering children to be able to block and mute any user and ensuring they can't be added to groups without their explicit consent, which could help prevent cyberbullying.*
- *Prohibiting accounts from downloading or taking screenshots of content posted by minors to prevent the unwanted distribution of sexualised or intimate content and sexual extortion.*
- *Disabling by default features that contribute to excessive use, like communication "streaks," ephemeral content, "read receipts," autoplay, or push notifications, as well as removing persuasive design features aimed predominantly at engagement and putting safeguards around AI chatbots integrated into online platforms.*
- *Ensuring that children's lack of commercial literacy is not exploited and that they are not exposed to commercial practices that may be manipulative, lead to unwanted spending or addictive behaviours, including certain virtual currencies or loot-boxes.*
- *Introducing measures to improve moderation and reporting tools, requiring prompt feedback, and minimum requirements for parental control tools.*

*The guidelines also recommend the use of effective **age assurance methods** provided that they are accurate, reliable, robust, non-intrusive, and non-discriminatory. In particular, the guidelines recommend age verification methods to restrict access to adult content such as pornography and gambling, or when national rules set a minimum age to access certain services such as defined categories of online social media services. The EU Digital Identity Wallets, and before they become available, the blueprint for age verification on which applications can be built, will provide a compliance example and a reference standard for a device-based method of age verification. The guidelines recommend age estimation in other cases, such as when terms and conditions prescribe a minimum age lower than 18 due to identified risks to minors."*

The Commission will use these guidelines to assess compliance with Article 28(1) of the DSA. They will serve as a reference point for checking if online platforms that allow minors to use them meet the necessary standards and may inform national regulators in their enforcement actions. However, following these guidelines is voluntary and does not automatically guarantee compliance.
Additional obligations that are relevant to the protection of minors are imposed on the VLOPs and VLOSEs. These actors need to conduct an assessment of the systemic risks on their platform (Article 34) and must take measures to mitigate those risks (Article 35). Systemic risks relevant to the protection of minors include the dissemination of illegal content, negative effects on the exercise of fundamental rights, including the rights of the child, and negative effects in relation to gender-based violence, the protection of public health and minors and serious negative consequences to physical and mental well-being. To counter such risks, if identified, reasonable, proportionate and effective mitigations must be implemented. Such measures may include, amongst others, adapting the design, features and functioning of the services, adapting terms of service and their enforcement, adapting content moderation processes and adapting the algorithmic systems (including recommender systems). VLOPs and VLOSEs must report about the risks and mitigation mechanisms, and are subjected to an independent audit once a year to assess compliance with the due diligence obligations. In case of suspected non-compliance, the European Commission can launch investigations and formal proceedings. When infringements are found, substantial fines can be imposed. iiAs research into the effects of the use of online platforms and services largely depends on the data that the VLOPs have, the DSA also puts in place a mechanism that allows access to internal data for vetted researchers (Article 40), enabling the independent analysis of issues such as the influence of local content creators, the demographics of their audiences, or the exposure of minors to harmful or subsequently banned content. Researchers who fulfill the criteria listed in Article 40 (8) can be granted the status of ‘vetted researcher’ by the Digital Services Coordinator of the country of establishment of the platform. They can then request access to certain data held by the VLOP.
The DSA therefore marks a major step in Europe’s digital regulation. It combines differentiated obligations depending on platform size, enhanced protection of minors, and a strong commitment to ensuring greater transparency and accountability of online actors. Its advantages are evident in terms of safety and fundamental rights, but its limitations lie in the complexity of implementation, the risk of over-moderation, and technical challenges (particularly age assurance).

The DSA forms the cornerstone of the regulation of online platforms, but is not the only relevant regulation. It sits together with the Audiovisual Media Services Directive (AVMSD) that also regulates video sharing platforms, the Digital Markets Act (DMA), the General Data Privacy Regulation (GDPR) and the AI act. These will possibly be added to with a Digital Fairness Act (DFA) including regulation on deceptive mechanics. It is of utmost importance that these directives and regulations are further strengthened for the protection and empowerment of the users of digital media, especially minors. This should be a starting point for the Belgian authorities in coming EU regulatory processes, like the evaluation of the AVMSD, the possible coming DFA and the possible reduction and harmonisations of all these regulations and directives in ‘the Digital package’.

3.2. Neighboring countries

3.2.1. France

In France, the use of mobile phones at school and in lower secondary education has been prohibited since 2018 (with some exceptions, e.g. for educational purposes). Upper secondary schools may introduce such a ban in their internal regulations.

In February 2022, France launched an interministerial action plan entitled *"For a Reasoned Use of Screens by Children and Young People"*. This plan, developed in partnership with several ministries (Health, Education, Youth), the interministerial mission MILDECA, the CNAF, and the audiovisual regulator ARCOM, was based on the recommendations of the High Council of Public Health. It aimed to strengthen prevention, awareness-raising, and parental support. Four flagship actions were foreseen:

- The creation of a "digital parenting campus", including an online portal (*jeprotegemonenfant.gouv.fr*) and workshops for parents.
- The development of pupils' digital skills from the 4th year of primary education (CM1) via the Pix platform.
- The establishment of an annual barometer of young people's digital uses, to identify problematic patterns.
- The provision of toolkits for parents and professionals in education, health, and youth sectors.

In 2023, a law introduced the notion of a "digital majority" at the age of 15, requiring parental consent for registration on a social network below that age. However, this provision has not yet been implemented due to the lack of decrees and compatible age verification solutions under EU law.

In 2024, an expert report (*"Enfants et écrans – A la recherche du temps perdu",* collectif d'experts, 2024) made 29 recommendations, including the introduction of age milestones: no screens before 3 years, strongly limited use up to 6 years, no smartphone before 11 years, no Internet access on smartphones before 13 years, and no social networks before 15 years. Following this, the government launched the *"Portable en pause"* experiment in lower secondary schools, aiming to completely remove phones during the school day (schools organising the total separation of phones through lockers, sealed magnetic pouches, or collective storage). This measure has been generalised since the start of the 2025 school year. Finally, in July 2025, a ministerial decree banned the use of screens in all early childhood care facilities, including nurseries.

To date, however, only limited evaluations of these policies have been conducted, and no robust national impact assessments are yet available.

In September 2025, the National Assembly published the report of its commission of inquiry on TikTok (Rapport d'enquête sur TikTok, Assemblée nationale, 2025). The report highlighted major concerns regarding the platform's effects on young people's attention, mental health, and data protection. It denounced addictive design strategies, opaque recommendation algorithms, and insufficient moderation of harmful content. The commission called for stronger national and European measures, including stricter age verification, increased transparency obligations for platforms, and reinforced (penal) sanctions in case of non-compliance, both for platforms and parents.

3.2.2. The Netherlands

In the Netherlands, a policy framework letter published in July 2023 defined the main lines of action on children's rights online. It emphasised the importance of European regulation, media literacy, mental health, influencer supervision, and the development of age verification solutions.
In January 2024, a national agreement introduced a ban on mobile phones in secondary classrooms, except for educational purposes. This measure was subsequently extended to primary and special education from the 2024–2025 school year. In June 2025, the government recommended that parents prohibit the use of social networks before the age of 15, while distinguishing this recommendation from messaging services.

The Ministry of Education commissioned the Kohnstamm Institute and Oberon to evaluate the impact of the classroom mobile phone ban through a representative survey of schools and focus groups across secondary, primary and special education. A baseline was conducted before the measure took effect, followed by a follow-up half a year later. In secondary education, schools reported improved concentration and social interaction. In primary and special education, the impact was more limited, as mobile phones were already less common. Overall, the evaluation concluded that the national agreement was widely implemented, positively received by schools, and expected to benefit learning outcomes and school climate, while highlighting questions about educational use and devices such as smartwatches (Carrión Braakman et al., 2024).
The Dutch government also ordered an expert report on age limits for smartphones and social media. This resulted in the *Richtlijn gezond schermgebruik* 2025[12] (Koning et al. 2025) In their guideline the experts recommended parents to use 13 years as a minimum age for access to social interaction platforms. Politically this recommendation was translated into a recommended minimum age of 15 for social media. Being recent, no evaluation of this recommendation has yet been carried out.

3.2.3. Sweden

Sweden has recently intensified its focus on children's and adolescents' digital media use. In 2024, the Public Health Agency (*Folkhälsomyndigheten*) issued recommendations advising against any screen use for children under two, and urging that screen time for preschool and school-aged children be strictly limited outside educational contexts. The guidance also addressed sleep problems linked to digital media and encouraged parents to model healthy media habits (Public Health Agency of Sweden, 2024). At the same time, the government is reviewing proposals for a national minimum age for social media access, reflecting rising concerns about online risks, including exposure to harmful content and youth involvement in crime.

In the school context, Sweden does not currently have a national legislative ban on smartphones or social media. The National Agency for Education (Skolverket, 2024) instead promotes safe digital environments and the responsible, critical use of digital media, while leaving decisions on screen time and device restrictions largely to local schools and municipalities. However, momentum is shifting: in March 2025, following a government inquiry, a legislative proposal was submitted to parliament to ban mobile phones in compulsory schools and after-school clubs for all students aged 7–16. Scheduled to take effect in autumn 2026, the reform aims to improve study conditions, increase student safety, and support well-being by removing digital distractions and reducing risks of harassment associated with mobile phones, smartwatches, and similar devices during the entire school day (Regeringskansliet, 2025).

3.2.4. Ireland

In Ireland, the Online Safety and Media Regulation (OSMR) Act 2022 assigns digital platforms specific duties to protect children, moderate harmful content, and apply age-appropriate design, under the supervision of *Coimisiún na Meán*, the national media regulator (Department of Culture, Communications and Sport, 2020). The Act addresses harmful online material linked to 44 existing criminal offences, as well as content such as serious cyberbullying, promotion of eating disorders, self-harm or suicide, and information on methods of self-harm or suicide. Since 21 October 2024, the first Online Safety Code has required video-sharing platforms to take concrete steps to protect the public-especially children-from harmful video and related content. Complementary Online Safety Guidance Materials help service providers interpret and implement the Code and clarify the regulator's expectations. To complement

[12] https://assets.odido.nl/x/59e04591d4/richtlijn-gezond-schermgebruik-2025.pdf

these legislative measures, Irish policy emphasises community-based agreements, digital literacy, and parental involvement rather than strict legislative bans. *Coimisiún na Meán* runs ongoing initiatives, including public campaigns on illegal online content (aligned with the EU DSA), awareness campaigns around the launch of the Online Safety Code, educational resources for students, teachers and parents on children's rights online, Safer Internet Day, and support for Media Literacy Ireland and the Be Media Smart campaign, promoting the skills needed to critically assess media, identify misinformation, counter extremist views, and make informed choices online.

In the school context, Circular 0044/2025, published on 12 June 2025, requires all recognised schools to implement a policy banning the use of personal mobile phones by pupils during the school day, including breaks and lunchtimes, while allowing limited exemptions for medical, wellbeing, or special educational needs (Department of Education and Youth, 2025). The ban aims to reduce distractions, minimize cyberbullying, and encourage in-person social interaction, creating a phone-free learning environment that supports pupils' concentration, wellbeing, and academic performance.

3.2.5. United Kingdom (UK)

The UK has adopted a regulatory framework that combines statutory obligations for online services with guidance for educational institutions.

The Online Safety Act 2023 places binding duties on platforms to protect children, with Ofcom responsible for developing enforceable codes and ensuring compliance (UK Government, 2023). Ofcom's guidance on age-assurance and child safety requires platforms to introduce effective age-verification and protective measures while safeguarding users' privacy. These obligations were phased in during 2024–2025 and now form the primary legal instrument for online safety. Since 25 July 2025, platforms must use highly effective age-assurance systems - such as secure facial scans, photo ID, or credit card checks - to prevent children from accessing harmful content. This includes pornography, material promoting self-harm or suicide, eating disorder content, hate speech, and violent material, as well as other high-risk online harms. The aim is to make it significantly harder for children to accidentally or deliberately access such material. In addition, platforms are required to provide clear and accessible reporting mechanisms for children and parents. While the Act does not set a statutory minimum age for social media use, growing regulatory pressure and recommendations from authorities such as the Children's Commissioner are pushing towards stricter child protection measures.

At the educational level, there is no statutory nationwide ban on mobile phone use in schools. However, Department for Education guidance (February 2024) encourages headteachers to prohibit the use of mobile phones throughout the school day, including breaks and lunchtimes, except where needed for educational or medical purposes, in order to reduce distraction and cyberbullying. Most schools have introduced restrictions, though implementation, exceptions, and enforcement remain the responsibility of individual schools.

3.2.6. Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) serves as the national regulator for electronic communications and digital infrastructure. In the context of the Digital Services Act (DSA) and broader digital policy, the BIPT acts as Belgium's Digital Services Coordinator, ensuring compliance with EU rules on online platform accountability, transparency, and content moderation. The BIPT also oversees aspects related to network safety, accessibility, and electronic communications security, and coordinates with audiovisual regulators - the *Conseil Supérieur de l'Audiovisuel* (CSA), the *Vlaamse Regulator voor de Media* (VRM) and the *Medienrat der Deutschsprachigen Gemeinschaft* - as well as with data

protection authorities, to ensure coherent national implementation of digital regulation frameworks.

In addition, Betternet, Belgium's official national contact point for illegal or harmful online content, plays a complementary preventive and protective role. It enables users to report illegal online material, including child sexual abuse content, cyberbullying, and hate speech, and collaborates with law enforcement and internet service providers to remove such content. Betternet also contributes to awareness-raising and prevention activities in cooperation with schools and youth organizations, helping to promote safe online environments for children and adolescents. Betternet is co-funded for 50% by the European Commission. The Flemish and French Communities both co-fund part of the awareness raising through their representative organisations in Betternet. At the federal level the co-funding for the help- and hotline is lacking.

Digital competences and media literacy are also integrated within educational policy frameworks. In Flanders, "digital competences" is one of the key competences embedded in the updated curriculum goals ("*eindtermen*"), and various resource centres provide schools and teachers with educational materials and training to support responsible and critical use of digital technologies (for example, https://www.mediawijs.be/nl). In the French Community (also known as *Fédération Wallonie-Bruxelles*) digital and media literacy are promoted as transversal competences to be integrated across subjects rather than as a separate compulsory course. The *Conseil Supérieur de l'Éducation aux Médias* (CSEM) acts as a resource hub, coordinating awareness campaigns, research initiatives, and the development of pedagogical resources to foster critical and safe engagement with digital content among pupils and teachers. In the German Community raising digital and media literacy is tasked to the Medienznetrum Eupen.

The Flemish government has introduced a general ban on smartphones and other connected devices in all primary and secondary schools, to be implemented as of September 2025. For grades 5 and 6 of secondary schools and certain vocational or special pathways, each school may decide whether to ban smart devices outside of lessons. Exceptions are allowed for educational use, for pupils with special needs or medical reasons, or in specific personal contexts, as well as for internships and extra-muros activities. The ban is a condition for recognition in primary education and for funding in secondary education (https://www.vlaanderen.be/onderwijs-en-vorming/wat-mag-en-moet-op-school/afspraken-op-school/verbod-op-gebruik-van-smartphones-en-andere-slimme-apparaten#extra-informatie).

In the French Community (*Fédération Wallonie-Bruxelles*), a decree adopted in March 2025 introduced a general ban on the recreational use of smartphones and other connected devices in all FWB schools as of the start of the 2025 school year. The ban applies during school hours and breaks (including recess, lunchtime, and activities outside the school premises), and covers all levels and networks: nursery, primary, secondary, mainstream, and special education. Exceptions are foreseen for educational use, as well as for pupils with a disability or a health condition requiring the use of electronic communication equipment.

IV. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

The use of screens and social media has become pervasive in the lives of young people, and both civil society and public authorities are increasingly concerned about their potential effects on (mental) health and well-being. These concerns are part of a broader societal awareness of the contemporary media environment, including issues such as cyberbullying, exposure to unrealistic body ideals, addictively designed games and platforms, and dis- and misinformation. Yet, these trends form part of a broader 'wicked problem' where factors such as school pressure, poverty, and inequality often outweigh media effects. At the same time, this increased awareness offers an opportunity to promote safe and healthy use of screens and social media, and to support the well-being of children and adolescents through evidence-based policies, education, and guidance for families and professionals.

Scientific research indicates that the effects on (mental) health remain complex and nuanced. Current data do not generally allow for clear causal inferences from 'screen time' as such on mental health and well-being: The heterogeneity of study designs, insufficient consideration of developmental and cultural differences, ambiguous terminology ('well-being', 'screen time', 'young people') and the limited number of studies on the platforms most widely used by adolescents (e.g. TikTok, Instagram, Snapchat) complicate interpretation. The digital media landscape also rapidly evolves, with findings quickly losing relevance. Several key questions therefore remain open, particularly concerning causal pathways, the existence of an "optimal" threshold of use, the identification of beneficial versus harmful practices, and the delineation of vulnerable groups. There is still no consensus regarding the legitimacy of so-called social media or smartphone addiction as a distinct clinical entity, nor clarity on how such an addiction should be reliably assessed using standardised diagnostic instruments. This lack of precise definitions and standardised assessment tools continues to hinder cross-study comparability and the development of effective intervention strategies.

Existing literature nonetheless suggests that certain (mental) health and well-being outcomes are affected by particular media uses, with the effects being contingent on media characteristics (such as the content consumed and design features to increase usage time), the context of use, and individual characteristics, rather than by screen time alone. Even if the effects are of small to moderate magnitude, their accumulation could generate significant long-term consequences.

Age plays a crucial role: very young children are particularly vulnerable, and adolescents - whose brains are still developing, highly sensitive to rewards, and not yet fully mature in impulse control and risk assessment - face challenges related to identity building, social comparison, and peer pressure. Excessive exposure to fast-paced, reward-based algorithmic content raises concerns about its impact on brain development and maturation.

Already before birth, digital media are also used by parents to guide their prenatal health care and to prepare for parenthood. This offers potential benefits in terms of knowledge efficiency, but also poses risks related to misinformation, negative social comparisons etc.

Before the age of three, learning from screens remains limited due to the so-called "video deficit": children learn less from a screen than from live interaction. After this age, however, appropriately designed educational programs can positively influence language, cognition, and social development. Adults' involvement plays a central role: co-viewing and active mediation can mitigate negative outcomes and enhance positive effects. Yet the online omnipresence combined with the easy accessibility of age inappropriate content makes it highly challenging for parents to exert such parental mediation in a satisfying way.

Video games represent another significant aspect of the digital environment. Prosocial, cooperative, or active games can foster cooperation, social competence, emotional regulation, and physical activity, and some are even used as therapeutic or educational tools. In contrast, certain types of gaming have been associated with sleep disturbances, sedentary behavior, and addictive patterns. The evidence is, however, sometimes mixed: some meta-analyses report negligible effects, while others identify more consistent associations. Content analyses also show that videogames are often dominated by antisocial elements such as gender stereotypes, and sexualization.

Social media use exemplifies the ambivalence of digital technologies. Active use-publishing, interacting, and exchanging with others-can enhance social support, personal identity, creativity, and self-esteem (especially when active usage is warm/agreeable in nature). Passive use-browsing without interaction -can be linked to psychological distress, body dissatisfaction, and depressive symptoms (especially when consuming idealized content stimulating damaging social comparisons). Ultimately, however, content plays a decisive role: positive and inclusive messages, such as those promoting body diversity and solidarity, contribute to well-being, while repeated exposure to harmful content-unrealistic beauty ideals, misinformation, risky online challenges, automutilation, traditional gender norms, violence or pro-eating-disorder communities-heightens mental health risks. Platform algorithms act as amplifiers by repeatedly exposing young users, particularly vulnerable ones, to such content. Moreover, while friendship-related posts tend to be positive, user-generated content is often intertwined with biases related to appearance, gender norms, self-presentation, and performance standards, which can contribute to various antisocial outcomes. Current evidence also demonstrates that not everyone experiences positive outcomes of smartphone use and that excessive smartphone and social media use can, under certain conditions, lead to behavioral addiction with significant negative effects on adolescents' mental health, cognitive functioning, and social well-being.

Some online behaviors raise further concerns. Cyberbullying affects a substantial proportion of young people and is associated with depression, anxiety, suicidal ideation, and self-harm. Risks are exacerbated when cyberbullying occurs in conjunction with offline bullying, a combination that frequently co-occurs during adolescence. Sexting, early sexualization, and grooming also represent tangible threats, although their prevalence and impact vary across contexts. On the other hand, online interactions may under some conditions reduce loneliness, strengthen social bonds, and provide a space for identity exploration, again underscoring the ambivalent nature of these tools. Online interactions might also bring social support when being confronted to those online (or offline) threats.

From a physical and medical perspective, screen use affects several aspects of health. Intensive use, particularly in the evening, disrupts sleep quality and duration. Prolonged close-range exposure contributes to eye strain and increasing rates of myopia. Excessive time spent in sedentary screen-based activities increases the risk of overweight and obesity, cardiometabolic health and musculoskeletal pain. Among young children, excessive use of passive screen media may hinder language and motor development, while interactive and age-appropriate content can stimulate learning. Screen use has also been linked with other vulnerabilities, including attention deficits, addictive behaviors (substances, gambling), and eating disorders (through mechanisms of social normalisation and exposure to risky content).

2. Should there be a minimum age for access to social media and smartphones?

On the question of banning smartphones and social networking until a certain age, opinions were divided within the working group, and the SHC chose to clearly state the arguments for and against the two options.

2.1. Smartphones

Regarding smartphones, the majority of the experts (13 out of 21) support **allowing smartphone use** before the age of 13.

a) Arguments against a ban

Experts opposing a ban stress the **lack of strong scientific evidence**. Current research does not allow for firm conclusions about an "ideal" age below which smartphone use should be prohibited. A ban, they argue, should only be introduced when there is clear and unequivocal evidence of harm, as with smoking or alcohol, or when a behavior carries a high individual or societal risk, such as driving. Smartphones do not meet either criterion. Moreover, there is no solid evidence that 13 is a meaningful threshold. In many contexts, including Belgium, smartphones are considered particularly useful during the transition from primary to secondary school, typically around age 12.

Opponents also highlight **practical challenges** that could make a ban largely symbolic. Enforcement by authorities would be extremely difficult, and prohibiting use might lead to clandestine behaviors that are potentially more dangerous. Most of the time, there is in fact, little reason for children at a relatively young age (around 12 years old) to already own a smartphone. If policy efforts focus on creating a social norm around postponing smartphone ownership and clearly outline alternative options (both for communication, e.g. staying in touch with parents, and for leisure activities that do not involve smartphone use), this could result in health benefits. A hard age cut-off seems unnecessary in this regard.

They point out that smartphones can also offer **conditional benefits** - which may vary across adolescents depending on age, context, or personal circumstances - with relatively low risks, including feeling of safety during commuting, communication with parents (especially in shared custody situations), access to information, social connections, and informal or formal support systems. A ban could disrupt family routines and reduce flexibility. For these reasons, decisions about smartphone ownership and use are best made by parents according to their values, rather than through blanket restrictions. For these reasons, decisions about smartphone ownership and use are best made by parents according to their values, rather than through blanket restrictions.

Smartphones are neither inherently good nor bad. Potential harms stem from the use of specific applications in specific contexts by individuals with specific vulnerabilities, not from the device itself. Opponents of a ban therefore advocate for **targeted regulation**-such as controlling algorithms, installing default parental controls, and providing structured education on "smart" smartphone use-rather than prohibiting the devices outright. As social media services become safer or age-restricted, concerns about smartphones are likely to diminish. Experts note also that **partial restrictions** remain relevant. Limiting smartphone use in specific settings-such as schools or youth organizations-can address some of the risks without imposing a universal ban.

They underline that links between smartphone use and negative outcomes are complex and multifactorial. These issues cannot be solved with a simple ban but require a comprehensive **set of preventive measures**: increasing awareness among young people and caregivers, offering tools to limit or mitigate risks, and supporting the development of digital health and well-being skills. Rather than banning smartphones entirely, they propose supervised, age-appropriate, and time-limited use.

b) Arguments in favour of a ban

Experts who support a smartphone ban before the age of 12 or 13 argue that smartphones offer no real added value before the beginning of secondary education (when it provides a link with the old and new networks) and that giving younger children unrestricted internet access would be irresponsible. Even though the evidence base for such a measure is not yet robust, the **precautionary principle** can be invoked. Research reports several potential adverse effects of early smartphone use, including negative impacts on neurodevelopment, mental health, sleep and learning, attention and academic achievement, social and emotional development, child safety, and the emergence of addictive usage patterns. In addition, uncontrolled use of cameras, such as taking and examining selfies, can undermine healthy body-image development.

Smartphone use by a child often affects not only the child but also individuals around them. Many parents find it difficult to assume the responsibility and authority required to impose strict supervision and limits on smartphone use. A commonly applied minimum-age rule could help reduce peer pressure and status competition-such as who owns the latest smartphone model-thereby lowering the **social pressure** to adopt smartphones at a young age. A ban is also seen as a clear, simple rule that is relatively easy to implement and that would allow for gradual, scaffolded exposure to smartphones after the age of 13.

Supporters of the ban also emphasize the importance of **consistent restrictions** across all types of **personal screens**, not just smartphones. When devices remain shared within the family rather than personal property, parents can more effectively control when and how they are used, including the type of content accessed. Child-friendly interfaces, developed or regulated by government authorities, can ensure only age-appropriate content is available, fostering safer and developmentally supportive media experiences. If parents need to maintain contact with their children for practical reasons, experts recommend providing mobile phones without internet access, such as simple feature phones, to meet safety and communication needs.

At the same time, they acknowledge that a ban might create enforcement challenges and could increase inequities if some families bypass the rule. Therefore, any minimum-age policy should be paired with **realistic support measures**, including school-managed learning devices, limited-function phones, parental controls, and mandatory digital and media literacy and emotional resilience education. Coherence also requires protecting children not only from their own smartphone use but also from third-party sharing of their personal information or images online.

2.2. Social Media

With regard to social media, the majority of experts (14 out of 21) support a ban (at least for certain platforms), including 10 who support it up to age 13 and 4 up to age 15[13].

a) Arguments in favour of a ban

Experts in favor of introducing a legal minimum age for social media use argue that the **precautionary stance** is underpinned by concerns about children's developmental vulnerabilities. Even if the scientific evidence on social-media impacts is not uniformly strong and causality is not always established, it is consistent enough to justify precautionary and proactive measures. Smartphones and certain social media can be habit-forming and affect

[13] Among the stakeholders consulted, most agreed not to set a legal limit, but one organisation was also in favour of setting the age limit at 16, for which they also have some expert support.

children's development, well-being, and mental health. Children and adolescents-whose brains are still maturing-are particularly vulnerable to risks such as exposure to harmful content, sleep disruption, negative self-image, and anxiety. Before puberty, children need every opportunity to develop their brains, bodies, and social skills without interference from these technologies. Adolescence, with its rapid brain development, shifting sleep patterns, increasing peer influence, and strong engagement in leisure activities, is also a sensitive developmental phase. Therefore, children should be shielded from these risks as they are from other harmful exposures such as drugs, alcohol, or tobacco.

Many parents find it too difficult to firmly restrict and closely supervise their children's use of these platforms. Establishing a clear legal age would provide a visible and widely understood **social-norm** framework for all parties-young people, parents, schools and communities. Just as in other domains such as alcohol or tobacco regulation, setting a legal threshold would send a strong societal signal about what is considered appropriate at different ages. Even if enforcement and age verification remain imperfect, the normative effect of such a measure-what society expects and parents can rely on-would still be significant.

Children have the **right to protection**, safety, health, and psychological development. A legal minimum age could delay exposure and mitigate some negative effects. While parental and educational strategies are essential, they are insufficient to offset developmental vulnerabilities when exposure occurs early. Several studies indicate that even with active parental involvement and media-education programmes, problematic effects of early use persist. Behavioural interventions often target conscious behaviour change, but not the automatic and unconscious processes that shape habits. For this reason, experts believe that **environmental measures,** such as legislation, should complement individual and family actions. Evidence from alcohol and tobacco policies shows that reducing access is often the most effective approach. Because vulnerabilities change throughout development, a legal framework should offer a solid base of protection, supported by targeted strategies for the most vulnerable groups and life stages.

The majority of the experts are in favour of regulation support setting **the age limit at 13 for non-chat-oriented platforms**, followed by guided, progressive introduction through parental mediation, media education, and regulatory oversight. The rationale is that below age 13, children typically lack the cognitive and emotional maturity to self-regulate their social-media use and cope with inappropriate content; beyond that age, enforcing a ban becomes more difficult, and adolescents need to develop digital citizenship skills. Some experts support parental approval for use between ages 13 and 15. A minority propose raising the minimum age to 15, extending the precautionary period until cognitive and emotional control is more fully developed. Others argue that if platforms are properly secured (default parental controls, content limitations, time restrictions), such a high threshold might be unnecessary.

The current industry practice sets the minimum age to open an account on most social media platforms at 13 years old. This is often confused with the age of digital consent under the GDPR, which determines the age at which children can legally consent to the processing of their personal data-set at 13 years old in Belgium. However, these two standards serve different purposes. In practice, enforcement of both the industry age limit and data protection rules remains weak: many children access platforms well before this age, and age-verification mechanisms remain inadequate. Therefore, supporters of a ban argue for **strengthening** legal age restrictions and **enforcement mechanisms**, noting that relying on voluntary guidelines has proven insufficient.

b) Arguments against a ban

Experts opposing a legal minimum age for social media use emphasise the **lack of strong scientific evidence** and the complexity of the issue. They argue that a ban is appropriate only when there is overwhelming evidence of population-level harm and no offsetting benefits, as with alcohol or tobacco. This is not the case for social media as a whole. While some data show negative impacts in certain contexts, the current evidence base does not allow the determination of an "ideal" age for access. Effects vary by platform type, context, content, and parental support. A single minimum age oversimplifies a complex issue and may be less effective than more nuanced interventions.

Opponents also warn against alarmist rhetoric and **moral panics**, which can distort the public-health debate. They caution against claims such as "screens damage brain development" or "social media is like a drug," which are not supported by strong evidence. Demonising social media may undermine nuanced, evidence-based policy. Social media platforms are also important spaces for young people's socialisation, autonomy, identity exploration, friendships, civic engagement, and creative expression. A strict ban would not only **curtail these opportunities** but might even **infringe on children's rights** to freedom of expression, access to information, and participation in cultural and recreational life, as enshrined in the UN Convention on the Rights of the Child. Adolescents in rural or disadvantaged settings could be especially impacted, as social media can be an important space for connection and belonging.

Moreover, legislation already exists to address illegal content, cyberbullying, and identity theft. An age restriction would not add new protections but could criminalise legitimate use.

Implementation would also be technically and practically complex. Defining what counts as "social media" is itself challenging, since it covers a wide range of platforms with very different risk profiles-from chat apps to infinite-scroll, video-based platforms like TikTok or Instagram. It is not clear which platforms a legal ban would cover, and applying the same threshold to all of them may be inappropriate.

Age verification is another major obstacle. Differences in school calendars and age cohorts make a fixed chronological threshold difficult to apply fairly, and adolescents are already adept at **circumventing such restrictions**. Evidence from other countries shows that even when age-verification technologies are introduced, they are often ineffective, raise privacy concerns, and can create a false sense of security. Teenagers would likely **migrate to less regulated, potentially more harmful platforms** or use alternative tools such as game environments and messaging apps. A "forbidden fruit" effect could further increase young people's curiosity and push them towards riskier behaviours. Strict bans may also inhibit open communication between adolescents and adults: if young people encounter harmful content, they may avoid seeking help out of fear or shame. A strict legal ban may also increase inequalities. Those who still gain access would develop digital and social competencies earlier, while others would be left behind. A ban would **delay opportunities** for adolescents **to develop** self-protection and **digital autonomy skills** - precisely at the stage of development when these capacities should be strengthened. It could also undermine parents' educational role, heighten family tensions, and give platforms excessive power over users' data through intrusive age-verification procedures.

Rather than setting a strict minimum age, experts call for **stronger platform regulation**. We have a duty not to remove children from their online world, but to make it safer. This means not increasing control over young people, but placing greater legal responsibility on platforms to ensure their safety, particularly by adapting design features (e.g., limiting infinite scroll, increasing transparency, improving content moderation, diversifying recommendations).

Regulatory frameworks should require platforms to undergo independent audits for child safety, enforce transparency in data practices, and adopt age-appropriate design standards, as seen in the UK's Age Appropriate Design Code.

Other **preventive measures** should combine media education, parental support, and public campaigns that promote responsible adult behaviour. Experts recommend setting structured rules and agreements within families, gradually adapting them as children grow. Educational frameworks, such as Mediagroeilijn / Medianest, can support healthy media habits. Reducing institutional dependence on social media-such as in schools-could also help ease parental pressure. Screen-free spaces and times in schools, libraries and public places can offer meaningful alternatives to a blanket ban.

3. Recommendations

Society has a duty to ensure that children and adolescents grow up in safe environments - at home, at school, during leisure and sports activities, and in the digital space. This responsibility includes creating conditions that protect their physical, psychological, and emotional well-being across all settings, both offline and online. **This responsibility is shared and should not rest solely on children, adolescents or parents.**

Legal age limits could be a strong societal signal and a tool to support parents and delay exposure. While evidence on the optimal age for screen introduction remains inconclusive, studies consistently highlight risks such as sleep disruption, reduced physical activity, and exposure to harmful content. However, the lack of consensus on a "one-size-fits-all" age underscores the need for flexible, context-sensitive guidelines. We need also to take into account the risk of unintended consequences (such as driving use underground, creating stigma, or limiting access to beneficial resources).

Rather than an unspecific ban targeting all youth, it is thus necessary to provide a **comprehensive approach**. To act broadly and sustainably on the risks associated with the use of screens and social media, without losing possible benefits, it is essential that **prevention and support measures** combine awareness and education (digital and socio-emotional education for young people, training and support for parents, teachers and professionals in general), **environmental changes** (availability of offline leisure activities), **detection and support** (access to emotional, social, and psychological support, clinical interventions in cases of problematic or harmful use), as well as **regulation and accountability of platforms** regarding design, algorithms, and content moderation.

This approach should thus operate simultaneously at the levels of the community, school, family, health, youth, culture and media sectors, and the social media, gaming and video-sharing platforms themselves.

The recommendations presented here are the overarching, general recommendations, complementing the more specific recommendations formulated at the end of each chapter. They should be considered as a coherent set: acting on some recommendations in isolation will likely have little effect, whereas their **combined and coordinated implementation** is expected to make a meaningful difference. Importantly, the effectiveness of these recommendations will depend on how they are implemented, which requires close **collaboration with key stakeholders**, including policymakers, professionals, parents, educators, youth organizations, and the platforms themselves. Involving young people themselves in shaping these policies is considered essential to ensure that the measures are both effective and legitimate.

3.1. Cross-sectoral – Society as a whole

Objective: Establish an integrated and coherent national strategy aimed at creating an environment conducive to balanced and safe digital media use. We will suggest different aspects to mitigate the negative effects of screen use and fully add to the positive effects that screen use can have. These are not to be seen as separate elements but as elements that need to be connected. For example educational institutions should be able to actively engage with parents and families and at the same time messages and alternatives should appear in the community.

Recommended actions:

- Develop a **national / inter-federal plan for the prevention and regulation of digital use** that acknowledges the risks of social media without denying its social and developmental value, encompassing multiple sectors such as early childhood, education, health, media, youth, culture, equal opportunities, innovation, consumer protection, and justice, and ensure that this strategy is developed in close consultation with key stakeholders, including young people, parents, educators and professionals across sectors, researchers studying media uses and child development and community organisations.
- Ensure families have universal access to a **healthy environment and sufficient socioeconomic conditions** to enable quality education, appropriate cognitive and emotional stimulation, access to safe, inclusive and affordable green/blue spaces, play, leisure, culture, sports activities, and opportunities for peer interaction (see also SHC 9742, 2025), thereby allowing families **to offer meaningful alternatives to screen use**.

3.2. Public Health

Objective: Promote safe and age-appropriate digital use, strengthen the caregivers role as a protective factor, and ensure a **comprehensive continuum of care** – from prevention and early detection to timely support and treatment - for potential impacts related to screens and social media.

Recommended actions:

Primary prevention

- Provide opportunities for **positive digital and non-digital alternatives** including arts education, sports, youth work, etc., including for youth who reside in care and asylum facilities.
- Provide recommendations and **usage guidelines** for children's screen use, building on a comparison of existing frameworks (WHO, American Academy of Pediatrics, Sweden, Common Sense Media, current audiovisual and film rating systems, PEGI). These guidelines should move beyond simple age-based restrictions or screen-time limits and offer parents and professionals practical, age-appropriate tools that address the quantity, quality, context and type of use (e.g. messaging versus video-based platforms). Guidelines should highlight both risks and opportunities, and be formulated in an integrated way across health, education, welfare and media policies. In addition, their feasibility and effectiveness in real-life family settings should be studied, particularly how parents can realistically apply and implement them (e.g. "mediagroeilijn" where parents receive specific advice based on age of the child).

- Implement inter-federal **campaigns on the risks and opportunities** associated with screens and social media (with age-appropriate messages) and ensure that these are coordinated and supported through strong cooperation between regional and federal actors working on digital and media literacy, health prevention, etc., together with Betternet and BIPT.
- These campaigns should be accompanied by the identification and promotion of resources, tools and services that help protect against the risks highlighted in the campaign. Many good practices can be found on Parentsconnectés.be, Medianest.be, Mediawijs.be druglijn.be.
- Ensure that all adults in educational or caregiving roles (parents, teachers, youth work and youth care professionals, professionals working with parents and with people with disabilities, etc.) are aware of their crucial role as role models:
    - Develop **parenting support programs** (such as workshops, online tools, and community programs) including guidance on healthy screen use, parent-child dialogue, positive role models and active support for digital and media use, to help them navigate digital parenting challenges, especially in underserved communities.
    - Integrate digital and media literacy education into social and health services, by embedding awareness-raising and guidance on healthy digital use in everyday work with children, adolescents and parents.
- It is recommended to prioritize media education approaches that go beyond the transmission of technical knowledge (cognitive media literacy) and also foster young people's social and emotional development, including creative and critical thinking, emotional manipulation and power dynamics, emotional self-regulation, and constructive attitudes (affective media literacy). Such affective approaches have proven to be more effective in promoting critical reflection and sustainable behavior change, while having been identified as protective factors mitigating some risks brought by screen use. This media education should also be closely connected to comprehensive sexuality and relationship education.
- No scientific evaluations have been found regarding the national regulation of screen time for children and adolescents. It is therefore essential to emphasize that if such regulations are implemented, clear criteria for their evaluation must be established in advance. This means that specific methods and measurement tools need to be developed to assess the effectiveness and impact of the national regulations. Without these predetermined evaluation criteria, there is a risk that the regulations will not achieve the desired outcomes and that the effects on the target group cannot be accurately measured. Therefore, it is crucial to have a robust evaluation framework in place before proceeding with the implementation of such measures.
- Inform underaged users, their parents and their environment on the DSA, the rights children and their parents have, and the tools it offers to take action to the risks VPO's bring in cooperation with BIPT and the Belgian Safer Internet Centre Betternet.

Secondary prevention – early detection

- Provide support for accessible helplines and anonymous chat services, strengthen reporting hotlines, and build on existing good practices that deliver high-quality **online support and care** to address risks associated with smartphone and social media use, and to promote children's mental health and wellbeing.

- Digital environments are a major part of young people's lives. Awareness and sufficient knowledge of these environments are essential for (mental) health and care professionals working with youth and parents. Train mental health and frontline professionals (youth care, care for people with disabilities, people who provide parenting support, etc.) to prevent, identify early signs of problematic use and support healthy digital practices.
- Awareness of the associations between screen exposure, cognitive development, and neurodevelopmental conditions such as ADHD and ASD is crucial. Therefore, evaluation of screen exposure in childhood and digital media use should be included in diagnostic assessments of neurodevelopmental disabilities, through the use of validated instruments (PIUQ, IGDS, SMDS) and by favouring a qualitative and contextual approach that also takes into account circular inferences. Systematic data collection should be promoted to strengthen future research and clinical insights.

Tertiary prevention – support
- Facilitate access to support services, including online assistance (listening spaces, help messages, redirection to support services).
- Reinforce, develop and evaluate assistance programs to support adolescents experiencing difficulties with digital use to promote regulated use that is integrated into development.
- Pay specific attention to parents in migration, unaccompanied youth, in poverty, parents with children with disabilities, etc. to provide tailored support.
- Facilitate access to tools to report harmful content & practices (see also below, 4.2.6 Media & Digital Platforms).

3.3. Early Childhood (0–5 years)

Objective: Protect and promote motor, cognitive, language and socio-emotional development by minimizing early exposure to screens (especially earlier than 24 months), supporting age-appropriate use and strengthen other types of caregiver/parent-child interactions.

Recommended actions:
- Bring support and opportunities to parents to prioritize other types of caregiver/parent-child interactions such as communicating, reading, storytelling and playing to overcome the possible reduction or displacement of these crucial developmental activities by screen use.
- Integrate parental education and support into health services. Routine pediatric consultations and early childhood health services should systematically include guidance on healthy digital use, highlighting both the risks of excessive exposure and the benefits of real-life alternatives. This should be framed in supportive, non-judgmental language, avoiding blame or guilt for parents.
- Develop positive public campaigns to raise awareness among parents about balanced digital use, the importance of reducing their own screen use and the value of shared, real-life activities. Campaigns should focus on empowerment, providing practical suggestions for alternatives, and avoid stigmatizing parents.
- Safeguard developmental opportunities in childcare settings by avoiding passive or uncontrolled screen use. When digital media are used, this should be intentional, supervised, be limited in time in order to limit long sedentary time, and linked to developmentally supportive activities that promote interaction or learning and do not replace them.

- Guarantee safe and age-appropriate content by strengthening oversight of digital content targeted at young children on platforms such as YouTube Kids and similar services. Establish an independent advisory board to evaluate age appropriateness (e.g. cocomelon) and enable regulatory action under the DSA for mitigation measures.

3.4. Education

Objective: Establish balanced time between sedentary screen time and physical activity (in all intensities), balanced digital habits, reduce risky online behaviors, promote self-regulation, and protect mental health while considering developmental stages.

Recommended actions:

- Promote a **positive school climate** that supports mental well-being and reduces sedentary behavior.
- Encourage schools to adopt **multi-component approaches**, including curriculum adaptation, peer involvement, teacher training, and environmental strategies such as limiting screen access to purposeful, educational use during class hours (avoid using screens as a quiet-time or non-educational tool; if such use is taking place, parents need to be informed so they can adopt children's screen use at home). This ensures students continue to learn responsible digital practices even if access is restricted.
- **Schools play a pivotal role in reinforcing digital and media literacy and healthy screen habits. From primary school onwards, fund and integrate school age-appropriate programs** that address social and emotional education, critical thinking, responsible digital use, digital and media literacy (e.g. protecting online privacy, managing social connections, avoiding sharing sensitive information, understanding mechanisms), and (cyber)bullying prevention, as well as identification of procedures and resources when issues arise.
- Develop policies and best practice guidelines for daycares and kindergarten settings to ensure age-appropriate screen use (avoid using screens as a quiet-time or non-educational tool). If screens are used in class, parents should be informed.

3.5. Parents and families

Regarding the appropriate age for access to and use of smartphones and social media, the **SHC encourages families to adopt a balanced and developmentally sensitive approach**.

Taking age-appropriate measures will include the following.

- Positive communication about online experiences: give recognition to the fact that digital media are an essential part of the lives of most children and adolescents, even when they seem trivial or don't interest you. Discuss both the risks and opportunities they can offer, what the child feels gives themselves most benefit and what to do if they encounter something they don't feel comfortable with.
- Parents and caregivers gather hands-on experience: try to explore the digital media used by children and adolescents, you will feel more secure to talk about them and be better able to create a climate where sharing experiences is facilitated, which is good when everything goes well, but even better when something goes wrong online.
- Consider the individual child: potential risks and benefits of digital media can differ for every child and are influenced by factors like age, ASS, ADHD, social anxiety and depression. Take these individual differences into account when taking measures and discussing risks and opportunities with the child in question.

- Take the behavior of parents and caregivers into account: parents and caregivers need to model healthy relationships with digital media and smartphones. It is important to make time to bond and interact with a child, to help it learn language, develop socially and develop motor skills, etc. Busily using digital media all the time yourself, while your child is near, can interfere with that time and reacting anxiously to a child's screen use can prevent conversations that may mitigate possible harms.
- Provide structure for digital media use for your child, that adapts as your child grows or changes and as you have more conversations about it and remember these rules of thumb[14] :
    - Given the potential impact of screen exposure on young children's vision and development, the SHC recommends introducing screens (which cover all types of digital media, including smartphones, tablets, and gaming consoles) **no earlier than 24 months of age**. When introducing screens preferably do so **gradually**, with clear rules regarding content and duration.
      Parent-child **co-viewing** has been identified as possible way to mitigating negative effects of screen exposure on the child's language development and shared learning and foster positive outcomes.
    - **For children until the end of primary school**: setting **clear rules and creating structural habits** for media use (television, video, games ...) is beneficial. For young children this involve curation and supervision of their media use, as they grow this turns into more of a conversation.
      Although there is no scientific consensus on this matter, due to specific risks[15] linked to digital media **platforms for social contact and media, video sharing and online gaming**, the SHC recommends as a precaution:
        - No account creation before 13 years old **without parental consent**, in line with GDPR regulations, which prohibits the processing of personal data of individuals under 13 without parental consent, and without sufficient guarantees of age appropriate content and contact moderation and the limitation of engagement mechanics).
        - No passive use **without parental supervision**, when content moderation is also insufficient when using these media without account creation, algorithms can access device data to make personalized content recommendations and engagement mechanics are still active.
        - Other structural habits could be no smartphones during meals and no smartphones in bedrooms during sleep time.
    - **From 13 to 16**, the emphasis should shift to a **dialogue and conversations** on children's screen use, gradually teaching them how to take responsibility for their screen use, without necessarily removing all rules all together, and identifying formal and informal resources in case of issues encountered on

[14] Parenting should be viewed as a collective and evolving process; media education guidelines are best used as flexible reference points aimed at promoting balance, quality interactions, and open communication rather than strict compliance or perfection.

[15] for instance:

- contact possibilities that are insufficiently moderated and include the sharing of content, the possibility for conflicts and bullying and the unsupervised contact with strangers,
- content that is insufficiently moderated to be age appropriate,
- engaging mechanics that might contribute to addiction disorders (e.g. continuous personalized short-video feeds)

screens. Between the ages of 13 and 16, access to digital media should only be progressive and supported by **active parental mediation and media literacy education**.

- **From 16 on**, rules on screen use seem to mostly have a counterproductive effect, which does not mean that issues that arise with problematic use patterns shouldn't be discussed. If harms are observed on health, sleep, work, school, friends, because of the time that goes to screens, then this may be a problematic situation in which support is needed.

3.6. Media & Digital Platforms

Objective: Strengthen the social responsibility of private actors and enhance the protection of minors online (application of the DSA)

Recommended actions:

The SHC recommends following **the Guidelines on the Protection of Minors**, published on 14 July 2025 by the European Commission. These guidelines set out a non-exhaustive list of proportionate and appropriate measures aimed at protecting children from a wide range of online risks, including grooming, harmful or age-inappropriate content, problematic and addictive behaviours, cyberbullying, and harmful commercial practices.
Belgium could play a coordinating role at the European level to support the effective implementation of these measures. By fostering cooperation among Member States and sharing good practices, Belgium could help accelerate and harmonise the protection of minors online, while strengthening its leadership in European digital and child protection policies.

In particular, the following measures are recommended:

- Enforce **algorithm transparency** and age verification through implementation of the DSA and strengthen monitoring mechanisms (no self-regulation of the sector).
- Require "**safety by design**" standards for young users (default private profiles, positive nudges[16], content filters), and strengthen detection and moderation systems.
- Ensure that algorithmic recommendation systems are not automatically imposed on minors. By default, minors and their parents should have clear, accessible options to limit, disable, or adapt algorithmic personalization (in line with the DSA), reducing exposure to potentially harmful or addictive content such as endless scrolling, autoplay, and constant notifications, which pose particular risks for young people due to their still-developing self-regulation abilities.
- Strengthen reporting mechanisms for cyberbullying and harmful content. Make these mechanisms accessible for children, youth, and parents, and provide links to local mental health and support services (emotional, legal, informational). Consider including police or care professionals when appropriate.
- Systematically use data collected through these channels to inform, monitor and improve public policy.
- Encourage cooperation among authorities, researchers, and platforms to assess the effectiveness of measures.

[16] Subtle prompts that encourage healthy or prosocial digital behaviors

- Encourage cooperation so that new platform features are first assessed by an independent committee on how suitable they are for minors before social media platforms introduce them to minors.

In addition to the commission's directives, the SHC also recommends:

- Impose restrictions on user-generated content and on engagement promotional practices by alcohol brands and marketing for unhealthy foods targeting or engaging Belgian minors, to reduce exposure to potential harmful content and marketing (see SHC 9781, 2024 and SHC 9527, 2022).
- Maintain a clear distinction between video games and online gambling to reduce early exposure to gambling (see SHC 9526, 2020).
- Impose restrictions and ensure compliance with child-appropriate content in social media personalities (e.g. influencers) and advertisements targeting Belgian minors, including content that may negatively affect body image, mental well-being, or increase eating disorder risks.
- Encourage the use of child-appropriate devices and provide parents with information and guidance at the point of sale (physical or online shops, including telecom providers). Information should highlight potential risks (e.g. impact of selfies on body image) and include advice, warnings or support on responsible use when purchasing a screen (smartphone, tablet...).

3.7. Research

Objective: Establish an evidence-based national governance framework to better understand, anticipate, and regulate the impact of rapidly evolving digital environments on the health and well-being of children and adolescents.

Recommended actions:

- Establish an independent auditing centre, with the mandate (under the Digital Services Act) to directly access platform data. Its role is to monitor in real time which digital practices are prevailing among youth, to identify emerging risks in this constantly changing environment (‘moving target problem’), and to provide timely evidence to policymakers. In addition, specific protection mechanisms against SLAPP (strategic lawsuits against public participation) should be set up for researchers working with these sensitive data.
- Add the digital health of children and adolescents to the national health observatory (Sciensano), with a focus on the long-term monitoring of screen use and its impacts. This observatory should define standardized indicators (e.g. prevalence of cyberbullying, screen time patterns, health outcomes) and collect data in collaboration with the Belgian Safer Internet Centre (Vanwynsberghe et al., 2022), academic research groups, and the BIPT. The aim is to provide consistent, longitudinal data to support national health, education and media policies.
- Digital media are ever changing and evolving in a fast pace: research and policy advice should be able to react much faster. Therefore, support interdisciplinary research: fund studies on risky digital and media use and on effective interventions (digital therapies, family support, school programs, youth care support). The consistent identification of vulnerable groups-such as individuals with autism spectrum disorder, ADHD, depressive disorders, or social anxiety disorder-also underscores the need for further longitudinal and

mechanistic studies. Future research should aim to disentangle directionality, clarify underlying mechanisms, and inform preventive and therapeutic strategies tailored to at-risk populations (see also chapter 2.5 for the open research questions).
- Start a research track on the social use of AI and health and wellbeing, focusing on how children and young people use this and how their use of AI provides opportunities, support, risks and harm.
- Establish a cross-sectorial national advisory board to timely and regularly evaluate the potential risks associated with new technological developments

4. Considerations on implementation and future steps

4.1. Implementation

In implementing policy on digital media use we recommend that active input is sought from relevant **stakeholders** (youth, parents, schools, (mental) health and care professionals, police, etc. - by first establishing a comprehensive list of relevant, including field-based organizations and associations). This report has sought active input from stakeholders and implementation of policies will require to intensify this process. Policies must also account for **global and cultural diversity,** ensuring that recommendations are adaptable to different socioeconomic contexts and technological access levels.

Based on the current available data, implementing policy on the use of digital screens is unlikely to, on its own, be a sufficient or highly impactful intervention to reduce (mental) health problems in youth. Therefore, recommendations as laid out in the current report need to be part of an **integrative approach** and go together with other preventative actions to improve (mental) health in youth.

Implementation of policy actions should be accompanied by **research on the effects** of novel policies. This is needed since there currently is limited knowledge about the effects of policies such as age restrictions, smartphone bans, etc.

Many of the recommendations are based on group-level, preventive actions. For some youth, smartphone availability is essential for purposes of connectivity (e.g. hospitalized children), inclusion, and participation (e.g. translation, transportation, etc.). Policy should allow for consideration of particular, individual circumstances.

4.2. Future steps

The current developments in technology and AI give rise to novel products and possibilities that will come with profound ethical and health concerns and implications. The emergence of AI-assisted (mental) health is a good example. We urge for a more **proactive** approach to research and policy in this realm. That is, the current **reactive** approach where research and policy substantially lag behind novel digital developments can be considered suboptimal with regard to public health. A proactive approach could entail a more extensive evaluation of product safety before granting access to youth and adults, with stronger regulatory demands for companies on considering and documenting potential health risks as well as relevant other considerations (data management, privacy considerations, etc.).

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VI. COMPOSITION OF THE WORKING GROUP

The composition of the Committee and that of the Board as well as the list of experts appointed by Royal Decree are available on the following website: About us.

All experts joined the working group ***in a private capacity***. Their general declarations of interests as well as those of the members of the Committee and the Board can be viewed on the SHC website (site: conflicts of interest).

The following experts were involved in drawing up and endorsing this advisory report. The working group was chaired by **Ernst KOSTER**; the scientific secretary was Sylvie GERARD & Els TOBBACK.

CATTHOOR Kirsten	Psychiatry	UAntwerpen
CLOET Eva	Healthcare	UZBrussel
COLLARD Yves	Media education	Media animation
COUVERT Marie	Psychology	CH Pédiatrique Clairs Vallon
DECLERCQ Emmanuel	Psychology, psychotherapy	Private practice
DELESPAUL Philippe	Psychology	Maastricht University
DEMEULENAERE Andy	Media education	IMEC
DESMET Ann	Psychology	ULB
EGGERMONT Steven	Social sciences - communication	KULeuven
GEORIS Anne-Laure	Public health	AIGS
GIELEN Daan	Well-being	Vlaams Instituut Gezond Leven vzw
JACOBS Delphine	Child psychiatry	UCLouvain
KOSTER Ernst	Psychology	UGent
LIPKENS Luc	Public health-physical activity & sedentary behaviour	Vlaams Instituut Gezond Leven vzw
LORANT Vincent	Sociology	UCLouvain
MATTHYS Frieda	Psychiatry	VUB
MOMMERENCY Gijs	Psychology	UZGent
MORRENS Manuel	Psychiatry	UAntwerpen
MOTTRIE Cindy	Psychology	ULB
RESIBOIS Maxime	Psychology	CRéSaM
SABBE Bernard	Psychiatrist	UAntwerpen
SERVAIS Olivier	Anthropology	UCLouvain
VANCAMPFORT Davy	Physiotherapy	KULeuven
VAN DAELE Tom	Psychology	Thomas More University of Applied Sciences
VANDEBOSCH Heidi	Communication - Cyberbullying	UAntwerpen
VANDEN ABEELE Mariek	Digital culture - communication	UGent
VANDENBOSCH Laura	Media psychology	KULeuven
VANMARCKE Karen	Addictions	VAD
VERDUYN Philippe	Psychology	Maastricht University

WALRAVE Michel	Communication	UAntwerpen
WESTREICH Smadar	Psychology	VUB
WIJGAERTS Femke	Addictions	VAD
WILLEMEN Ronny	Psychotherapy	Integra Limburg
ZARBO Arnaud	Psychology	Nadja Asbl

The standing working group Mental Health has endorsed the advisory report. The standing working group was chaired by **Olivier LUMINET and Frieda MATTHYS**; the scientific secretary was Sylvie GERARD & Els TOBBACK.

BELMONT Angélique	Psychology	Centre Alfa
CARBONELLE Sylviane	Medicine	SOS Burnout
DE WILDE Joke	Ortho pedagogy	HO Gent
DE WITTE Nele	Psychology	Thomas More University of Applied Sciences
GILS Ann	Prevention	ICHO
GODDERIS Lode	Occupational medicine	KU Leuven
LAMY Dominique	Medicine	UC Louvain
LUMINET Olivier	Psychology	UC Louvain
MERTENS Serge	Psychiatry	Private Practice
NOLMANS Mattias	Experience expert	
SYMANN Sophie	Child psychiatry	UC Louvain
VAN DEN CRUYCE Nele	Sociology	KU Leuven

The following experts were heard but did not take part in endorsing the advisory report:

LIEVENS Eva	Law & Technology	Ghent University

The following firms/associations/etc. were heard:

BIOT Camille	Forum des jeunes
BONGARTZ Lara	Rat der deutschsprachigen Jugend
COMPERNOLLE Théo	Kids Unplugged
COPPENS Sabine	Kies Kleur tegen pesten
CRAEYNEST Lies	Kids Unplugged
DEBBAUT Yves	Opgroeien
DEFOY Tanguy	Ligue Bruxelloise pour la Santé mentale
MEYNS Lien	Kids Unplugged
MOERMAN Isabelle	Kinderrechtencommissariaat
NSANZINEZA Ange	Vlaamse jeugdraad
TARGNION Pierre	Délégué général aux droits de l'enfant
VAN PAEMEL Niels	Child focus
VAN ROY Astrid	Gezinsbond
VANDENBROECK Kris	Psyche
VANDEPUTTE An	Eetexpert

VII. APPENDIXES

Appendix 1 : Detailed recommendations on cyberbullying

Young people

As potential victims, young people should learn:

How to best protect themselves online (e.g. by using privacy settings, by not putting sensitive information online, by being selective with regard to the persons they "befriend" online…). In addition, studies indicate that promoting online media literacy is an important component of anti-cyberbullying (school) interventions.

Research shows that youngsters who spend more time online/on social media, and who engage in "risky" online behaviors, have an increased risk of cyberbullying victimization (for an overview of risk and protective factors, see: Chen et al., 2017; Kowalski et al., 2019). However, there are also studies that indicate that cyberbullying victimization might lead to more online media use (e.g. because victims are taking online revenge on their perpetrators, or are looking for online support) (Müller et al., n.d.).
For overviews of existing prevention and intervention programmes, see: Ang, 2015; Q. Chen et al., 2023; Doty et al., 2022; Gaffney et al., 2019; Heyeres et al., 2021; Kasturiratna et al., 2024; Van Cleemput et al., 2014).

- How to best cope with cyberbullying victimization (e.g. by not "bullying back", by talking to a trusted person such as a friend, a parent, a teacher, a health professional, or an online help platform…)

There is still a lack of (longitudinal) scientific evidence on what coping strategies work best for whom in which circumstances. However, preliminary findings suggest that receiving social support might prevent young people from becoming victimized online, but also buffers the potential negative outcomes of cyberbullying victimization (Espino et al., 2023; Macháčková et al., 2013; Raskauskas & Huynh, 2015; Sticca et al., 2015). It is important to note here that not only (off- or online) support from friends, parents, teachers, or other trusted people young people know in real life, might help. Research suggests that also online support (even from "online-only" friends) has benefits. (In a study amongst undergraduates (mean age 19.28)Cole et al., (2017) found that (1) for people with weaker in-person social support, social media sites provide a source of social support that is less redundant of the social support they receive in person; (2) in ways that were not redundant of each other, both online and in-person social support were associated with lower levels of depression-related thoughts and feelings, and (3) the beneficial effects of online social support (like in-person social support) offset some of the adverse effects of peer victimization.
In Flanders, a study found that young people who had been cyberbullied, also reached out to the forum of Awel (a helpline for youngsters), to receive emotional and informational support from other young people(Bastiaensens et al., 2019).

As potential perpetrators, young people should learn:

- How to deal adequately with negative emotions such as anger and boredom, that cyberbullying is not socially accepted, what the negative impact of cyberbullying is on the victim, what negative repercussions perpetrators might face (punishment by parents/school, exclusion from online services, legal consequences,…), etc.
- How they can engage in restorative actions (e.g. delete harmful messages, apologize towards the victims, etcetera). (Hendry et al., 2023).

Research shows that youngsters who spend more time online, have difficulties with emotion regulation, lack self-control/are more impulsive, and score low on empathy have a higher chance of being a cyberbullying perpetrator (Barlett et al., 2024; L. Chen et al., 2017; Guo,

2016; Kowalski et al., 2019; Pabian & Vandebosch, 2013; Vandebosch & Van Cleemput, 2009).
The scientific literature also suggests that the online environment might lead to "online disinhibition", which might have both negative as well as positive consequences (toxic versus benign online disinhibition effects). Factors that contribute to online disinhibition are: the indirect nature of the communication (making it difficult to see the immediate impact of one's action on the receiver), anonymity and the perceived lack of an authority (Suler, 2004).

As potential bystanders of cyberbullying, young people should learn:

- Not to (seemingly) approve/reinforce the actions of a person who engages in cyberbullying (e.g. by liking, commenting, or sharing a post) or to remain passive (i.e. not reacting) and to support the victim.

Research suggests that interventions that focus on changing the behaviors of bystanders of cyberbullying (turning them into "upstanders") might help to prevent cyberbullying as well as its negative (mental health) impact (e et al., 2014, 2015; Costa Ferreira et al., 2016; DeSmet et al., 2012; Pfetsch,, 2015; Rudnicki et al., 2023; You & Lee, 2019).

Parents

Parents also play a role in cyberbullying prevention, detection/reporting and intervention. They should guide their children's online media use, be aware of signals that might indicate their child's involvement in cyberbullying (either as a victim, bully, or bystander), react appropriately when they are aware of cyberbullying targeted at, caused or witnessed by their children. Moreover, parents should not only mediate their child's online media use, but also be a good (online) example themselves.

Research shows that cyberbullying often happens outside school hours and premises, when young people are at home. Systematic reviews and meta-analyses further indicate that the family environment can be a protective factor or risk factor for cyberbullying victimization and perpetration. Parental monitoring, perceived support from parents, and positive parental (communication styles) reduce the chances of cyberbullying involvement and attenuate its impact (Barlett et al., 2024; Elsaesser et al., 2017; Kasturiratna et al., 2024).

A meta-analysis on the effectiveness of parent-related interventions on cyberbullying amongst adolescents (Wang & Jiang, 2023), reveals that the existing parent-related programs have small effects on cyberbullying perpetration and victimization, and suggests that anti-cyberbullying interventions can further be improved by effectively enabling parent involvement, as well as increasing parenting skills, parent–child interactions, and communication.

Schools

Schools are thought to be an important actor in anti-cyberbullying programs, as cyberbullying often originates from traditional bullying in the school context, and also impacts the social relationships and the learning outcomes there.
Schools can undertake several actions to promote a positive school climate and reduce (the prevalence and impact of) negative social behaviours such as traditional bullying. Indirectly – since cyberbullying is often an extension of traditional bullying (cfr. supra) – this may also affect the prevalence of cyberbullying amongst pupils. However, the specific characteristics of cyberbullying, also require specific attention. Schools should raise awareness about cyberbullying (what is it?, what are its causes and effects?, and what can be done about it?) amongst their pupils (and the parents of their pupils), promote reporting cases of cyberbullying to the school staff, and try to adequately deal with cyberbullying incidents that occur.

Researchers have tested the impact of three types of programs (in educational contexts): (whole) school programs (primarily) developed to tackle traditional bullying (e.g. KiVa) ; (whole) school programs that have been developed to specifically address cyberbullying (and related online risks) (e.g. Media Heroes, Surf-Fair); and, integrated programs addressing both bullying and cyberbullying (e.g. NoTrap!, Cyber Program 2.0.). (For a detailed description, see: Vandebosch, 2019.)

These school programmes sometimes integrate technological tools (e.g. games) to address cyberbullying, illustrating that technology does not not only provide new possibilities for bullying, but also new opportunities for dealing with (cyber)bullying (Nocentini et al., 2015). Apart from tools embedded in a wider school-based program, there are also stand-alone technological tools (e.g. virtual mobile phone buddies or online tailoring websites for victims). Children and adolescents often find them attractive and like that they are available at a time and in a format they enjoy. Moreover, according to their developers, the technologies allowed: the simulation of real world experience; the practicing of new skills; tailoring; personalized feedback; and confidentiality.

Most meta-analyses conclude that school programs have a (very) small effect on cyberbullying victimization and perpetration – and thus are able to (help) reduce the problem (Henares-Montiel et al., 2023; Lan et al., 2022; Ng et al., 2022; Polanin et al., 2022). Currently, there are no convincing effects of these programs on (positive) bystander behavior (Henares-Montiel et al., 2023; Torgal et al., 2023). As for now, it is unclear what program components are (most) effective in creating change.
*Apart from the abovementioned programs, that often focus on educating students (as well as teachers and parents) about cyberbullying and how to prevent or deal with it, some studies have also looked at the impact of <u>smartphones bans</u> in schools. A recent scoping review (Campbell et al., 2024, p. 257) reported that the evidence was mixed and concluded: "*It is crucial to recognize that banning mobile phones and not banning other available internet connected devices in schools is a simplistic solution which seems unlikely to have meaningful impact. If students want to cyberbully, they could use any tool available to them at school, such as laptops, tablets, smartwatches or library computers. Cyberbullying usually happens outside of school hours and away from school grounds (Smith et al., 2008). It may begin in school in face-to-face encounters and be transferred online after school. Banning phones also has the risk of driving bullying behaviour underground or making them more devious (Brewer, 2014). Considered collectively, removing mobile phones from schools is unlikely to have significant impact on cyberbullying." *To the best of our knowledge there is no scientific evidence (yet) on the impact of age restrictions for social media on cyberbullying. On the one hand, one could argue that this might limit the opportunities for cyberbullying perpetration and victimization (as these platforms are currently being used by many young people, also for cyberbullying). However, in this case too, it is likely that the cyberbullying will transfer to those online communication applications that are still accessible to young people (e.g. messaging applications, game environments, and so on). This is also clear from cyberbullying research dating from before the rise of the large social media platforms. For instance, in the first large-scale cyberbullying study conducted in Flanders in 2005 amongst 2052 youngsters (in the two last years of primary school, and in secondary school) cyberbullying was equally present (and performed via the technologies and applications that were then available to, and popular amongst, youngsters, such as text messaging and Instant Messaging) (Vandebosch et al., 2006).*

<u>The police</u>

Although there are a number of arguments that would plea against the involvement of the police in cyberbullying amongst youngsters (e.g., the fact that (cyber)bullying is to some degree "normal" in the social development of youngsters and that offenders should thus not be criminalised, and the fact that not all forms of cyberbullying (e.g., massively defriending

someone) constitute a criminal offence), there are also some arguments that plea in favour. As mentioned before, since most cyberbullying takes place from outside school and outside school hours, it may not always be so evident for schools to mediate between, for instance, the victim and the perpetrator (and their respective parents). Hence, the (local) police might fulfil this role. The involvement of the police is also necessary in those cases where cyberbullying does represent a serious threat to the mental and/or physical health of the victim, and fast cooperation with the ISPs is needed to identify the perpetrator and to stop the crime. To summarize: the police should be contacted when the cyberbullying is (expected to constitute) a criminal offense (for more information on the legal qualification of different types of cyberbullying in different countries, see : Shariff, 2008; Walrave et al., 2009), and could be contacted for more ambiguous cases (and for tips on how to prevent all types of cyberbullying).

For an overview of police actions regarding cyberbullying in the Belgian context, see : Vandebosch et al., 2012.

Social media platforms

Throughout the years, social media platforms' views and narratives (as evident from, for instance, their policy documents) on who is responsible for addressing cyberbullying (and other types of online aggression, such as online hate speech) have changed. While originally they put much emphasis on the role of users, they gradually also acknowledged their own role, to then frame online aggression as a complex problem that needed collaboration with external actors (Dubois & Reepschlager, 2024). These trends also align with changes in views of policymakers, who first stimulated self-regulatory initiatives, to then create a legal framework. In Europe, for instance, Social Networking Sites worked with the European Commission to develop the *Safer Social Networking Principles for the EU* (Safer Social Networking Principles for the EU, 2009). In November 2022, the Digital Services Act (DSA) entered into force and was directly applicable across the European Union since the beginning of 2024. The DSA imposes special rules on "very large online platforms" (VLOPs) In practice, major actors (like Meta) have gone on to invest in the prevention, detection and redress of cyberbullying on their platform. With regard to prevention, social media platforms have become involved in large-scale awareness campaigns on cyberbullying, often collaborating with other partners, such as anti-bullying, e-safety and mental health organizations. Moreover, following 'safety-by-design' practices, and the philosophy of 'nudging'(Thaler & Sunstein, 2008), social media have been developing their platforms in such a way that these encourage safe and positive online behaviour, by making the default setting for young users' profiles 'private', for example, or by including messages such as "say something nice" in the space for typed comments. With regard to detection, social media platforms rely on monitoring and reporting systems (Van Royen et al., 2015). The outputs of such systems may be assessed by human moderators, who then decide whether action is necessary, and what should be done. Interventions may include removing content; blocking users; legal action; and offering support. In addition, several authors (Macbeth et al., 2013; Van Royen et al., 2017) have suggested that the outcomes of automatic detection systems may also be used for direct action targeting cyberbullies, supporting victims or encouraging bystanders to intervene positively. For instance, a reflective interface might encourage a cyberbully to 'think twice' before they actually post harassing content (Van Royen et al., 2017). Victims can be offered support, by referring them to relevant on- or offline services, and by giving them concrete advice about how to deal with cyberbullying, for example through typical instructive "help messages", or through stories about other victims' successful coping (Macbeth et al., 2013). In addition to automatic monitoring systems, social media platforms have also created reporting mechanisms which – at least in theory – might lead to similar follow-up actions by moderators.

Traditional (news) media

Content analysis of news media coverage of cyberbullying has revealed a range of different angles for presenting this topic: describing individual cases; offering research findings; and discussion of policy, action and/or interventions against cyberbullying (Vandebosch et al., 2013). These studies also indicate that media logics, such as focusing on sensationalism, and negative news, may explain the 'alarming tone' that is often used in these news reports, and the particular attention paid to cyberbullying cases that are linked with suicide (Milosevic, 2015; Young, Subramanian, Miles, Hinnant, & Andsager, 2017). This kind of news media coverage may be contributing to a 'moral panic' (Cohen, 1972), and to calls for repressive measures that focus on criminalizing cyberbullying and cyberbullies through new laws; and the use of restrictive and controlling measures by parents and schools, such as limiting youngsters' time spent online. A more 'educational', nuanced and 'trusting' approach is likely to have greater positive effect. (cfr. supra) (Vandebosch et al., 2013)

(Cyber)bullying has not only received attention in the news media, but also in popular media formats (e.g. films such as *The Social Network*, *Cyberbully*, and television series, such as *Glee)*.

Overall, research (Oppliger, 2013; Scheg, 2015) shows that fictionalised media coverage often has a strong focus on: a) suicide as an outcome of cyberbullying; b) cyberbullying as the 'revenge of the nerds'; c) girls as perpetrators and victims; and d) adults as offenders. This is not always in line with the research findings on cyberbullying. es to

While popular media representations of bullying and cyberbullying are sometimes regarded as raising public awareness, there are also possible negative effects resulting from misrepresentation. For instance, when media sources highlight unproductive coping strategies, including suicidal thoughts, young viewers may learn ineffective, or even dangerous, ways of dealing with aggressive situations. A stereotypical fictional portrayal of 'popular' students cyberbullying, that might also highlight positive outcomes of such activities, may implicitly promote such behaviour (Oppliger, 2013). Collaboration between media professionals and health professionals, who are also cyberbullying experts, would help avoid negative impacts and promote the positive benefits of media attention, including fictionalised film and television coverage. Previous research on other health-related topics has demonstrated the value of an Entertainment-Education strategy based on this type of collaboration. Such an approach is able to reach large and otherwise difficult to target audiences with positive effects on important behavioural determinants such as knowledge, attitudes, and belief in self-efficacy (Moyer-Gusé, 2008).

In Flanders, Belgium, the children's public broadcasting channel Ketnet has cooperated with the Youth Helpline (Awel) to create a fiction series, *D 5R,* that addresses different types of problems facing young people, including cyberbullying.

About the Superior Health Council (SHC)

The Superior Health Council is a federal advisory body. Its secretariat is provided by the Federal Public Service Health, Food Chain Safety and Environment. It was founded in 1849 and provides scientific advisory reports on public health issues to the Ministers of Public Health and the Environment, their administration, and a few agencies. These advisory reports are drawn up on request or on the SHC's own initiative. The SHC aims at giving guidance to political decision-makers on public health matters. It does this on the basis of the most recent scientific knowledge.

Apart from its 25-member internal secretariat, the Council draws upon a vast network of over 500 experts (university professors, staff members of scientific institutions, stakeholders in the field, etc.), 300 of whom are appointed experts of the Council by Royal Decree. These experts meet in multidisciplinary working groups in order to write the advisory reports.

As an official body, the Superior Health Council takes the view that it is of key importance to guarantee that the scientific advisory reports it issues are neutral and impartial. In order to do so, it has provided itself with a structure, rules and procedures with which these requirements can be met efficiently at each stage of the coming into being of the advisory reports. The key stages in the latter process are: 1) the preliminary analysis of the request, 2) the appointing of the experts within the working groups, 3) the implementation of the procedures for managing potential conflicts of interest (based on the declaration of interest, the analysis of possible conflicts of interest, and a Committee on Professional Conduct) as well as the final endorsement of the advisory reports by the Board (ultimate decision-making body of the SHC, which consists of 30 members from the pool of appointed experts). This coherent set of procedures aims at allowing the SHC to issue advisory reports that are based on the highest level of scientific expertise available whilst maintaining all possible impartiality.

Once they have been endorsed by the Board, the advisory reports are sent to those who requested them as well as to the Minister of Public Health and are subsequently published on the SHC website (www.hgr-css.be). Some of them are also communicated to the press and to specific target groups (healthcare professionals, universities, politicians, consumer organisations, etc.).

In order to receive notification about the activities and publications of the SHC, please contact: info.hgr-css@health.belgium.be.

www.superiorhealthcouncil.be

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