

Review

# Children's Vulnerability to Digital Technology within the Family: A Scoping Review

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**Abstract:** Children today experience digital engagement from a young age, and information and communication technology (ICT) use impacts how the family, seen as a social-relational structure or network of two or more people, communicates and interacts in daily life. This review broadly encompasses how children and young people are vulnerable regarding digital technology, focusing on diverse aspects of the family. The scoping review includes a final corpus of 100 articles broadly focusing on the term 'vulnerability' as it relates to digital technology and the family. The themes identified originate from the articles and describe five domains of vulnerability: (1) extensive Internet use, (2) age and gender, (3) risky online behaviour, (4) social networking as a social lubricant, and (5) parental mediation and care. The studies identified lean heavily on quantitative studies measuring time, whilst depth and context are less visible. Despite a growing body of research, there is a lack of both qualitative studies and research examining the role of technology in the lives of children and young people and how family dynamics are affected in the digital age.

**Keywords:** children; family; scoping review; information and communication technologies; vulnerabilities



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## 1. Introduction

Children today experience digital engagement from a very young age, and information and communication technology (ICT) use within the family impacts family communication and daily life. This review broadly encompasses how children and young people are vulnerable regarding digital technology, focusing on diverse aspects of the family. As presented by Seland et al. [1], the project uses a vulnerability and autonomy framework developed by Lotz [2]. Vulnerability is seen as an intrinsic, enduring aspect of being human, linked to every human's dependence on others and the affective, social nature of humans. In addition, children and young people constitute a vulnerable group due to their age and life phase, but vulnerabilities differ over time as well as due to context-specific, temporary, or enduring situations that may arise from personal, social, economic, or environmental conditions in one's life [2]. Vulnerability may arise from other, unmanaged, or poorly managed critical situations as well, undermining agency or exacerbating the sense of powerlessness [1]. Like vulnerability, autonomy is understood as being socially and intersubjectively constituted, and vulnerability and autonomy therefore coexist in a person [2]. Autonomy-generating experiences such as friendship, social support, learning, and development may increase individual resilience towards the vulnerability inherent in being human and part of the human world. Furthermore, this study aims to understand the conditions under which harmful versus beneficial effects occur in relation to ever-increasing ICT use among children and young people.

Family is understood as a social–relational structure or network of two or more people whose members share goals and values, have a long-term commitment, and often reside in the same household [1]. An important part of ‘doing family’ as a daily practice can be described under different care functions of the family. In terms of digital technologies in the family, the ‘caring for’, ‘caregiving’, ‘care receiving’, and ‘caring with’ of family members strongly impact the well-being of children and young people in the family [3]. The construction and shape of personal relationships among family members in their daily togetherness greatly affect the well-being of family members and their use of digital technologies. Children’s use of ICT is often the object of negotiation or conflict and may be handled differently in different families. Parents’ mediation strategies are typically the strongest with younger children and then decrease as the children grow older [1]. In terms of the effects of the use of digital technologies, it has been shown that the attachment of adolescents to parents has a significant effect on adolescents’ Internet use [4] and how children and young people experience relationships cultivated through online connections is highly dependent on family forms.

The scoping review focuses on (daily) practices in the family and connections to the family that establish and shape personal relationships between generations and, if necessary, between genders. The family is produced and exhibited daily by common practices, such as the management of balance within the family on different levels, the construction of commonalities, and care for each other [5]. As part of the family, children are considered competent and have an agentic role to play in their development while simultaneously being vulnerable. Changes in digital media environments and children’s use practices lead to changes in childhood and socialisation and in the development of their view of the world [6]. The insights presented about family and ICT use form the focus of this literature review, which aims to answer the following research question: What are the main conditions contributing to children and young people being either negatively or positively impacted by ICT use in the family?

This review systematically identifies and synthesises the literature on the conditions that contribute to positive and negative outcomes of children’s and young people’s use of ICT in families.

## 2. Materials and Methods

An extensive description of our method for undertaking a scoping review, based on Colquhoun [7] and Peters et al. [8] can be found in Seland et al. [1]. In presenting the protocol for the scoping review, Seland et al. (2022) describe the five steps in our framework<sup>1</sup>:

- (1) Identification of keywords. Our keywords were extracted from a first literature review by Lorenz and Kapella [9] and resulted in keywords in the following categories: target group (6 keywords), ICT usage (7 keywords), context (3 keywords), situational vulnerabilities (30 keywords), and autonomy (0 keywords). All the keywords can be found in the protocol [1].
- (2) Using all the keywords across the databases Academic Search Ultimate, Education Source, ERIC, SocINDEX, SCI-EXPANDED, SSCI, Arts and Humanities Citation Index, Emerging Sources Citation, Applied Social Sciences Index and Abstracts, PsychINFO, and Social Care Online.
- (3) Selecting studies, with two reviewers and the web-based review-tool Rayyan, and reading the titles, abstracts, and keywords of each result from the literature search. The scoping review included a total of 252 studies after the selection process, broadly focusing on the term ‘vulnerability’ as it relates to digital technology and family. Articles included in the first charting focus on aspects that either increase or decrease vulnerability in regard to digital technology. Further consideration of the 252 articles identified was based on the following inclusion criteria:
  - Studies written in English
  - Studies from Europe and the OECD area

- Studies focusing on the target age-group of 0–18 in combination with family
  - Studies that cover differences in background and differences in outcome
  - Studies published between 2011 and 2021
- (4) Charting studies by using a spreadsheet giving an overview of the research based on a cursory reading of the studies in full text. This process led to a final corpus of 100 studies published in the period 2013–2021. Following the criteria, European studies are mainly included in the review. However, due to their focus on the youngest adolescents and children (i.e., those below the age of twelve) in combination with differences in background and outcome, we included one study from Chile, two from the US, two from China, one from India, and five from Australia. The final corpus consisted of a total of 100 studies: 70 quantitative studies, 14 qualitative studies, 6 mixed methods studies and 10 review articles. Fifty-nine of the quantitative studies were surveys or questionnaires targeting adolescents aged 12–18 and/or their parents, and five were longitudinal studies. One survey was distributed to children younger than 12. The rest of the quantitative studies were tests or multivariate analyses. Within the qualitative paradigm, all studies were in-depth or focus group interviews. The interviews targeted adolescents aged 12–18 and/or their parents, except for one study where the researchers also talked to children younger than 12. This first scanning of the methodological approach indicated that few studies examined positive and negative influences through listening to children under 12, so the insights regarding the youngest children in the family were gained through answers from their parents. In this phase, 27 of the studies were excluded due to addressing obesity, sedentary time/physical activity, and screen time without also addressing situational and/or pathogenic vulnerability.
- (5) Synthesising the results through a descriptive summary that aligned with (a) the objectives and (b) the questions of the review. A thematic analysis of the 73 studies included in this final phase yielded five thematic categories.

### 3. Results

Organising the articles thematically, we were able to sum up relevant resilience-enhancing factors contributing to the well-being of children and young people and their vulnerability as (1) extensive Internet use, (2) age and gender, (3) risky online behaviour, (4) social networking as a social lubricant, (5) parental mediation and care, and (6) gaps in existing research. These themes serve as headings for the results section.

#### 3.1. Extensive Internet Use: A Well-Researched Topic

Globally, there is a relatively high focus on research investigating the relationship between parental mediation and concepts such as Internet addiction, extensive Internet use, or problematic Internet use. Even though the emphasis on such thematic approaches is less focused in Europe, 40 studies in our scoping review mention these terms. There seems to be strong evidence of the influence of family relationships on young people's Internet use or Internet addiction. Optimal parenting (i.e., the balance of emotional warmth and protection) and the adolescent's autonomy lower the risk of excessive Internet use (EIU) [10]. Interparental conflicts increase the risk of Internet addiction by weakening the parent–adolescent attachment pathway [11]. However, Uhláriková and Šeboková [12] show that a higher level of enmeshed cohesion among Slovak adolescents, characterised by strong emotional connections between family members, the mutual dependence between parents and children, and not having many friends and interests outside the family, increases problematic Internet use. Family affective involvement plays a moderating role in the relationship between temperamental lack of control and the salience of the Internet, such that Internet salience tends to be lower for those with high family affective involvement but higher when family affective involvement is low [13]. Gunuc and Dogan [14] show that adolescents spending time with their mothers have a higher level of perceived social support and a lower level of Internet addiction. Similar findings are found with regard to

the balance of emotional warmth and protection, which is deemed the strongest protective factor in terms of EIU. In contrast, other risk factors, such as lower socioeconomic status of the family and increased time spent at home, are seen as minimal [10]. Mothers' and fathers' parental responsiveness and care correlate with lower gambling outcome scores and overprotection with higher scores [15]. Moreover, research shows that boys, especially those living in urban areas, spend more time playing online games and tend to show more symptoms of online gaming addiction [16].

Trumello et al. [17] found that Internet addiction is often distinguished by social isolation and withdrawal, which they believe is consistent with their results showing a positive correlation with callousness, which is most closely related to a lack of empathy. Other studies suggest that boys approaching early adolescence tend to become more preoccupied with Internet use and that children who report having a more favourable relationship with their parents are less likely to have compulsive Internet use (CIU) [18]. A longitudinal study by Strittmatter, Parzer [19], which aimed at understanding the effects of the Internet on the emotional and social development of children and young people, suggests that the students in their study who had significant real-life problems were more prone to escape to virtual life. Thus, escaping from offline problems to a virtual life can reinforce already existing real-life problems. For adolescents with low and medium self-control, interparental conflict increases the risk of Internet addiction [11].

Certain studies examine how children with some types of disabilities are vulnerable to Internet overuse. For example, in a study including adolescents with Asperger Syndrome, depressive symptoms were found to predict higher scores on the Young Internet Addiction Scale (YIAS), while parental control may protect against it [20]. A focus on children with autism spectrum disorder indicates they might be more prone to problematic use of digital devices such as TV, phone, tablet, and computer, have longer screen time per day, and start to use electronics at an earlier age than other children [21]. A study investigating risk factors of problematic Internet use shows that inconsistent parenting has a mediation effect between ratings of hyperactivity and maladaptive cognitions in adolescents [22]. In contrast, in another study, most families in the autism spectrum disorder group state that using ICT affects their children negatively, especially in the social/emotional context, along with domains that involve communication, behavioural problems, and motor activity [21].

Likewise, problematic Internet use is higher among adolescents without parental control, so empowering parents to moderate their child's Internet use is encouraged [23]. Higher parental care and monitoring predict lower EIU in adolescents, while higher parental overprotection and lower socioeconomic status predict higher EIU [10]. Italian data show that perceived behavioural control determines higher risk perceptions of Internet use in adolescents [24]. High parental responsiveness (warmth) seems to exert a protective effect against such behaviour, although other studies suggest that the most beneficial parenting style is authoritative parenting, which includes high responsiveness and adherence to rules [25]. Miltuze et al. [18] suggest that when parents follow through on rules, this can serve as a protective factor in comprehensive Internet use.

Several studies investigate how parents' mental health and ability to connect to their children affect children's Internet use. Poor maternal mental health is associated with a decline in life satisfaction, while poor paternal mental health is associated with a reduced likelihood of stability rather than fluctuation [26]. Analysis of the connection between Internet addiction and the emotional quality of the relationship with parents indicates that lower levels of emotional quality in the maternal relationship as opposed to the paternal relationship are associated with higher levels of Internet addiction [17]. In addition, parents' interest in and readiness for parenting turn out to be critical factors in reducing the risk of Internet addiction [27]. Despite public concern surrounding the impact of digital media on today's children, children tend to use the Internet more often as a form of communication and entertainment when they have more digital devices at their individual disposal. As Camerini et al. [28] state, 'it is not certain from our data if this reflects a supply driven or demand-driven social phenomenon' (p. 2500). These researchers suggest that the

availability of digital devices for personal use does not depend on the socio-economic status of a child's parents [28].

Early adolescents and younger children find comfort and company in online activities that sometimes substitute for missing parent-related activities [29]. In some cases, the Internet offers the primary source of communication between children left in the country and their parents who live abroad for work. Consequently, constant access to the Internet may be one of the factors supporting the addiction to the Internet and computer games. Maftai and Enea [30] argue that a dominant permissive parenting style may increase the possibility of having Internet gaming disorder in early adolescence. One explanation is that a permissive type of parenting involves less control over the child's way of spending time, with less communication and discussion related to threats posed by Internet misuse or overuse [30]. Another paper argues that parents must be aware of the balance between monitoring their children's Internet use and children's right to privacy from their parents because children's right to privacy may contribute to fostering their future capacities for autonomy and relationships [31].

In the field of extensive Internet use amongst children and young adolescents, the communicative climate within the family seems to matter. Inconsistent parenting, interparental conflicts, and lack of parental control seem to negatively affect Internet use, whilst warm and close relations combined with an authoritative parenting style seem to regulate Internet use in beneficial ways. Socioeconomic background, different disabilities, children having few friends, and fear of isolation in real life seem to contribute to a higher risk of extensive Internet use.

### 3.2. Age and Gender

Adolescents who visit social networking sites more often are more likely to be older, have started using the Internet sooner than their peers, seek friendships, and try to escape from everyday life [32]. Thus, while online socialisation can be challenging, it seems that age, as well as the quality of the relationships, is important in reducing vulnerability [24]. Moreover, age is a factor that can have an influence on a greater perception of risk in different uses and areas of the Internet [33]. Children start playing computer games in early childhood. In accordance with existing literature, Segev et al. [34] find a correlation between having emotional or behavioural difficulties, spending more time using computers, and finding it harder to disengage from the computer. Interestingly, this difference is evident only when computer screen time is assessed: no difference is found in smartphone or small-screen gaming use. The results suggest that computer screen time follows an age-based course, and over-use must be examined within the context of age [34].

Age and gender play significant roles when parents consider the health implications concerning an appropriate balance in their children's activities, particularly for the youngest children. Family routines and parents' perceptions of children's media use are the closest predictors of their strategies supporting children's media use at home and children's actual engagement with technology. Studying adolescents' excessive use of social networks shows that protective factors against excessive behaviour are conscientiousness, the existence of rules, and being a boy [35]. Parents of boys are more concerned about the consequences of media use on their children's health than parents of girls [36]. The moderating role of positive mother-adolescent relationships in the association between social media use and body dissatisfaction is equal for both genders [37].

Age, in social media use, is positively associated with self-concept clarity. On average, older adolescents tend to report higher levels of self-concept clarity than younger adolescents. Boys are more likely to report higher levels of self-concept clarity. At the same time, girls are more likely to report high-quality friendships [38]. Gender can be one of the predictive variables of the perception of risk for dysfunctional online activities, especially for girls, but elevated family communication can lead to reducing Internet use [24]. The most consistent factor in studies on social media is gender, with girls experiencing the

largest decline in happiness and being more likely to have a worsening trajectory over time than boys [26].

While gender might be a protective factor in predicting excessive use of social networks, it does not seem to be a protective factor when looking up pornography online. According to Sevcikova, Serek [39], adolescents are reluctant to discuss pornography with adults, but girls, in particular, do discuss their online experiences with peers, and this increases with age. Furthermore, researchers in this study do not find any specific pattern of individual-level predictors for intentional or unintentional exposure to such sexual material on the Internet other than gender factors, indicating that both sexes use it to learn about sexual relations, but boys use it to a larger extent for their own arousal [39].

As shown, several of the studies investigate how age and gender may contribute to resilience and vulnerability when it comes to ICT use in the family. There are, however, few clear answers except for the findings showing that age and gender matter in how parents address their children's Internet use, screen time, and online gaming. Although children themselves point to the positive effects of being online, they also point to bad things, such as viruses, bullying, and people not being honest online. If children do not recognise these issues, it may be difficult for them to understand the aims of media education [40]. This seems to be a field in need of more nuanced research.

### *3.3. Risky Behaviour Online and Exposure to Sexual and Harmful Content*

Adolescents have a lower perception of the risks involved in Internet and digital technology use than adults, indicating the need for adolescents and adults to collaborate to prevent Internet risk behaviours [33]. At the same time, research by Sevcikova et al. [39] shows that adolescents are reluctant to discuss a theme such as pornography with adults, possibly indicating that this field of knowledge is not easy to access. Not only is exposure to sexual material a threat to the well-being of children and young people, but a consequence of an increasingly digital world is that the threat of online child sexual abuse can increase. Currently, relatively little is known about the effects of online child sexual abuse, according to a recent study by [41]. These researchers argue that technology-assisted child sexual abuse is no less impactful than offline-only sexual abuse, but the technology aspect creates additional elements for young people to contend with. Such experiences can lead to a sense of powerlessness, anxiety, despair, and depression [41,42]. In addition, parents or carers often accidentally discover online harm, leading to a sense of guilt for not questioning their child's unusual behaviour and being unaware that the Internet posed a danger [43]. As such, parental knowledge and involvement in mediating teenagers' online activities are found to positively predict teen digital citizenship [44]. Bell [45] suggests that the Internet offers vast scope for practice and prevention efforts under certain circumstances. Owing to their unique features, online support groups may be particularly suited to the psychological needs of young people who self-harm and experience suicidal crises compared to face-to-face help [45].

Regarding risk factors and the use of social networks for social support, Malo-Cerrato et al. [35] focus their research on factors that predict excessive use of social networks in adolescence that can help prevent problems such as addictive behaviours, loneliness, or cyberbullying. A systematic review by Best et al. [46] includes 43 papers which focus on the effects of online technologies on adolescent mental well-being or related concepts. Harmful effects of online technology include exposure to harm, social isolation, depression, and cyber-bullying [46]. Children and young people who are currently experiencing mental health problems are more than three times more likely to have been bullied online in the last year [47]. According to Best et al. [46], cyberbullying is associated with increased depression and is thus a real risk to adolescent well-being, as such instances of cyberbullying can increase vulnerability. Those more likely to experience cyberbullying are adolescents who are younger, male, have spent long hours on social media, and have lower family socioeconomic status [48].

Results of research using a social-ecological framework, which focuses on the family, peers, and school contexts, show that strong relationships within these contexts are associated with fewer experiences of cyber-bullying [48]. Interestingly, Baldry et al. [49] find that parental monitoring online could protect children from cyberbullying and cybervictimisation, but this depends on whether their children perceive adults as competent and how much children feel that parents can support them rather than intruding in their lives, controlling them, or removing their devices. Parenting practices such as indulgent parenting, characterised by acceptance and involvement, have been shown to be the most protective parenting style in terms of cyberbullying, while authoritarian parenting, characterised by the use of physical and verbal coercion and privation practices, has been linked to a higher risk factor for cyberbullying and traditional bullying victimisation, especially for boys in the case of traditional bullying [50].

Indulgent parenting, characterised by acceptance and involvement practices, is the most protective style across all the outcomes analysed. This style can be a protective factor for traditional bullying and cyberbullying victimisation. Furthermore, the protective and risk effects of parenting over cyberbullying are consistent for boys and girls [50]. Floros et al. [15] show that parental bonding is more effective than parental safety practices and, in fact, that 'affectionless parental control' and gender are significant in terms of the increased prevalence of online gambling. Interestingly, research suggests that being in the middle in a mother–father conflict significantly predicts adolescents' social media addiction [51].

As shown in this section, children access a range of potentially harmful content online. Complex topics such as bullying and sexual content are hard to address, and children seldom talk to adults about them. Parenting styles characterised by acceptance and involvement can act as a protective factor. Children seem to need more understanding than control when they access harmful content, and boys seem to be more exposed to diverse harmful content than girls.

### *3.4. Social Networking as a Social Lubricant*

Davis [38] dispels the myth that parents and peers represent opposing influences on adolescents and show how parent and peer relationships work together to impact adolescent identity. Specifically, the experience of positive mother relationships positively impacts levels of self-concept clarity, partly due to the mediating role of high friendship quality [38]. Adolescents experiencing harmful behaviour online report no significant differences in the level of support they report either in total or specifically from family, significant others, or friends. While some participants in a study by Hamilton-Giachritsis et al. [41] found their parents were supportive, for several this was not the case, and then friends were of great importance [41].

Video games are sources of family interaction, particularly for males in the family, and are suggested to be one of children's means of deploying power within the family context, as they are utilised as a source of family socialisation or withdrawal from it. A shared interest in games also seems to assist in bonding and cooperation among siblings [52]. Notably, the general impression formed from the sampled group in the study by Bassiouni and Hackley [52] shows that video games are an essential part of children's lives, especially for boys. Moreover, this study shows that boys and girls like different games, and there is a different dynamic in the social role of games in their respective identity strategies [52].

The potential positive effects of ICT are noted in the context of making, maintaining, and building upon family relationships and friendship quality in adolescents [38]. However, despite the potential of social media as a new channel of communication, they are not utilised or supported by foster carers or social work practitioners, who tend to view this new channel of communication as a risk or a nuisance [53], despite studies showing the number and quality of connections established through social networking can become a much-needed social lubricant in adolescence [54]. Research on children in foster care shows that young people are not passive recipients of their familial and friendship networks and

perceive these networks more as ‘staying in touch’, allowing them to control the ‘who, how, and when’ of their relationships [53]. Rather, using mobile communication devices and the Internet provides young people in care with a degree of independence, control, and freedom from scrutiny that are not traditional features of life in care systems [53]. Furthermore, research shows that adolescents living in foster or residential care can use previously experienced relationships cultivated through online connections, which are helpful in transitioning beyond care. They may also be able to tap into the potential to make use of social capital cultivated in these relationships [53].

Tuukkanen and Wilska [40] explore the general change in sociability in children’s life. According to them, face-to-face social contact has decreased because it is physically easier to chat with friends in online environments than to go out and play [40]. Conversely, research suggests that a higher number of online friends is associated with increased negative online experiences, such as embarrassing posts online, or risky activities, such as frequently chatting with strangers [55]. Several studies are designed to examine the differential contribution of various forms of parental mediation and beneficial and risky digital behaviour. Regarding social media use, risky behaviour online is measured by the frequency of posting personal details, sending insulting messages, and meeting face-to-face with a stranger met online. Only restrictive parental supervision has a significant effect, and such supervision actually increases adolescents’ risky behaviour online [56].

Specific challenges in the digital era emerge for parents of children with intellectual disabilities when their children seek participation in online communities. According to parents, these young people encounter barriers due to their lack of reading skills, and they have difficulties generalising from one situation to another, so they might need support every time they enter, for example, an official website [57]. In particular, parents of children with intellectual disabilities perceive that the Internet is an arena that can help their children be more involved in social life. This perception is particularly likely to be expressed by parents of young people who have few social interactions outside school and experience difficulties in making social contacts, even though the connection online does not always proceed smoothly. At the same time, parents are concerned that these young people do not have enough knowledge of netiquette and that they find it difficult to read and interpret the subtle codes, which, in turn, contributes to their sometimes ending up in situations where they are either considered to be behaving badly towards others or, more frequently, do not perceive when others are mean to them [57].

Parental efforts to monitor their adolescent’s whereabouts, activities, and contacts appear to reduce both exposure and vulnerability to (possible) media effects [58]. Another study points to how parental control moderates the association between low self-control and offline and online delinquency [59]. However, parents’ use of technical controls proves to be equally ineffective in averting children’s CIU, with associations similar to those of parents forbidding certain activities [18]. Strict parental rules about Internet and smartphone use before sleep might prevent negative consequences of social media use at bedtime and sleep quality, but only among less engaged social media users [60].

Sen [61] underlines how virtual relationships and self-expression on social networking sites can be central to young people’s identity even if the family dimension is not present due to the specific situation of the children. Parental monitoring of social media is not, however, associated with adolescent adjustment [62]. Nevertheless, other studies on social media suggest that high use of social media is found to be significantly associated with a change in happiness scores but not with worsening life satisfaction trajectories [26]. Regarding parental bonding factors, care functions as a resilient factor in adolescent motivations for participation in social networking, whilst overprotection contributes to vulnerability amongst children and adolescents [32].

The body of research in this area shows how children and young people use social media as an important arena for establishing contact and developing their social skills. Open communication and parental mediation seem to strengthen young people’s ability to use social media wisely.



### 3.5. Parental Mediation and Care

Four types of bonding are extracted in a majority of the studies, care reflects parental warmth and affection versus indifference and rejection, and control reflects parental control and intrusion versus encouragement of autonomy and independence. Exposing a child to affectionless control in early life seems to predispose them to maladaptive relationships with others in later life [63]. There is also evidence that family support, social bonds, and the affective involvement of family members affect children's and young people's well-being [42].

Children engage in a wide range of screen-based and non-screen-based sedentary behaviours at home, of which socialising, indoor playing, TV watching, and using a tablet are the most common [64]. Among UK parents, there is a strong sense of the need to ensure a balance in children's digital and non-digital engagement [36]. Many parents agree that children's use of online environments should be controlled at home, and most parents do this, according to some of the research identified by Tuukkanen and Wilska [40]. Furthermore, parents are considered important role models through their own use of digital technology. Bayraktar [65] shows that parental mediation strategies may differ depending on the context. A qualitative study shows that preschool children between the ages of five and six think their parents spend too much time on the Internet at home and that parents' activities online are centred around playing games, browsing social media, messaging, and watching TV series and soccer matches [66]. Moreover, the children in this study talked about feeling unhappy, lonely, bored, and angry when their parents were online [66]. Parents sometimes focus on their own emotions and spend time on the Internet searching for things that worry them, exemplified by COVID-19 [67]. Unlike peer-related loneliness, perceived loneliness in the relationship with parents does not, however, predict problematic Internet use per se [29].

Being in a supportive family contributes to both a significant increase in life satisfaction and a greater likelihood of stability rather than fluctuation [26]. The social environment, including parental social support, emerges as having a significant influence on children's activity [68]. Parents describe their support as being very much about improving the young person's understanding of social codes and netiquette, as well as understanding instructions and, for some young people, the technology as well. Among other strategies, several parents are 'friends' with their children on different social media as a means of discussing issues with their children if they write or perceive any comments on social media that can be emotionally distressing [57]. Parents having more control over the time their child spends on social media, including the use of apps or software programmes or through encouraging their child to think critically about potentially harmful content, is associated with better pre-adolescent mental health [69]. Children mention parental rules as an important factor in limiting their screen time [68]. Dumuid et al. [70] find that children with fewer electronic devices, particularly in their bedrooms, participate in less screen time, regardless of socioeconomic status, while research by Appelhans et al. [71] shows that the physical and social home environment, including screen time and sleep duration, may promote childhood overweight/obesity in low-income households. While parental control is important in terms of vulnerability, parents' attitudes are seen as crucial in realising the benefits of the pedagogical potential of technology. Open family communications about Internet use, where children can share their online experiences with their parents, can be a protective factor against cyberaggression and involvement in cybergossip [72]. Elevated problem-solving capacity and family communication can also reduce children's Internet use [24].

Bassiouni and Hackley [52] point to ways in which children exhibit their own agency, for example, children who can develop economic literacy in negotiating with parents to obtain the latest games or consoles by searching offers and utilising birthday money, offering to do jobs around the house, or even buying games jointly with adult family members. More comprehensive access to ICT as early as elementary school has resulted in distinct profiles of use by children, which appear to be linked to different family resources

and diverse parental involvement concerning regulation and support [73]. For most parents, devices such as tablets are seen as a toy for younger children, especially those below the age of eight [74].

Daoud et al. [75] identify that parents are overwhelmingly positive in terms of their own digital competence when measuring digital competence and Internet access at home. Parents categorised as supportive and non-controlling, in particular, fell into the group of digitally competent parents. In contrast, Siomos et al. [76] find a lack of digital competence amongst parents and argue that parents should be trained appropriately so they can become more involved in supervision but to a degree that does not curtail autonomy. Siomos et al. [76] underline how affection and care, including an understanding of children's need for individuality and self-expression, are expected to make children more responsive to prevention efforts based on how parents describe their involvement. Only restrictive parental supervision significantly affects adolescents' behaviour on social media; such supervision increases adolescents' risky online behaviour, and peers are of great importance to those with restrictive parental supervision [56]. Inconsistent parenting may inadvertently encourage adolescent maladaptive cognitions or unfounded beliefs regarding the trustworthiness of friends online [22].

Parents have power in choosing what to share online on behalf of their children. Children want to be asked about and listened to before their parents 'sharent', that is, share stories or images about them on social media [77]. Adolescents who are more concerned about their online privacy are more likely to disapprove of sharenting; however, female adolescents or adolescents who are closer with their parents have more positive attitudes toward the practice [78].

The body of research in this area points us in the direction of the great importance of parental involvement in the lives of young children and adolescents. The research also indicates a need for digital competence amongst parents and areas where they can acquire such knowledge. It also seems important to develop areas where parents and children can discuss the balance between monitoring and respecting children's right to privacy, and there appears to be a lack of knowledge about how and why parental style and contextual factors interact in creating negative or positive impacts on children's use of ICT.

#### 4. Gaps in Existing Research

The positive and negative effects of ICT use refer to pressure to adapt, cyberbullying, exposure to indecent/inappropriate content, problematic Internet use, social media dependency, family conflicts, parental mediation, and risk of sexual abuse [25,75,79]. Children's online life can cause difficulties or conflicts within their families, and vulnerable children are at risk. Muniz [80] shows that teens being violent with their partners in an online environment indicates higher levels of family conflict, especially for girls. It seems important to look at the online socialisation context, together with that of the family and school, due to its relevance to and impact on the daily lives of teenage boys and girls today [80].

Regarding protective conditions, several studies highlight social support and social connectedness [35,48,81], including family climate [37,50,80]. Furthermore, parents are considered the most important partners for young children's interaction with ICT, and it is to be expected that the effect of digital media will depend on parents' choice of suitable media and the support of their children. However, the effects of ICT and social media differ from person to person and depend on how individuals process their experiences [37]. Within particular settings, the effect of technology use may be influenced by a complex pattern of understanding the purpose of use and the participants involved, all of which influence each other [37,48,55,75,82,83].

The review has also shown how parental mediation and parenting style, different family members, and peer involvement in digital activities matter. This suggests that thinking about conditions contributing to children and young people being either negatively or positively impacted by ICT use in family settings requires a shift in research focus to access the nuances and complexity of the field. Based on the studies presented, there

seems to be a need for more studies addressing parental mediation style due to the great importance of parental involvement in the lives of young children and adolescents. There is a lack of knowledge about how and why parental style and contextual factors interact in creating a negative or positive impact on children's use of ICT. The review has shown that 'effective' mediation depends on different factors, described as vulnerabilities, such as age, gender, environment, and how many friends the child has. However, there is some consistency in research suggesting that an open parental style can contribute to children's resilience in handling risks better, whilst a strict, rule-based mediation may work as a negative factor and increase children's vulnerabilities due to limited experience and lack of digital competence. The research also indicates a need to better understand digital competence amongst parents, indicating that parents' digital competence affects how they develop their mediation strategies.

## 5. Concluding Remarks

Through broadly focusing on the term 'vulnerability' as it relates to digital technology and family, the research identified in this scoping review identifies several factors contributing to the vulnerabilities and negative effects of children's lives online. The body of research suggests that online friends can contribute both positively and negatively to well-being [46], and adolescents' digital skills positively predict both online risks and opportunities [84]. The Internet can provide social support but may create the foundation for serious addictions due to low levels of perceived social support [14]. These findings highlight how previous research in many ways over-emphasises the harmful aspects of ICT. When addiction is measured in time spent with a digital device, without examining what the device is used for, the research may be in danger of, as McCrory et al. [85] point out, leaning heavily on quantitative studies measuring time whilst depth and context are less visible. This shortcoming in existing studies suggests the need for more qualitative research examining the correlation between membership of social groups, the feeling of loneliness, parents' mediation, and children's well-being. There are potential positive effects of ICT on children's and adolescents' social life, yet there is a lack of research examining the role of technology in the lives of children and young people and how family dynamics are affected in the digital age. The studies pointing in the direction of the importance of context have started this work, but knowledge about how and why parental style and contextual factors interact in creating a negative or positive impact on children's use of ICT is still in need of more research.

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## Notes

- <sup>1</sup> A thorough protocol of the systematic review, including the design, identification and use of keywords, the study selection, the process of extracting and charting results and the synthesis process, can be found in Seland et al. (2022).

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