

Questionnaires used to explore the perspectives of parents and health professionals on young children's use of technology: A systematic review

Charlotte Lund Rasmussen, Ivan Pui Hung Au, Danica Hendry, Amber Beynon, Sarah Stearne, George Thomas, Kate Mannell, Lisa Kervin, Susan Edwards, Courtenay Harris, Leon Straker, Juliana Zabatiero

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Abstract

Background: Technology is integrated into children's daily lives, with parents' and health professionals' perspectives shaping children's technology use. Measuring and understanding these perspectives is essential for developing strategies for supporting adults in decision-making that help children thrive in a digital world.

Objective: This systematic review aimed to investigate questionnaires that have been used to assess parents' and health professionals' perspectives on young children's use of technology related to health, wellbeing, and development. The secondary aim was to synthesize findings on these perspectives.

Methods: Peer-reviewed articles published between January 2010 and September 2024 were identified through searches in seven electronic databases. Studies were included if they examined parental or healthcare professionals' perspectives on technology use among children aged birth-5 years. Two reviewers independently conducted the data extraction and quality assessment. Deductive thematic analysis was utilised to explore the content focus of the questionnaire used in the included studies and synthesise the reported perspectives.

Results: Eighty-five studies were included, all involving parents. No study investigated health professionals' perspectives. The methodological quality of questionnaires used was generally low and only 39 studies reported psychometric properties of the questionnaires used. Of these, 15 studies reported more than one measure of validity or reliability. Seventy-five studies reported participants' perspectives on children's technology use. Findings revealed that parents generally supported the role of digital devices in enhancing learning but expressed concerns about potential negative impacts on children's physical health, emotions, and behaviours.

Conclusions: Parents' perspectives on children's technology use are frequently assessed through questionnaires, though the quality of these questionnaires was often poor, with limited psychometric testing. Parental perspectives were mixed with educational benefits being recognised but countered with concerns about the impact on children's physical health and development. High-quality tools are needed to generate stronger evidence informing strategies to support families in technology decision-making with children.

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Original Manuscript

Title Questionnaires used to explore the perspectives of parents and health professionals on young children's use of technology: A systematic review

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Methods: Peer-reviewed articles published between January 2010 and September 2024 were identified through searches in seven electronic databases. Studies were included if they examined parental or healthcare professionals' perspectives on technology use among children aged birth-5 years. Two reviewers independently conducted the data extraction and quality assessment. Deductive thematic analysis was utilised to explore the content focus of the questionnaire used in the included studies and synthesise the reported perspectives.

Results: Eighty-five studies were included, all involving parents. No study investigated health professionals' perspectives. The methodological quality of questionnaires used was generally low and only 39 studies reported psychometric properties of the questionnaires used. Of these, 15 studies reported more than one measure of validity or reliability. Seventy-five studies reported participants' perspectives on children's technology use. Findings revealed that parents generally supported the role of digital devices in enhancing learning but expressed concerns about potential negative impacts on children's physical health, emotions, and behaviours.

Conclusions: Parents' perspectives on children's technology use are frequently assessed through questionnaires, though the quality of these questionnaires was often poor, with limited psychometric testing. Parental perspectives were mixed with educational benefits being recognised but countered with concerns about the impact on children's physical health and development. High-quality tools are needed to generate stronger evidence informing strategies to support families in technology decision-making with children.

Keywords: measurement tools; questionnaire validation; early childhood; digital parenting; digital age

Introduction

Technology is now an integrated part of many children's daily lives (1-3). Technologies used by children encompass both screen-based (e.g. tablets, smartphones, and computers) and non-screen-based (e.g. smart toys and interactive learning tools) technologies (4). Recent survey data from the United States of America suggests that children under the age of 8 years spend ~2.5 hours/day on screen devices and that more than half of 4-8-year-olds have their own tablet device (3). In Australia, children under 2 years of age spend, on average, 12.2 hours/week on screens, and 2-6-year-old children spend 25.9 hours/week (1). Moreover, a third of 3-6-year-olds and 17% of children under the age of 3 years are reported to own a personal mobile screen device (1). The rise in young children's technology use has been accompanied by an increase in research assessing potential benefits and harms of such use on children's health, wellbeing, and development (5). On the one hand, some research suggests that technologies can enhance learning, language development, creativity, and support social connections (6-9). On the other hand, excessive screen time has been associated with negative health effects, including sleep disturbances and obesity (10, 11). Moreover, exposure to inappropriate content has been linked to emotional and behavioural challenges such as attention issues and anxiety (7). These mixed results highlight the complexity of technology's role in the health, wellbeing, and development of young children (birth-5 years), and how factors such as content, context, and duration of use can influence technology's role (12).

Children's interaction with technology happens within a system, whereby multiple factors influence how children use technology (13, 14). One of these factors is the perspectives (i.e. beliefs, attitudes, and viewpoints) of key adult figures in children's lives, including parents, educators, and health professionals.

Parents are present in daily environments which enables them to set rules, provide supervision and engage in children's technology use, and can be considered the primary influencers and mediators of their children's technology use. Thus, their perspectives may influence children's use of technology and its impact on their health, wellbeing and development (15, 16). Research suggests that parents hold mixed perspectives on children's technology use, mirroring broader public debates (17). Three systematic reviews found parents to have concerns about potential negative impacts of screen time on children's physical health and social skills, as well as the risk of exposure to inappropriate content and development of addiction (18-20). In contrast, the review by Choy et al. (2024) also found parents to have positive views on technology in relation to enhancing learning skills, creativity, digital literacy, and social-emotional development. While these findings provide some insights into the complexity of parents' perspectives toward technology, the reviews by Chong et al. (2023) and Visier-Alfonso et al. (2023) only considered qualitative studies (18, 20). Moreover, Chong et al. (2023) did not investigate positive views on screen time, and the reviews by Visier-Alfonso et al. (2023) and Choy et al. (2024) only included studies that reported on technologies used to support physical activities (20) or were internet-based (19).

Health professionals, such as medical doctors, child health nurses, and allied health professionals, are a trusted information source (16) who provide recommendations on healthy technology use which parents often rely upon to make informed decisions about their children's digital engagement. However, their perspectives on children's technology use have not been systematically investigated and synthesised. Educators play a crucial role in enhancing learning experiences and digital literacy within the early learning and school environment and in supporting parents (15). The perspectives of educators on children's technology use have been extensively discussed (15, 21, 22), and appear to reflect the broader community and parent perspectives. Specifically, educators have been found to hold positive views on the use of technology to support learning and engagement, while also expressing concerns about exposure to inappropriate content and overuse. Given the substantial body of research on this topic, educators' perspectives it will not be considered in the current paper.

The perspectives of parents and health professionals potentially play an important role in shaping children's engagement with technology. Findings show that parents who view technology negatively

are likely to use a restrictive mediation strategy, whereas parents with positive views on technology may be more likely to integrate it into their children's lives (23). Likewise, health professionals with a positive view on technology may encourage parents to actively engage with their children's technology usage, whereas those with a negative view may highlight the potential health risks associated with technology.

Perspectives can be captured through both qualitative and quantitative methods, such as interviews and questionnaires. Interviews and other qualitative methods can be useful to gain a detailed understanding of perspectives but are typically limited in sample size and generalisability. Questionnaires are commonly used to enable researchers to collect data from a large number of participants with relatively low burden (24). This is especially important for large-scale data collection which enables comparison of perspectives across different population groups. While questionnaires are useful tools, their validity is crucial for ensuring accurate and reliable high-quality evidence. To our knowledge, however, no study has systematically investigated questionnaires that have been developed and used for assessing adults' perspectives on children's technology use and the validity of these tools. Thus, the focus of this study was on questionnaires. Having valid questionnaires available for capturing such perspectives can aid in developing evidence-based strategies for supporting adults in moving toward perspectives and practices that help children to thrive in a digital world.

Therefore, the primary aim of this systematic review was to investigate the quality of questionnaires that have been used to assess parents' and health professionals' perspectives on young children's use of technology related to health, wellbeing, and development. A secondary aim was to summarise parents' and health professionals' perspectives on young children's use of technology as measured by these tools.

Method

Study protocol

The study protocol was prospectively published on Open Scientific Framework (<https://osf.io/qzwxu>). This systematic review adhered to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) (25). This systematic review was exempted from Ethics/Institutional Review Board approval as it did not involve human participants, and ethical approval was not required to review published/publicly reported literature.

Search strategy

Searches were conducted in the following electronic databases: CINAHL, Embase, MEDLINE, ProQuest, PsycINFO, Scopus SPORTDiscus, and Web of Science (Core Collection). The search targeted articles published between January 1st 2010 and September 1st 2024, to capture contemporary technology, and was conducted using a combination of search terms relating to adults' perspectives, technology use, target population (i.e. parents, health professionals and children), and method (i.e. questionnaire). A full list of search strategies by databases is provided in Appendix A. Additionally, reference lists of included articles were searched for additional relevant studies.

Selection of studies

All retrieved studies were exported into EndNote 20 (Clarivate Analytics, 2020). Two reviewers (CLR and IPHA) independently screened titles and abstracts to identify potentially relevant articles using Research Screener, a software system that uses artificial intelligence to iteratively learn from screening decisions, reducing the need to review irrelevant papers (26). Following title and abstract screening, full text screening of articles was completed independently by the same two reviewers. Any researcher disagreement on the eligibility of a particular study was resolved through discussion, with a third reviewer (JZ) to resolve discrepancies.

Inclusion criteria

Studies were included if they explored parents' and health professionals' perspectives on young children's (aged birth-5 years) technology use, including screen- and non-screen-based devices, using questionnaires (e.g. self-report survey instruments, diaries). Only original peer-reviewed

manuscripts, published in English, were considered.

Exclusion criteria

Review studies, expert opinions, editorial letters, and studies that focused on children with chronic health conditions (e.g. cancer, diabetes, epilepsy) were excluded.

Quality assessment

The methodological quality of the included studies was assessed using the Quality Assessment Checklist for Survey Studies in Psychology (Q-SSP) (27). The Q-SSP is a 20-item checklist that evaluates survey quality across four domains: introduction (4 items), participants (3 items), data (10 items), and ethics (3 items). Each item has the following response categories: yes (met criteria), no (did not meet criteria), not stated clearly, or not applicable. For each study, an overall quality score and a quality score for each domain were calculated as the percentage of 'yes' out of the total applicable items. Depending on the number of applicable items, studies were required to achieve a set threshold score to be rated as 'acceptable' in quality, while studies with scores less than this threshold were deemed to have 'questionable' quality. Specifically, a threshold of $\geq 73\%$ was used for the overall score. The following were used as thresholds for acceptable quality for each domain: $\geq 75\%$ for introduction; $\geq 67\%$ for participants; $\geq 70\%$ for data and $\geq 100\%$ for ethics. Of note, item 19 ("Were participants debriefed at the end of data collection?", ethics domain) was considered as not applicable, as debriefing could be argued as being impractical and that the data collection was harmless given that all included studies were based on questionnaires. Study quality was independently assessed by two reviewers (CLR and IPHA) and any discrepancies were resolved by discussion without the requirement of a third reviewer.

Data extraction and synthesis of studies included in the review

The following data were extracted from the included studies: study characteristics, questionnaire characteristics, questionnaire items, and perspectives from study participants. Study characteristics included author; year of publication; country where the study was completed; study aim and design; sample sizes; sample characteristics and recruitment strategy. Sample characteristics included age; gender identity; and relationship to the child. Information on the following questionnaire details were extracted: questionnaire details (i.e. title, number of items, and administration format); questionnaire development; number of items and scoring details; and questionnaire psychometric properties.

Questionnaire items related to adults' perspectives on children's technology use and the reported perspectives were extracted from each study and entered into NVivo 14 (QSR International, 2023) (28) to facilitate coding and identification of common themes related to the focus of the questionnaires and reported perspectives. All data were extracted independently by two reviewers (CLR and IPHA) and cross-checked for any discrepancies, which were resolved without requiring a third reviewer.

A two-level coding framework was developed to systematically assess 1) technology type, i.e. technology/ies the questionnaire referred to, and 2) questionnaire content focus, i.e. the focus of the items within the questionnaire regarding adults' perspective on children's technology use. Following this framework, each questionnaire was first coded based on the technology type it referred to using the following codes (level 1): applications; computer; digital media or digital device; gaming; mobile touch screen devices; no specific hardware; screen time; and television. Next, a deductive thematic analysis (29) was used to investigate the content focus of each item and the reported perspectives, which were classified into four key dimensions based on the Child-Technology Interaction model (14):

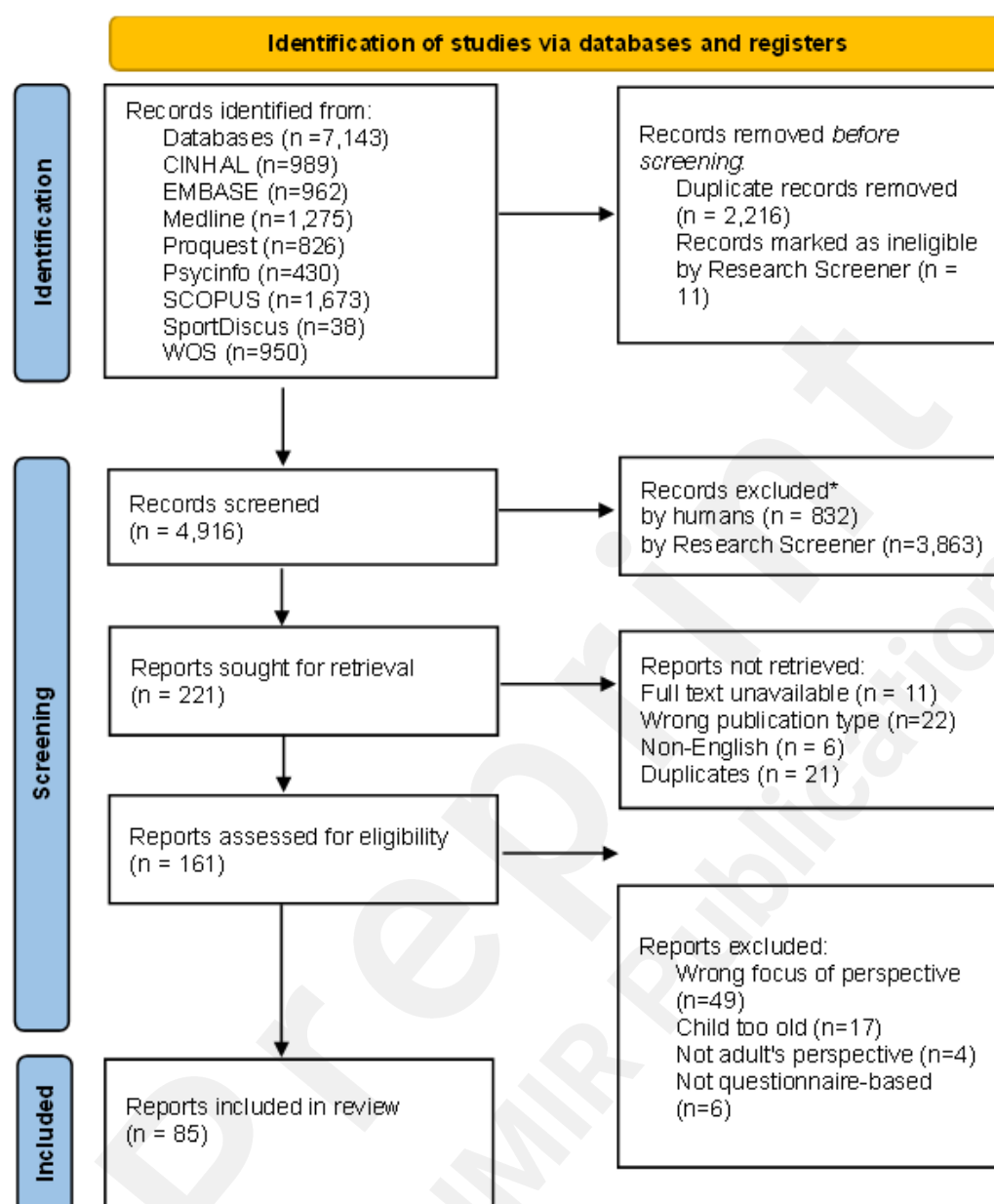
- *child* - characteristics of the child, including demographic factors and individual capabilities (e.g., age, physical health, cognition);
- *other people* – the role of family members or other social influences, such as peers and siblings, in children's technology use (e.g. family interaction, co-viewing);
- *tasks* – the purpose for which the technology is used (e.g. learning, entertainment); and
- *technology* - the nature of the technology involved (e.g. software, content).

Results

Study inclusion

Figure 1 shows the PRISMA flowchart of search results and study exclusions. A total of 7,143 records were identified based on the initial database search, of which 85 studies met the inclusion criteria for this review.



Figure 1. PRISMA flowchart of included studies.

*Screening took place using “Research Screener”, an artificial intelligence screening software. Four records were considered ineligible by Research Screener due to lack of abstracts. Twenty-one rounds of screening (50 in each round) took place before the screeners determined that no further useful papers were being shown.

Quality assessment of included studies

Table 1 provides the quality assessment of included studies, with questionable quality highlighted with shading. The average overall quality score was 61% (range: 32-100%) with 62 studies scoring below the threshold for acceptable quality (i.e. 73%), indicating questionable quality. Generally, studies had higher quality scores for introduction as 84 studies scored above the threshold for acceptable quality (overall mean=98%, range: 50-100%). Forty-seven and seventeen studies, respectively, had acceptable quality related to information about study participants (mean=49%, range: 0-100%) and data (mean=49%, range: 10-100%). Forty-nine studies provided acceptable quality information related to ethics (mean=60%, range: 0-100%).

Table 1. Quality assessment of included studies.

Study	Overall	Introductio	Participan	Data	Ethics
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	score	n	t	score	score
Akyol, 2022 (30)	58	100	33	50	100
Alade, 2022 (31)	58	100	33	40	100
Al-Balushi, 2016 (32)	32	100	0	20	0
Alkalash, 2023 (33)	79	100	67	70	100
AlSamhori, 2023 (34)	61	100	67	33	100
Amzalag, 2021 (35)	42	100	0	40	0
Arippin, 2023 (36)	53	100	67	30	100
Asplund, 2015 (37)	74	100	33	70	100
Balaban, 2019 (38)	68	100	67	70	0
Bansal, 2023 (39)	47	100	33	20	100
Barmomanesh, 2017 (40)	47	100	67	30	0
Beyens, 2014 (41)	58	100	67	40	100
Bleakley, 2013 (42)	68	100	67	60	0
Boonmun, 2023 (43)	74	100	67	70	100
Bourha, 2024 (44)	53	100	0	40	100
Brauchli, 2023 (45)	84	100	33	90	100
Brown, 2023 (46)	74	100	33	80	0
Cardy, 2023 (47)	72	100	67	56	100
Carson, 2012 (48)	84	100	67	80	100
Carson, 2013 (49)	68	100	67	50	100
Chattha, 2021 (50)	53	50	67	40	100
Chia, 2022 (51)	79	100	67	70	100
Chen, 2018 (52)	47	100	0	40	100
Cingel, 2013 (53)	74	100	67	60	100
Covolo, 2021 (54)	74	100	67	60	100
Dardanou, 2020 (55)	37	100	0	20	0
Dong, 2022 (56)	63	100	67	60	0
Eales, 2021 (57)	74	100	67	70	0
Ebbeck, 2016 (58)	45	100	33	30	50
Fan, 2022 (59)	74	100	67	60	100
Farima, 2023 (60)	42	100	33	10	100
Garcia-Conde, 2020 (61)	58	75	67	50	0
Gjelaj, 2020 (62)	32	75	33	20	0
González-Sanmamed, 2023 (63)	53	100	0	50	0
Grané, 2023 (64)	61	100	33	44	100
Griffith, 2023 (65)	79	100	67	80	0
Halpin, 2021 (66)	89	100	100	80	100
Hamilton, 2016 (67)	53	100	67	40	0
Hatzigianni, 2014 (68)	37	75	33	20	100
Howie, 2020 (69)	68	100	67	50	100

Hutton, 2018 (70)	68	100	33	60	100
Ihmeideh, 2017 (71)	74	100	67	70	100
Ilgar, 2018 (72)	37	100	33	20	0
Istemic, 2023 (73)	58	100	0	50	100
Istemic, 2023b (74)	58	100	0	50	100
Jain, 2023 (75)	100	100	100	100	100
Jin, 2013 (76)	63	100	67	60	0
Joginder Singh, 2021 (77)	63	100	33	50	100
Konok, 2020 (78)	74	100	67	60	100
Kostyrka-Allchorne, 2017 (79)	42	100	33	30	0
Lee, 2022 (80)	58	100	33	50	0
Lepicnik, 2013 (81)	58	100	33	40	100
Li, 2015 (82)	37	100	0	30	0
Liibaan, 2023 (83)	32	75	33	20	0
Little, 2019 (84)	58	100	33	50	0
Luo, 2023 (85)	68	100	67	50	100
Mansor, 2021 (86)	74	100	67	60	100
Matziou, 2021 (87)	63	100	33	60	100
Mikelic Preradovic, 2016 (88)	42	100	33	30	0
Milford, 2022 (89)	68	100	67	50	100
Nabi, 2016 (90)	74	100	67	70	0
Natsiopoulou, 2013 (91)	32	100	33	10	0
Nikken, 2019 (92)	68	100	67	50	100
Nikken, 2015 (93)	58	100	67	50	0
Njoroge, 2013 (94)	74	100	67	60	100
Nwankwo, 2019 (95)	58	100	67	30	100
O'Connor, 2016 (96)	68	100	67	50	100
Ophir, 2023 (97)	58	100	0	50	100
Petegem, 2019 (98)	58	100	67	40	50
Raj, 2022 (99)	89	100	100	80	100
Raj, 2023 (100)	89	100	100	80	100
Rajalakshmi, 2023 (101)	63	100	67	40	100
Rosanda, 2022 (102)	47	100	0	50	0
Sada Garibay, 2024 (103)	60	100	67	50	0
Seršen, 2024 (104)	53	100	33	40	0
Solomon-Moore, 2017 (105)	63	100	33	50	100
Stuckelman, 2023 (106)	58	100	67	40	0
Suresh, 2023 (107)	79	100	67	70	100
Tanusha, 2023 (108)	63	100	67	50	100
Tay, 2021 (109)	58	100	67	50	0

Vaala, 2014 (110)	47	75	33	40	0
Vaiopoulou, 2021 (111)	45	100	33	20	50
Vittrup, 2016 (112)	68	100	67	60	0
Vincent, 2021 (75)	68	100	67	60	50
Wang, 2024 (113)	50	75	33	33	100
Overall mean scores (range)	61 (32-100)	98 (50-100)	49 (0-100)	49 (10-100)	60 (0-100)

Scores calculated as the ratio between “yes” scores and total applicable quality assessment items. For the calculation of overall score, a score of $\geq 73\%$ may be considered acceptable quality. The threshold for acceptable quality for each domain were $\geq 75\%$ for introduction; $\geq 67\%$ for participants; $\geq 70\%$ for data and $\geq 100\%$ for ethics. Cells shaded in the table indicates studies that did not meet this threshold.

Characteristics of included studies

The characteristics of included studies are provided in Table 2. Studies were published between 2012 and 2024, with most studies published in 2022 (n=11) and 2023 (n=22). Only three studies aimed to explicitly develop and validate questionnaires for measuring parents’ perspectives on children’s use of technology (32, 38, 111). Among the remaining studies, most studies aimed to investigate adults’ perspectives of children’s use of technology (n=48) and/or determinants of children’s technology use (n=19).

Among the 85 included studies, most were cross-sectional (n=74), 70 were based on questionnaire responses only and 15 used a mixed-method approach of both questionnaires and interviews. The studies were conducted in a wide range of countries, but primarily in the United States of America (n=11), the United Kingdom (n=5), and Australia (n=5). The average number of study participants was 495 (range=10-3,413) of which 82 studies only consisted of parents. In three studies, grandparents were also included (46, 56, 96). No studies included health professionals. Accordingly, only parental perspectives are reported on in this paper. Among the 59 studies that reported participants’ gender, most were female (mean=80%, range=47-100%). Participants’ age was reported in 46 studies and mostly ranged between 30-40 years.

(Please place table 2 here, submitted as multimedia appendix due to size.)

Characteristics of questionnaires used in included studies

Table 3 provides the characteristics of questionnaires used among the 85 included studies. Nineteen studies reported the title of the questionnaire and 76 reported the item type. Among the studies describing questionnaire item type, 52 reported using questionnaires with closed-ended items and 24 used questionnaires with a combination of closed- and open-ended items. A total of 63 studies provided information on administration format, of which most (n=42) used an online questionnaire. A total of 74 studies provided information on how the questionnaire was developed, most commonly (n=45) reported as being developed specifically for the study.

Thirty studies reported the total number of items in the questionnaire (mean=34, range=6-86) and 67 studies reported the number of items specifically related to parents’ perspective of children’s use of digital technologies (mean=11, range=1-33). A total of 61 studies reported details on item scoring, with a Likert-scale to measure level of agreement most commonly used (n=49).

Psychometric properties of questionnaires and/or items related to measures of parents’ perspectives on children’s technology use were reported by 39 studies. Among these, 14 studies conducted pilot tests to ensure *face validity* (32, 33, 46, 51, 54, 70-72, 75-77, 92, 99, 108). Twelve studies evaluated *content validity* by consulting experts within the field (38, 43, 51, 52, 63, 64, 71, 72, 75, 85, 107, 109), of which three studies reported content validity indexes which ranged between 0.83-1.00 (43, 75, 107).

A total of ten studies reported measures of *construct validity* based on results from a type of factor analysis (38, 52, 56, 63, 85, 90, 92, 97, 98, 111). Confirmatory Factor Analysis (CFA) was used in

four studies (52, 56, 98, 111), though the reported metrics varied. Chen et al. (2018) reported a Root Mean Square Error of Approximation (RMSEA) of 0.06, a Standardized Root Mean Square Residual (SRMR) of 0.05, a Composite Reliability of 0.88, and Average Variance Extracted of 0.66. Dong et al. (2022) also performed a CFA and found that the model explained 43% of total variance, with eigenvalues ranging from 13.18 to 2.92, but no additional performance metrics were reported. Petegem et al. (2019) reported an RMSEA of 0.06 and SRMR of 0.02, while Vaiopoulou et al. (2021) found an RMSEA of 0.027 and SRMR of 0.07. Exploratory Factor Analysis (EFA) was applied in five studies (38, 63, 85, 92, 111). Balaban et al. (2019) used Principal Component Analysis (PCA), reporting factor loadings of 0.54–0.87. González-Sanmamed et al. (2023) found loadings between 0.52 and 0.90, while Luo et al. (2023) identified a two-dimensional structure with an internal reliability of 0.95 (specific metric not reported). Nikken et al. (2019) identified a five-dimensional structure, with item loadings >0.45, and Vaiopoulou et al. (2021) used PCA alongside CFA, reporting factor loadings of 0.54–0.89. Two studies conducted a factor analysis, but did not specify which type (90, 97). Nabi et al. (2016) identified a two-dimensional structure, while Ophir et al. (2023) reported a two-dimensional structure explaining 69–70% of variance, with factor loadings ranging from 0.69 to 0.81.

Cronbach's alpha was predominantly reported (n=26 studies) as a measure of *internal consistency reliability*, ranging from 0.24 to 0.95 (mean=0.80) and one study used McDonald's omega as a measure of internal consistency (45), which ranged between 0.62–0.69. A total of 7 studies reported a measure related to assessing reliability, but did not specify which metric this was based on (76, 80, 85, 90, 99, 100, 108). One study reported a test-retest reliability based on intraclass correlation (ranging between 0.64–0.98) (86).

(Please place table 3 here, submitted as multimedia appendix due to size)

Focus of questionnaires used in included studies

A total of 67 studies reported either examples of, or all questionnaire items, used for measuring parents' perspectives on children's technology use (see Table 4). When considering which type of digital technology each questionnaire covered (i.e. results of the level 1 coding), most questionnaires focused on *digital media or digital devices* (n=22) where technology was broadly referred to without a particular hardware, software or content type. Twelve studies focused on *screen time*, which either covered children's exposure to any screens or to specific device types (e.g. television, smartphones) (36, 39, 43, 48, 49, 66, 75, 77, 86, 97, 105). Among specific device types, nine studies focused on children's exposure to *mobile touch screen devices* (e.g. smartphones, tablets) (31–33, 54, 55, 69, 78, 96, 112) and eight studies focused on *television viewing* (37, 41, 42, 61, 70, 93, 94, 110). Seven studies did not specify a particular device (e.g. referring to general internet use) (34, 47, 52, 76, 101, 103, 104). *Gaming* and *computer use* were referred to in four (35, 38, 74, 98) and three (72, 88, 91) studies, respectively. Finally, 2 studies focused on *applications* (59, 111).

Table 4. Questionnaire items related to perspectives from each study.

Author, year, country	Items related to perspectives
Akyol, 2022, Turkey (30)	NR.
Alade, 2022, USA (31)	Parents were asked to rate their level of agreement (on a 4-point Likert scale) with the following statements regarding mobile device use at home: - Having a mobile device in the home makes my job as a parent easier. - My child learns a lot when they use the mobile device. - My child enjoys using mobile devices. - I enjoy using the mobile device with my child.

	- I am concerned that my child uses the mobile device too much. - Parents were asked to rate their level of agreement (on a 4-point Likert scale) with the following statements regarding mobile device use at school: - It is important for children to learn how to use technology in school. - Technology use in school distracts from learning. - There can be a healthy balance between traditional teaching methods and teaching with technology. - Tablets can be useful learning tool at school. - Tablet use takes away from other more important learning.
Al-Balushi, 2016, Oman (32)	No information provided on how parents responded to the following items: - It is normal that my children own mobile devices. - I feel safe when my children use mobile devices when I am not with them. - It is normal that my children have access to social networks via mobile device. - It is normal that my children play online games via mobile devices. - It is good for a specific age of children to use and own mobile devices. - It is okay that parents do not allow their children to use mobile devices. - It is okay to allow the Wi-Fi network being connected to my children's mobile device all the time. - I feel safe when my children share personal photos via social networks. - I feel safe when my children contact strangers. - I talk with my children about mobile devices' risk.
Alkalash, 2023, Saudi Arabia (33)	Parents were asked to rate their level of agreement (on a 3-point Likert scale) with the following statements regarding exposure to screens for their children under the age of 6: - Do you worry about the use of smartphones/tablets by your children? - Do you think it is your duty to limit the content that your son watches? - Do you find difficulty to control your child's use of smartphones/tablets or television, especially when there are many of these devices at home? - Do you face difficulty to monitor your child's use of smartphones/tablets or television due to your busyness with work? - Have you got annoyed by your child eating a lot while busy using smartphones/tablets or watching TV? - Do you feel that the presence of smartphones/tablets at home reduces the time the family spends communicating or playing

	with its children?
AlSamhori, 2023, Jordan (34)	Parents were asked to tick off their opinion (yes/no) towards the following statements: - Does the usage of technology improve your child mental and psychological growth? - Does the usage of technology impact negatively your child mental and psychologic growth?
Amzalag, 2021, Isreal (35)	Only example of items provided. Parents were asked to rate their level of agreement with nine items regarding their attitudes towards digital games (e.g. “The digital game is a waste of time”); seven items regarding their attitudes towards digital learning games (e.g. “Digital learning games encourage the learner to show responsibility and active involvement in the learning process”); and eight items regarding their attitudes towards digital learning games as an alternative for traditional homework (e.g. “Digital learning games, given as homework, allow learners to control the learning topics, thanks to immediate feedback”).
Arippin, 2023, Brunei Darussalam (36)	No information provided on how parents responded to the following items: Items related to “knowledge”: - Increase in children’s screen time is likely to decrease their effort in physical activity. - Children’s sleep pattern and quality can be disrupted by increase in their screen time. - Increased children’s screen time may increase risk of the children being overweight/obesity - Increased children screen time is more likely to increase consumption of soft drinks and snacks. - Children that spend more screen time are at risk of emotional, mental and behavioural problems. - Uncontrolled children’s screen time can lead to addiction to the devices. Items related to “attitude”: - I have the responsibility to control our child(ren)’s screen time by paying close attention on the appropriateness of the screen time activities. - I should not be concerned about our child(ren)’s screen time and they can engage for as long as they want. - It is challenging to manage our child(ren)’s screen time when there is a lot of screen-based devices available in out household. - It is difficult to constantly supervise our child(ren)’s screen time activity when there is increase household and/or work demand. - I would not consider my child(ren)’s level of screen time to be a serious matter if he/she/they is/are active, healthy and well-behaved. - I am aware that our child(ren) engagement with screen time is influenced by our use of screen-based devices and/or by others (e.g. siblings and/or friends).

	- I observed that our child(ren)'s use of screen device interferes with our family quality time. - I am concerned about our child(ren)'s unhealthy food intake when engaging in screen-based activity. Items related to "practice": - I encourage my child(ren) to play with toys or talk face-to-face rather than spending time every waking hour, using mobile phone, watching TV/video, and on laptop. - I ensure that I take away my child(ren) screen-based devices at home when they play or have social activities. - I try to limit or not use screen-based devices whenever I am with my child(ren). - I give screen-based devices to my child(ren) to keep them temporarily occupied and be quiet especially in time when I am busy and when he/she get fussy or moody. - I usually stop my child(ren)'s screen time at least an hour before bedtime to get him/her to fall asleep. - I offer screen-time to my child(ren) as a reward for good behaviour and removing it as a punishment for bad behaviour. - I do not allow my child(ren) to have any kinds of screen-based devices during family time (e.g. meal time) or in his/her/their bedroom.
Asplund, 2015, USA (37)	Only example of items provided. Parents were asked to rate their level of agreement (on a 5-point Likert scale) on whether they perceived TV as valuable or useful (e.g. "young children who never watch TV miss a lot that is of value"; "TV is a useful way of keeping the children amused") and they were restrictive about child TV viewing (e.g. "I restrict how much time my child spends watching TV"; "I have to be sure my child does not watch too much TV"; "I will switch off the TV if I think my child is watching too much").
Balaban, 2019, Turkey (38)	Only examples of items provided. Parents were asked to indicate frequency (on a 5-point Likert scale) on three items related to an 'Entertainment' dimension (e.g. "My child is entertained when s/he is engaged in digital games"); eight items related to a 'Learning' dimension (e.g. "Digital games increase my child's interest in mathematics"); six items related to a 'Physical' dimension (e.g. "My child sits in a hunchback position while playing a digital game"); five items related to a 'Social' dimension (e.g. "While playing digital games, my child's communication with us decreases"); and three items related to a 'Emotional' dimension (e.g. "Playing digital games makes it difficult for my child to express his/her feelings (S/he does not want to use expressions like "happy". "sad" etc)).
Bansal, 2023, India (39)	Same items as reported in Arippin et al. (2023).
Barmomanesh, 2017, New Zealand (40)	NR.
Beyens, 2014,	Only examples of items provided.

Belgium (41)	Parental attitude toward television was assessed by asking parents to rate their level of agreement (on a 5-point Likert scale) toward seven positive outcomes of television among young children (e.g. "Children who are heavy TV viewers learn a lot of new words").
Bleakley, 2013, USA (42)	Parents were asked to rate their level of agreement (information on scale details not provided) as to whether limiting/ continuing to limit their child's television viewing to 2 h or less every day would be: - complicated/ simple - bad/ good - foolish/ wise - unpleasant/ pleasant - easy/ difficult - harmful/ beneficial
Boonmun, 2023, Thailand (43)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) for a range of questions regarding children's screen time reduction, but only one example item was provided: "Parents are important individuals for limiting children's screen time."
Bourha, 2024, Greece (44)	Parents were asked the following question: "Have you noticed any improvements/progress/enrichment of knowledge in your child that you think is related to playing with this toy?". By answering "yes", the following question was asked: "If yes, in which developmental area?" with the following response options: - Speech/vocabulary - Gross motor activity or in a coordinated manner - Fine manipulation - Social-emotional development - Mathematical concepts - Creativity - Communication - Science concepts - Other Parents were asked to indicate the significance of their child's engagement with technology, but no information was provided on how this was measured.
Brauchli, 2023, Switzerland (45)	Parents were asked to rate their level of agreement (on a 6-point Likert scale) with the following statements regarding their children's screen media use: - I find it good when [child's name] uses screen media. - It is important for children to learn how to use screen media responsibly as early as possible. - Children must learn to use screen media as early as possible.
Brown, 2023, USA (46)	Parents were asked to tick off up to 3 of the most important options for the following items: What do you think are the most negative effects of digital media use in children? - Sleep problems/ Getting out of shape or obesity - Addiction to gaming or screens

	- Loss of social skills or being impolite - Aches and body pains - Attention problems - bullying/ Depression - Vision problems - Delay in learning language skills - Aggression - Trouble calming himself/herself when frustrated or upset - Low self-esteem - Exposure to violent or inappropriate content - None - Other What do you think are the most positive effects of digital media use in children? - Exposure to a wider vocabulary - Exposure to foreign languages - Relaxation or fun - Learning how to multi-task more easily - Increased creativity - Increase in school readiness - Increased hand-eye coordination or skill with hands - Increased communication with distant relatives or friends - Learning about other cultures, places, and ideas - None - Other
Cardy, 2023, Canada (47)	No information provided on how parents responded to the following item: - Overall, how does technology impact your child's quality of life? Parents were asked to tick off the domain in which their child benefited from technology use: - Social skills - Motor skills - Emotion regulation - Language and communication - Cognitive development - Leisure/ recreation - Transition - My child has not benefited from technology in any area - I don't know
Carson, 2012, Canada (48)	Parents were asked to rate their level of agreement (on a 4-point Likert scale) as to whether their child's screen time is: - It is good for his/her brain - It is something my child finds very enjoyable - It gives me the opportunity to get things done on my own - It allows me to cope from a busy day at work and/or looking after multiple children

	- My child needs/wants time to relax - It is family time, bonding time, or quality time - It grabs hold of my child's attention - It teaches my child to get along with others
Carson, 2013, Canada (49)	Parents were asked to rate their level of agreement (on a 4-point Likert scale) as to whether their child's screen time is: - It is a good learning tool - It is child enjoyment - It gives parent opportunity to get things done - It allows parent to cope with busy day/multiple children - It allows child to relax - It is family, bonding or quality time - It grabs hold of child's attention - It teaches children to get along with others Parents were asked to rate their level of agreement (on a 4-point Likert scale) with the following statements regarding their perceived barriers towards reducing their child's screen time: - Pressure from society to purchase media equipment - Neighbourhood is unsafe - Poor weather limits time outside - Parent needs coping-tool for busy day/multiple children - Parent needs time to do household chores - Child really enjoys screen time - Child does not engage in too much screen time
Chattha, 2021, Pakistan (50)	NR.
Chia, 2022, Singapore (51)	Parents were asked to rate the level of importance (on a 5-point Likert scale) of the following statements regarding their child's digital media use: - Improve child's knowledge and skills - Keep child entertained - Communication - Keep child occupied - Distract or divert child's attention - Put child to sleep Parents were asked to rate the level of concern (on a 5-point Likert scale) about the following statements regarding their child's digital media use: - Poor sleep - Poor eyesight - Lack of physical exercise and activity - Exposure to inappropriate content - Addiction - Lack of parent-child interaction
Chen, 2018, Taiwan (52)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following items regarding the usefulness of the internet for preschool children:

	- Internet-based instruction provides more knowledge for young children. - Internet-based instruction develops learning autonomy for young children. - Internet-based instruction provides more learning resources for young children. - Internet-based instruction develops peer relationships among young children.
Cingel, 2013, USA (53)	Only examples of items provided. For perceived positive effects of media, parents were asked to rate their level of agreement (on a 7-point Likert scale) as to whether a variety of media were beneficial to their child's cognitive, social and physical development (e.g. "I believe education television and videos are helpful to my child's cognitive development"). For perceived negative effects of media, parents were asked to rate their level of agreement (on a 7-point Likert scale) as to how worried they were that electronic media were harming their children in terms of their cognitive, social and physical development (e.g. "I worry that electronic media will have a negative effect on my child's cognitive development").
Covolo, 2021, Italy (54)	Parents were asked if they believed the use of smartphones and/or tablets by a preschooler (0-5 years old) posed a risk to his/her health. If yes, they were asked to rate how harmful they thought it was on a scale of 1 to 7. Parents were asked to rate the level of risk (on a 7-point Likert scale) they believed the use of smartphone and/or tablet would cause a preschooler to: - Have sleep disorders. - Become obese. - Become epileptic. - Have eye irritation. - Become celiac. - Confuse virtual reality with the real world. Parents were asked to rate the level of benefit (on a 7-point Likert scale) they believed the use of smartphone and/or tablet would be to a preschooler in terms of: - Learning new words (for children aged under 2 years old). - Learning new words (for children aged 3-5 years old). - Developing cognitive or creative skills. - Preventing Attention Deficit and Hyperactivity Disorder. - Communicating with distant relatives. - Approaching technology.
Dardanou, 2020, Norway, Portugal and Japan (55)	Parents were asked to tick off all they believed applied for the following item: What advantages do you think there are to your child/children using touchscreens? - They learn new skills.

	- They learn new knowledge. - It keeps them occupied. - It entertains them. - It allows them to be creative. - It will help them when they go to school. - Other Further, parents were asked if they had concerns about their child/children using touchscreens and, if yes, to elaborate on what their concerns were related to either children aged 0-2 years old and/or children aged 3 years and over.
Dong, 2022, China (56)	Parents were asked to rate their level of agreement (on a 6-point Likert scale) with the following statements: - The use of digital devices is beneficial for early learning and development - Digital devices are suitable for young children to use - The use of digital devices is beneficial for children's social interaction - The use of digital devices is harmful to the health of young children - The use of digital devices supports children's future learning or development Furthermore, parents were asked the following open-ended item: "How do you view young children's digital use at an early age? Why?"
Eales, 2021, USA (57)	Only examples of items provided. Parents were asked to indicate how helpful/hurtful (on a 5-point Likert scale) children's media use was across six different domains of their child's life: social skills, learning, ability to focus, behaviour, physical activity and creativity (e.g. "Overall, do you think your child's media use helps, hurts or makes no difference to his/her [domain]").
Ebbeck, 2016, Singapore (58)	NR.
Fan, 2022, China (59)	Parents were asked to tick off what they believed about young children using short-video apps, with the following options: - It is a waste of time - It enables digital play and releases children's pressure - It may result in vision problem or other health issues - It enables children to learn academic knowledge and skills - Children may be addicted to digital media - It can broaden children's vision and understanding of the world - Children may be influenced by low-quality/value contents - It satisfies children's social needs - Other
Farima, 2023, Moldova (60)	NR.
Garcia-Conde, 2020, Spain (61)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statements: - It is harmful that my child watches TV/screen.

	- Watching TV/screen is healthy entertainment for my child.
Gjelaj, 2020, Kosovo (62)	NR.
González-Sanmamed, 2023, Spain (63)	NR.
Grané, 2023, Spain (64)	NR.
Griffith, 2023, USA (65)	NR.
Halpin, 2021, Australia (66)	Only examples of items provided. Parents were asked to indicate the effect (on a 11-point Likert scale) of their child's current screen use on their child's functioning (8 items, e.g. "My child's overall behaviour"); their child's development (7 items; e.g. "My child's early learning [e.g. colours, numbers, letters]"); parent-child interaction (5 items; e.g. "How patient I am with my child"); and parent self-care (3 items; e.g. "How easily I can take a break while caring for my child").
Hamilton, 2016, Australia (67)	No information provided on how parents responded to the following items regarding how likely they were to limit their child's screen time to less than one hour per day in the next week to: - Promote my child's creativity - Improve my child's mental well-being - Improve my child's social skills - Improve my child's behaviour - Promote family interactions - Promote healthy habits in my child - Increase parent-child confrontations - Increase whining behaviour in my child - Interfere with my other commitments - Increase parent distress
Hatzigianni, 2014, Australia (68)	NR.
Howie, 2020, Australia & USA (69)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statements: - Using mobile technology will benefit my child overall. - Using mobile technology will be good for my child's education. - Using mobile technology in child care will be good for my child's education. - Using mobile technology will improve my child's social skills. - Using mobile technology is a risk for my child overall. - Using mobile technology will be bad for my child's education. - Using mobile technology will harm my child's social skills. - Using mobile technology will make my child at risk to online predators. - Using mobile technology will cause my child discomfort and pain (i.e. back/neck pain).

	- Using mobile technology will increase the amount of time my child spends sitting. - Using mobile technology will reduce my child's physical activity.
Hutton, 2018, USA (70)	Parents were asked to rate the level of importance (on a 5-point Likert scale) of TV viewing for the healthy development of babies <3 months old.
Ihmeideh, 2017, Jordan (71)	Preschool teachers and parents were asked their level of agreement (on a 5-point Likert scale) to the following statements regarding technology and digital media use by children: Physical/health aspect - Enhancing children's movement skills and physical activity. - Raising children's health awareness (disease prevention, health food, etc.). - Increasing children's knowledge about safety procedures in their life. Intellectual aspect - Developing children's thinking skills. - Helping children develop creativity. - Improving children's language and literacy. - Developing children's problem-solving skills. - Developing children's numeracy skills. Emotional aspect - Helping children in controlling and managing their emotions. - Protecting children from fear, shyness, and anxiety. - Helping children sympathize with others and identify with community members. Social aspect - Increasing children's awareness of their society and its problems. - Helping children cultivate feelings of belonging and citizenship. - Helping children communicate and interact with others. - Helping children know both, their social rights and duties. Moral aspect - Helping children cultivate positive morals and values. - Helping children exercise the highest ethics. - Helping children distinguish between good and evil, right and wrong. - Helping children maintain the prevailing good practices and traditions. Religious aspect - Developing children's positive attitudes toward their religious teachings. - Helping children learn about certain religious duties. - Helping children acquire religiously inspired social etiquette. Aesthetic aspect - Increasing children's ability to understand and appreciate the

	Arts (acting, singing, theatre). - Helping children learn tidiness, order and consistency. - Helping children experience things and appreciate their beauty. - Helping discover and develop children's preferences, interests and skills.
Ilgar, 2018, Turkey (72)	Mothers were asked to tick off (yes/no) if they agreed to the following statements regarding computer use among preschool children: - Contribute to perception, attention, and memory development in children. - Contribute to the development of hand-eye coordination in children. - Contribute to the development of creativity in children. - Have a negative impact on children's socialisation. - Contribute to children's self-production. - Meet children's need for alone time. - Support children's exploratory learning. - Enhance children's better and more frequent technology use. - Lead children not to spare time for actual games. - Restrain children's family time. - Lead children to use more violence. - Help children discharge their aggressive impulses. - Lead children to become detached from the real world because of the cyber world. - Lead children to obtain everything fastly and become idle. - Have reflections on children's behaviour. - Lead children to mimic in real life what they were exposed to. - Results in dependency if use is not regulated. - Have a negative impact on children's behaviour. - Lead children to become similar to the game characters. - Are used as a solution when families are tired and cannot spare time for the children. - Children prefer to spend time with their families instead of playing computer games.
Istemic, 2023, Slovenia (73)	Parents were asked to tick off their opinion (yes/no) regarding to the contribution of traditional and digital games to their child's development. - Sensory development (e.g., strengthens visual, auditory, and tactile skills). - Motor development (e.g., encourages the child to move, sit, climb, stand up, and walk; promotes hand-eye coordination). - Cognitive development (e.g., supports the development of speech, sounds, first words, and language skills; contributes to learning the alphabet, numbers, names of objects, etc). - Emotional development (e.g., develops the ability to manage one's own emotions; empathy). - Listening and observation. - Visual and spatial orientation.
Istemic, 2023b, Slovenia (74)	No information provided on how parents responded to the following statements regarding digital play's contribution to the learning and

development of their child's play:

- Media exposure at a young age (0-3 years) is important for early brain development.
- A child with not fall behind other children academically if his or her use of technology tools is restricted in the early years (0-3 years).
- Children under the age of 2 years should have no TV screen time.
- Children between 2 and 5 should limit their screen technology to 1 hour a day.
- Children between 2 and 5 should only use screen technology with their parents present.
- The use of a computer can promote long-term physical, emotional, or intellectual developmental damage.
- Introducing technological tools at a young age prepares children better for tomorrow's work force.
- Children today naturally understand how to use computers and related technology at an early age.
- In early childhood, children can use technology as a learning tool.
- Young children develop better without technology.
- My child should first learn to interact with the physical world; he has a lifetime to interact with the virtual world.
- I am concerned about how technology can affect a young child's brain development and learning.
- I want the child to enjoy their childhood and not become addicted to technology.
- If my child does not master technology, he will be excluded from peer groups.
- Due to the intensive use of digital technology in the family, parents are reading less and less to their children.
- Technological toys please children more than traditional.
- Preschoolers better develop without technology.
- With the help of technological toys, parents easily guide their child's play.
- Technological toys are better than traditional ones.
- Some technological toys enhance a child to develop early literacy.
- Technological toys enhance a child to be passive.
- Children under age three should not use technological toys.
- During playtime, the most important communication is between a child and the engaged person.
- Adults are less patiently following a child initiative with a play with a technological toy than with a traditional.
- More important is communication between a child and person present than a toy itself.
- Technological toys enable a child to learn how to manipulate technology.
- Adult leads and teaches a child how to play with technological

	toy. - During the play, a child intensively communicates with the person/s present.
Jain, 2023, India (75)	Parents were asked to tick off if they agreed to the following items: - Has your child ever complained of headache? - o If yes: Do you think the headache can be because of using screen (any screen TV/Mobile/Tablet/Laptop/computer) - Has your child ever complained of eye pain? - o If yes: Do you think eye pain can be because of using screen (any screen TV/Mobile/Tablet/laptop/computer) - Has your child every complained of itching in eyes? - o If yes: Do you think the itching in eyes can be because of using screen (any screen TV/Mobile/Tablet/Laptop/computer)
Jin, 2013, Korea (76)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statement regarding their children's internet use: - I am always concerned that my children's Internet use will expose them to harmful information. - I always pay attention to my children's Internet surfing and use. - It is very important to me to know what kinds of services my children access through the Internet.
Joginder Singh, 2021, Malaysia (77)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) to the following statement regarding their children's language skills: "My child has learnt new words from screen viewing."
Konok, 2020, Hungary (78)	Parents were asked the following statement regarding their perspective toward mobile touch screen device use: - It is better for a child to start mobile touch screen device use "as late as possible" or "as early as possible", or with neither. Parents were asked to tick off their perspective (yes/no) about the following statements regarding the potential harm of mobile touch screen device use: - It causes behaviour problems/ disturbed behaviour. - It causes neurological problems/ attention deficit/ intellectual deficit. - It is harmful for development/ it doesn't help development. - It induces aggression/ irritation/ tension. - It causes depression/ bad mood. - It overstimulates the nervous system. - It deteriorates phantasy/ imagination/ creativity. - It takes time away from other things/the child doesn't play with other toys/games. - The absence of physical activity/ children are less physically active. - The child can lose her/his interest in other things/ they are more difficult to occupy with other things.

	- It ruins social relationships/ it causes problems in forming relationships/ they become 'antisocial'/ they become introverted/ it causes loneliness. - The child can come across inappropriate content. - Pedophiles/ swindlers/ bad people can find her/him. - The excessive usage is harmful/ they can easily do it in excess. - It harms the eyes. - It can cause addiction/ it is hard to put it down. Parents were asked to tick off their perspective (yes/no) about the following statements regarding potential benefits of mobile touch screen device use: - It opens up the child's world. - It helps maintain/ form relationships. - It increases openness/ the child will be more open to the world/ to new things. - The child can ask for help in emergency. - It offers leisure/ entertainment opportunity. - It improves fine motor skills. - It has improving effects/ it improves skills. - It improves logical thinking/ problem-solving/ intelligence. - She/he can learn through these things/ there are educational applications/ it helps in learning. - The child's knowledge grows/ getting information. - She/he can search for information about things in which she/he is interested/ satisfying curiosity. - It helps foreign language learning. - The child can learn informatics/ she/he can keep pace with technological development/ her/his digital skills improve.
Kostyrka-Allchorne, 2017, UK (79)	Parents were asked to rate how harmful (on a 5-point Likert scale) to children the following features of TV and films were regarding: - Inappropriate language - Inappropriate behaviour - Violent content - Fast editing pace Parents were asked to indicate the effect of media (on a 6-point Likert scale) on children's development using the following items: - The effects of popular media on children's development are. - The effects of watching fast-paced action-filled programmes are. - The effects of watching educational programmes are. - The effects of watching programmes containing violence and threat are.
Lee, 2022, Korea (80)	Only examples of items provided. Nine items were used to measure the positivity of attitudes (e.g. "I think watching media will positively influence my child's behavioural development"). Four items were used to measure the intellectual dimension of the negativity of attitudes (e.g. "I think watching media will hurt my child's

	creativity”). Four items were used to measure the social dimension of the negativity of attitudes (e.g. “I believe watching media will negatively affect my child’s play with friends”).
Lepicnik, 2013, Slovenia (81)	No information was provided on how parents responded to the following items regarding competences they thought the usage of information-communication technology mostly developed among children: - Motor. - Learning/language. - Self-expression. - Social. - Cultural competences.
Li, 2015, China (82)	NR.
Liibaen, 2023, Scotland (83)	NR.
Little, 2019, UK (84)	NR.
Luo, 2023, Taiwan (85)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statements regarding young children’s information communication technology use: - Help children think flexibly - Provide a variety of learning content - Provide diverse stimuli for learning - Training the ability to react - Contribute to the development of cognitive skills (the promotion of thinking skills and knowledge) - Contribute to language learning - Training hand-eye coordination - Contribute to more familiarity with learning content - Help children to understand the learning content - Have a sense of accomplishment in learning - Contribute to active learning - Help to build self-confidence in learning - Rich audio and video help to improve interest in learning - Easily lead to phenomenon of technology-use addiction - Develop the habit of overreliance on audio-visual learning - Affect the development of the optic nerve - Reduced interests in exploring the external environment - Reduce motivation and interest in reading - Reduce creativity - Hinder the development of the ability to live independently - Affect the development of thinking - Hinder the development of relationships - Establish improper values
Mansor, 2021, Malaysia (86)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following items regarding screen time: - It is good for the development of his/her brain (such as learning

	aids). - It is something my child finds very enjoyable. - It gives me the opportunity to get things done on my own (such as house chores, cooking). - It helps me to handle a busy day at work and/or take care of children. - My child needs/wants time to relax. - It provides quality time together with family. - It grabs hold of my child's attention. - It teaches my child to get along with others. Parents were asked to indicate the influence of screen time ("Negative influence", "No influence" or "Positive influence") on their child's: - Physical wellbeing: Heart health/ Muscle and bone health/ Maintaining a healthy weight/ Fundamental movement skills. - Cognitive wellbeing: Academic achievement/ Cognitive development/ Ability to concentrate/ language development. - Social wellbeing: School readiness/ Social competence/ Self-esteem.
Matziou, 2021, Greece (87)	NR.
Mikelic Preradovic, 2016, Croatia (88)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following items regarding children's computer use: - Children learn new and useful things on computer. - Children who regularly use computer are at risk of developing dependence. - When using computers, children gain valuable IT skills which will be useful for them in the future. - Computers can have only negative influence on children's development. - Instead of playing with peers, children spend their time on the computer. - Children can better develop their skills playing computer games. - Children engage in sport less frequently due to the increased computer usage. - Excessive use of computers may separate children from their parents and friends. - Thanks to computers, children's intellectual development is enhanced. - Children spend more quality time on the computer than watching TV.
Milford, 2022, Australia (89)	Only examples of items provided. Parents were asked to rate their level of agreement (on a 5-point Likert scale) with a series of statements about the possible impact on their child in areas such as behaviour, attention, and academic performance. (e.g. "I feel that mobile media has a negative impact on my child's behaviour," "I feel that mobile media has a negative impact on my child's academic performance," and "I feel that mobile media has a negative impact on my child's general attention.")
Nabi, 2016,	Only examples of items provided.

USA (90)	Parents were asked to rate their level of agreement (on a 7-point Likert scale) with statements about learning (e.g. "Educational/entertainment electronic media can improve my child's language and communication skills") and fun (e.g. "Using educational/entertainment electronic media is a fun activity for my child").
Natsiopoulou, 2013, Greece (91)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following items regarding the effects of children using computers: - Offers joy and entertainment. - Promotes participation in learning. - Increases imagination and creativity. - Increase initiative. - Respects personal rhythms. - Limits free play. - Limits child's reading.
Nikken, 2019, Netherlands (92)	Only examples of items provided. Parents were asked to rate their level of agreement (on a 5-point Likert scale) regarding the effects of media on: - learning (e.g. "My child can learn about the world via media", "My child may know more about politics thanks to the Children's News"), - social skills (e.g. "My child may improve his or her social skills by the use of media", "My child can increase his or her peer group with good friends via social media"), - emotions (e.g. "My child can become calm and quiet from media use", "My child can learn to improve his or her concentration by using media"), - behaviour (e.g. "My child may adopt rude language from the media", "My child may get aggressive from seeing violence in the media"), and - health (e.g. "My child may get obese from media use", "My child may develop sleeping problems because of media use").
Nikken, 2015, Netherlands (93)	Only examples of items provided. Parents were asked to rate their level of agreement (on a 5-point Likert scale) regarding: - positive effects of media (e.g. "Screen media help my child to learn", "Media can teach my child English", "Electronic media will be good for my child's school performances"), - using media as a pacifier (e.g. "Digital media give a moment of rest for my child", "Media are a good pacifier for my child", "Media make my child calm and peaceful", "With media my child doesn't have to be bored"), - negative effects of media (e.g. "Digital media let my child see or do inappropriate things", "Media brings my child in contact with wrong people", "I'd rather see my child play with other things than digital media", "Digital media are not as good as normal toys for my child"), - and media as being too complicated (e.g. "Media are too complicated for my child", "Media do not match with my child's

	interests”).
Njoroge, 2013, USA (94)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statements: - Education TV programs can help preschoolers learn to recognize letters and numbers. - Educational TV programs can help preschoolers play better with each other.
Nwankwo, 2019, UK (95)	NR.
O'Connor, 2016, UK (96)	Parents were asked to tick off which of the following benefits they perceived for their 0-3-year-olds using touch screens: - It entertains them. - They learn new skills. - It keeps them occupied. - They learn new knowledge. - Allows them to be creative. - Other advantage.
Ophir, 2023, Isreal (97)	Mothers were asked to state their level of agreement (on a 5-point Likert scale) with the following items: - screen use can lead to cognitive problems, such as delays in brain development or impairments in attention capabilities - screen use can lead to emotional and social problems, such as impairments in emotion regulation and poor interpersonal capabilities - screen use may contribute to children's cognitive functioning, for example, through online education - screen use may contribute to emotional and social functioning, for example through online communications with friends - it is important to limit screen time among children in the 1st to 3rd grades - it is important to limit screen time among children in the 4th to 6th grades
Petegem, 2019, Belgium (98)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statement regarding digital gaming: - Digital games are a waste of time. - Digital games are useless. - I believe that digital games pose a threat to children's development. - Digital games are a meaningful activity. - I think it is good that children play digital games. Playing digital games may be harmful to children.
Raj, 2022, Malaysia (99)	NR.
Raj, 2023, Malaysia (100)	NR.
Rajalakshmi, 2023, India (101)	Parents were asked to tick off their opinion (yes/no) towards the following statements (only some items provided in the result section): - Increases his/her knowledge - Starts imitating what he/she watches

	- Might develop sleep problems - Might start eating unhealthy food - Might cause behaviour problems - Might impair eyesight - Has no negative effects - Has no positive effects
Rosanda, 2022, Slovenia (102)	Parents were asked to tick off which types of the following positive effects they believed digital toys (including digital without screen and screen-based) had for their children: - Perceptual development - Motor development - Cognitive development - Emotional development - Listening, observation - Visual and spatial orientation - Promotes hand-eye-coordination - Stimulates the strengthening of reflexes - Encourages the development of social skills - Encourages the development of problem-solving skills - Encourages the development of basic mathematical skills - Encourages the development of basic reading skills - Encourages the development of basic language skills - Stimulates interest in science - Stimulates interest in arts and crafts - Stimulates interest in history - Allows child to search for information - Provides entertainment - Encourages the development of the skills needed to succeed in school - Keeps child busy - Stimulates the child's interest in what is happening in his/her environment
Sada Garibay, 2024, Mexico (103)	Parents were asked to rate their level of perceived risk (on a 4-point Likert scale) using the following item: Which of the following statements describes better your feelings in relation to the use of streaming platforms (Netflix, Claro video, APV, Blim, or other) by your child/children in elementary school?
Seršen, 2024, Slovenia (104)	Parents were asked to tick off their opinion regarding the following statements: - Are you concerned about the possible negative effects of watching children's programmes on your child's development and learning? - o If answering "yes", name three aspects of children's programmes that you most fear could harm your your child. - Do you believe that children's programmes can have a positive effect on your child's development and learning? If answering "yes", name three most positive aspects of watching children's programmes.

Solomon-Moore, 2017, UK (105)	Parents were asked to indicate how 'beneficial≥ harmful,' 'healthy≥ unhealthy,' 'useful≥ of no use,' and 'of no concern≥ of concern' for the following statements: - Children spending several hours per day watching television or playing video games. - Children spending several hours per day during leisure time using a computer or surfing the Internet.
Stuckelman, 2023, USA (106)	NR.
Suresh, 2023, India (107)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following statement regarding screen-based device use: - I think my child is benefiting from screen based devices. - I am happy with the range of screen based devices my child has access to. - I believe screen based devices are making my child's life better. - I think my child is skilled at using screen based devices. - I think screen based devices prevents my child from interacting with other people. - Screen based technology helps me to keep my child occupied when the family attends to other work. - I will introduce more screen based devices to my child he/she grows up. - I find it hard to choose the appropriate activities and games for my child in screen based devices. - I think it is necessary to give screen based devices exposure to children from an early age. - I think screen based devices is helping to improve my child's attention and learning skills. - I think use of screen based devices increases the interactive opportunities for my child. - I prefer giving screen based devices over other toys for my child to play with. - I think it is necessary to encourage outdoor play activities along with screen based devices. - I believe screen based devices exposure has increased tantrums in my child. - I think screen based devices usage has negatively affected my child's communication skills. - I think my child prefers screen based devices over face to face interactions. - I am concerned regarding child's screen based devices usage. - Certain contents in screen based devices is inappropriate for young children. - My child spends too much time on screen based devices. - My child may get addicted to screen based devices. - My child losing interest in other activities and lacking real life functioning skills due to excessive screen based devices use. - Harmful effects of prolonged screen based devices usage on my

	child's health. - Whether screen based devices might negatively affect my child's learning, thinking, attention etc. - Whether increased use of screen based devices can negatively affect child's creativity and imagination. - Increase use of screen based devices can result in social deficit, less social interaction and isolation of my child. - Excessive screen based devices can impair my child's communication skills. - Excessive screen based devices can impair my child's speech and language development. - My child's screen based devices use might impact our cultural values.
Tanusha, 2023, Malaysia (108)	Parents were asked to tick off their opinion (yes/no/unsure) about the following statement: - Do you think that your preschool child's digital device use causes more benefit than harm? Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following themes related to perceived risks of children using digital devices: Physical - Damages eyesight - Exposed to radiation - Inactive lifestyle Intellectual - Causes device addiction - Has undesirable contents - Causes over-dependence Emotional - Causes poor social-emotional development - Causes impatience - Encourages tantrums Social - Causes social isolation - Causes poor social skills - Causes poor communication skills Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following themes related to perceived benefits of children using digital devices: Physical - Improves movements and coordination of hands and fingers - Improves sensation of vision, hearing and touch - Improves reflexes Intellectual - Improves academic achievement - Promotes creative and interactive learning - Enhances learning process

	Emotional - Appreciates music - Encourages independence - Reduces tantrums Social - Promotes technology awareness - Easily accessible and portable - Entertaining
Tay, 2021, Singapore (109)	Parents were asked to rate the importance (on a 5-point Likert scale) of digital media use regarding: - To improve child's knowledge and skills. - For entertainment. - To keep child occupied. - For communication purposes. - To distract or divert child's attention. - To put child to sleep. Parents were asked to rate their concern (on a 5-point Likert scale) about perceived harmful effects of child's use of digital media regarding: - Poor sleep - Lack of physical exercise and play - Lack of parent-child interaction - Exposure to inappropriate content - Addiction - Poor eyesight
Vaala, 2014, USA (110)	Mothers were asked to rate their attitudes (on a 7-point Likert scale) toward letting their child watch TV/videos for more than an hour a day on at least several days each week on three dimensions: - bad/good - foolish/wise - harmful/beneficial
Vaiopoulou, 2021, Greece (111)	Parents were asked to rate their perspectives (on a 7-point Likert scale) of children using educational apps regarding the following themes: Learning outcome: - Facilitate new knowledge acquisition. - Enhance a child's language development. - Promote creative thinking. - Contribute to the cognitive development. - Facilitate foreign languages learning. - Offer feedback in case of error. - Promote logical thinking. Worries: - Undermine children development. - They create health problems. - Problems are due to radiation. - Reduces quality interaction with parents. - Cause introversion in children.

	Enjoyment: - They offer pleasant sounds. - They enclose pleasant images. - They contain fun characters for kids. - They entertain the children. Values: - They are complemented by traditional teaching. - They offer multimedia teaching material. - They strengthen the motivation for learning. - They create an effective learning environment. Usability: - They provide instructions suitable for children of this age. - They are easy to use by children. - Children easily understand the content. - Children can use them without the guidance of an adult. Involvement: - They capture the child's attention. - They capture the child's interest. - They create an addiction to the child.
Vittrup, 2016, USA (112)	Parents were asked to rate their level of agreement (on a 7-point Likert scale) with the following statements regarding children's use of media and technology: - Media exposure at young age (0-3 years) is important for early brain development. - A child will not fall behind other children academically if his or her use of technology tools is restricted in the early years (0-5 years). - Children under the age of 2 years should have no TV screen time. - TV, videos, video games, or the computer can be used to keep children occupied while caregivers attend to important tasks. - Children under the age of 5 years should only watch educational programs. - TV advertisements have little impact on children under the age of 5 years. - The use of a computer can promote long-term physical, emotional, or intellectual developmental damage. - Introducing technological tools at a young age prepares children better for tomorrow's work force. - Children today naturally understand how to use computers and related technologies at an early age.
Vincent, 2021, France (114)	No information was provided on how parents responded to the following items regarding which benefits they believed using smartphones and tablets had for children under the age of 3: - Promotes learning (new words, improvement of language, shapes, colours, etc). - Develops dexterity (tactile function). - Calms, soothes, promotes concentration. - Keeps the child occupied/ Promotes sleep, helps to fall asleep.

	- Entertainment: pleasure, emotions, distraction, fun. - No perceived benefits. No information was provided on how parents responded to the following items regarding which risks they believed using smartphones and tablets had for children under the age of 3: - Negative impact on learning. - Negative impact on motor development. - Increases agitation, decreases attention or concentration. - Promotes isolation, reduces contact. - Prevents from sleeping well. - Increases the risk of overweight. - No perceived risk.
Wang, 2024, China (113)	Parents were asked to rate their level of agreement (on a 5-point Likert scale) with the following items: - Children's use of electronic information tools is not good for their brains. - Online activities (online games, movies) are detrimental to children's development.

NR=Not Reported.

Table 5 provides an overview of the content focus of the questionnaire items according to the four overall dimensions of the Child-Technology Interaction model. When considering the overall dimensions covered, most of the 437 reported items were related to the *child* dimension (n=187). Within this dimension, the most common content focus of the items were parents' perspectives on the potential impact of technology on children's *physical health* (n=48), including sleep issues and lack of physical activity, followed by the potential influence of technology on children's *emotions and behaviours* (n=47) and *cognition* (n=12). A total of 56 items could be considered as having a content focus under the *other people* dimension, of which most items aimed to measure *parental regulation of children's technology use* (n=32). A total of 176 items were related to the *task* dimension, of which most focused on parents' perspectives on the potential impact of technology use on how children *learn* (n=82) and how technology can be used for *social aspects* (n=40). Only 14 items could be considered as related to the *technology* dimension, of which *safety* was the most common theme (n=16).

Table 5. Classification of items according to the four dimensions of the Interaction Child-Technology Interaction Model, including codes used to classify each item.

Code ^A	Definition of code	Count (% ^B)
"Child" dimension (n=187,43%^A)		
Addiction	Item relates to child's addiction to technology.	12 (3%)
Age of child	Item relates to the age of the child. Can either be mentioning a specific age (e.g. 5 years) or range (e.g. young children).	17 (4%)
Attention	Item relates to technology's impact on children's attention.	10 (2%)
Cognition	Item relates to technology's impact on children's cognition. Includes aesthetic (e.g. order, beauty).	21 (5%)
Creativity	Item relates to technology's impact on children's creativity.	12 (3%)
Digital literacy	Item relates to children having the skills to use the technology.	8 (2%)

Emotions and behaviours	Item relates to technology's impacts on children emotionally and/or their behaviour (e.g. makes child aggressive).	47 (9%)
Physical health (incl. sleep issues)	Item relates to technology's impact on children's physical health.	48 (11%)
Religion and culture	Item relates to technology's impact on children's religion and/or culture.	3 (1%)
Wellbeing	Item relates to technology's impact on children's overall wellbeing.	9 (2%)
"Other people" dimension (n=56, 13% ^A)		
Family interaction	Item relates to how children's technology use can promote/hinder family time or family interaction.	24 (5%)
Parental regulation of tech	Item relates to regulations of technology use.	32 (7%)
"Tasks" dimension (n=176, 40% ^A)		
Displacement of activities	Item relates to time spent on digital technology instead of other activities such as normal/traditional play.	11 (3%)
Entertainment and relaxation	Item relates to technology as being entertaining or a way of relaxation for children.	22 (5%)
Keeping children occupied	Item relates to technology as being a way to "keep children occupied".	16 (4%)
Learning	Item relates to children using digital technology for learning.	82 (19%)
Preparing for adult life	Item relates to how technology can prepare children for adult life.	5 (1%)
Social	Item relates to how technology can be used for/influences social aspects.	40 (9%)
"Technology" dimension (n=14, 4% ^A)		
Internet and online	Item relates to children using the internet/being online.	2 (<1%)
Safety	Item relates to whether adults feel safe about their children using technology or to age-appropriateness of content.	16 (4%)
		Total: 437

^AEach item was only coded as belonging to one of the listed codes. ^BPercentage of total number of items.

Perspectives from included studies' participants

A total of 75 studies reported the study participants' perspectives on children's use of technology (Table 6). Across the four dimensions of the Child-Technology Interaction Model (i.e. *child*, *other people*, *tasks*, and *technology*), parents expressed diverse perspectives on children's use of technology.

When considering the *child* dimension, 23 studies reported that parents were concerned about potential negative impacts of technology on their children's *physical health*. Commonly raised concerns were related to lack of physical activity, sleep issues, and poor eyesight. Four studies reported that parents believed that technology could have beneficial impacts on their children's *physical health*, such as improvement in movement skills (44, 71, 81, 102). A total of 13 studies reported that parents were concerned about technology leading to *addiction* (30, 36, 46, 51, 58, 63, 64, 72, 82, 85, 96, 104, 108). Parents' perspectives on the impact of technology on children's *emotions and behaviours* were addressed in 11 studies (39, 67, 71-73, 81, 92, 101, 104, 112, 114).

While most of these studies (n=9) reported that parents had concerns about technologies leading to behavioural issues (39, 67, 72, 73, 92, 101, 104, 112, 114), some also reported that parents believe technology could have positive impacts on children's emotions and behaviours, for example, in supporting emotional regulation (71, 81, 92, 104).

When considering the *task* dimension of the Child-Technology Interaction model, a total of 41 studies reported perspectives related to the use of and/or potential influence of technology on children's *learning*. Among these studies, all participants reported positive perspectives, particularly in relation to the role of technology for enhancing children's academic performance. Mixed perspectives were found for the role of technology on children's *social development*. Nine studies reported that the participants had concerns about technology negatively impacting children's *social skills and development* (46, 55, 69, 72, 80, 92, 104, 107), while four studies reported that the participants believed technology had a positive impact, particularly in relation to *social interaction* (67, 71, 81, 104). Nine studies reported that parents acknowledged technology as a positive source of *entertainment and relaxation* for children (31, 37, 46, 49, 55, 61, 91, 104, 109).

For the *other people* dimension, parents were concerned about technology interfering with *family time* (36, 67, 72, 88). Finally, for the *technology* dimension, a commonly held concern among the study participants was related to children's *safety* when using technology, particularly in relation to children being exposed to inappropriate content (46, 50, 51, 58, 59, 63, 69, 79).

Table 6. Summary of findings related to perspectives towards children's technology use based on questionnaire-responses.

Author, country	year,	Perspectives from study participants
Akyol, Turkey (30)	2022,	All parents included in the study stated that technology addiction was harmful (100%), and 35% of the parents thought that technology addiction increases in online education compared to face-to-face education.
Alade, USA (31)	2022,	A total of 67% of the parents agreed that having a mobile device in the home made their job as a parent easier; 82% agreed that that mobile devices help their children learn at home; 96% agreed that their child enjoys using a mobile device in the home; 85% agreed that they enjoy using the mobile device with their child; and 41% of the parents agreed that they were concerned that their child uses the mobile device too much. When asked about mobile device use at school, 92% agreed that it is important for children to have access to technological in school; 38% agreed that technology use in school can distract from leaning; 94% agreed that there can be a healthy balance between traditional and technology-based teaching methods; 96% agreed that mobile devices can be a useful learning tool at school; while only 21% agreed that mobile devices takes away from important learning in school.
Al-Balushi, Oman (32)	2016,	NR.
Alkalash, Saudi Arabia (33)	2023,	A total of 73% of the parents had a positive attitude towards their children's exposure to screens.
AlSamhori, Jordan (34)	2023,	A total of 37% of parents believed that using technology improves their child's mental and physiological growth, while 73% perceived that technology negatively impacts their child's mental and psychological growth.
Amzalag,	2021,	Parents perceived that their children gained the following skills

Isreal (35)	through digital learning games: independent learning (mean on a 1-5 Likert scale=3.98, SD=0.96); curiosity, interest, and motivation (mean=3.69, SD=1.05); and creative thinking (mean=3.63, SD=1.21). Parent perceived that digital learning games used instead of traditional homework enabled their children to enjoy meaningful learning and to construct knowledge (mean=3.88, SD=1.18); to master learning materials (mean=3.80, SD=0.96); and to increase motivation and learn from their mistakes (mean=3.58, SD=1.09).
Arippin, 2023, Brunei Darussalam (36)	For items related to knowledge regarding their children's screen time, parents most frequently agreed to the following statements: "Uncontrolled children's screen time can lead to addiction to the devices" (46%); "children's sleep pattern and quality can be disrupted by increase in their screen time" (39%); and "increase in children's screen time is likely to decrease their effort in physical activity" (34%). For items related to parents' attitude towards their children's screen time, parents most frequently agreed to the following statements: "I have the responsibility to control our child(ren)'s screen time by paying close attention on the appropriateness of the screen time activities" (90%); "I am aware that our child(ren) engagement with screen time is influenced by our use of screen-based devices and/or by others (e.g. siblings and/or friends)" (69%); and "I observed that our child(ren)'s use of screen device interferes with our family quality time" (66%). For items related to parents' practices around screen time, the most frequently agreed to statements were: "I ensure that I take away my child(ren) screen-based devices at home when they play or have social activities" (84%); "I encourage my child(ren) to play with toys or talk face-to-face rather than spending time every waking hour, using mobile phone, watching TV/video, and on laptop" (83%); and "I usually stop my child(ren)'s screen time at least an hour before bedtime to get him/her to fall asleep" (76%).
Asplund, 2015, USA (37)	A total of 34% of the parents disagreed that young children who never watch TV miss a lot that is of value, and 42% disagreed that TV is a useful way of keeping the children amused.
Balaban, 2019, Turkey (38)	NR.
Bansal, 2023, India (39)	For items related to knowledge regarding their children's screen time, parents most frequently agreed to the following statements: "increased children screen time more likely to increase consumption of soft drinks and snacks"(32% mothers; 29% fathers); "children that spend more screen time are at risk of emotional, mental and behavioural problems" (23% mothers; 25% fathers); and "increased children's screen time may increase risk of the children being overweight/obesity" (22% mothers; 24% fathers). For items related to parents' attitude towards their children's screen

	time, parents most frequently agreed to the following statements: “I have the responsibility to supervise our child(ren)’s screen time activity even when there is increase household and/or work demand” (22% mothers; 25% fathers); “it is challenging to manage our child(ren)’s screen time when there is a lot of screen-based devices available in out household even though I should manage it” (21% mothers; 23% fathers); and “I would consider my child(ren)’s level of screen time to be a serious matter even if he/she/they is/are active, healthy and well-behaved” (21% mothers; 21% fathers). For items related to parents’ practices around screen time, the most frequently agreed to statements were: “I try to limit or not use screen-based devices whenever I am with my child(ren)” (32% mothers; 33% fathers); “I don’t give screen-based devices to my child(ren) to keep them temporarily occupied and be quiet especially in time when I am busy and when he/she get fussy or moody” (28% mothers; 25% fathers); and “I usually stop my child(ren)’s screen time at least an hour before bedtime to get him/her fall asleep” (17% mothers; 20% fathers).
Barmomanesh, 2017, New Zealand (40)	A total of 48% of the parents had a negative feeling toward their child’s use of smartphones/tablets, whereas 31% were neutral, and 21% had a positive feeling. More than half (61%) of the parents believed that using digital technologies prepares children for the real world they have to live in.
Beyens, 2014, Belgium (41)	NR.
Bleakley, 2013, USA (42)	NR.
Boonmun, 2023, Thailand (43)	Results of parents’ attitudes towards their children’s screen time reduction were stratified in the control (n=35) and intervention group (n=36). In the control group, the mean attitude score was 72.86 (SD=8.41) at baseline, with higher scores indicating a more positive attitude towards children’s screen time reduction. In the intervention groups, the mean attitude score was 73.03 (SD=7.28) at baseline.
Bourha, 2024, Greece (44)	Prior to their child’s exposure to technology-enhanced toys, 50% of the parents believed that their child’s engagement with technology was very significant or extremely significant. Following their child’s exposure to such toys, this increased to 52.5%. A total of 81% parents believed that technology-enhanced toys resulted in improvement of their child’s knowledge. Among these parents, 27% believed that their child’s fine-motor skills had improved; 25% believed that their child’s speech/vocabulary had improved; and 17% believed that their child’s creativity had improved after exposure to technology-enhanced toys.
Brauchli, 2023, Switzerland (45)	The following mean scores were reported regarding parents’ attitudes towards children’s screen media use across four measurement time points: T1=2.53 (SD=1.08); T2=2.51 (SD=1.06); T3=2.71 (SD=1.19); and T4=2.72 (SD=1.13) (with higher scores representing more positive attitudes).

Brown, 2023, USA (46)	The most commonly held beliefs about the negative effects of childhood digital media use were addiction to gaming/screens (52%), sleep problems (39%), getting out of shape or obesity (33%), loss of social skills or being impolite (33%), and exposure to violent or inappropriate content (32%). The most commonly held beliefs about the positive effects of childhood digital media use were exposure to a wider vocabulary (44%), learning about other cultures, places, and ideas (41%), and relaxation or fun (36%).
Cardy, 2023, Canada (47)	From the community sample, 44% of parents perceived a positive to very positive impact of technology use on children's quality of life. Compared to the group of parents with autistic children, parents in the community group were more likely to report that their child has not benefited from technology in any area (adjusted odds ratio, AOR=0.35, 95%CI: 0.16, 0.73). For children's quality of life, more parents in the community group compared to the parents with autistic children believed that the impact of technology was positive for children who used technology for education (AOR=4.61, 95%CI: 2.52, 8.55), recreation (AOR=2.54, 95%CI: 1.37, 4.71), and therapy (AOR=8.50, 95%CI: 2.97, 30.78). Leisure/recreation, language and communication, and cognitive development were the most common (over 40%) domains that parents from the community sample believed benefited children by using technology.
Carson, 2012, Canada (48)	NR.
Carson, 2013, Canada (49)	The most common perspectives among the parents were that screen time is enjoyable for their child (96%), when their child engages in screen time it gave the parents an opportunity to get things done (87%), and that screen time is a good learning tool (79%). The three most agreed on barriers to reducing screen time were that their child does not engage in excessive screen time (75%), screen time is enjoyable for their child (70%), and parents need time to perform household chores (64%).
Chattha, 2021, Pakistan (50)	A total of 45% of the parents believed that screen time improved the child's knowledge and vocabulary; 14% of the parents believed that screen time negatively affected the child's vision; 11% believed that the child learned unacceptable things when exposed to screens and 6% of the parents believe that screen time had no advantage for their children.
Chia, 2022, Singapore (51)	The most common positive perspective among the parents was that digital media was very important to improve their child's knowledge and skills (48%). The most common concerns were that digital media use would result in addiction (76%), poor eyesight (73%), and expose the child to inappropriate content (74%).
Chen, 2018, Taiwan (52)	NR.
Cingel, 2013, USA (53)	Mean positive belief score among the parents was 3.77, SD=1.29, on a 1-7 Likert scale, with a higher score presenting more positive

	beliefs about children's media use. For the negative belief score, with a higher score presenting more negative beliefs about children's media use, the mean was 4.14, SD=1.39, also on a 1-7 Likert scale.
Covolo, 2021, Italy (54)	Most adults (predominantly parents) believed that the use of mobile devices by children aged 0-5 years old posed a health risk (74%) and that mobile devices were harmful to children (76%). The most commonly perceived risks associated with mobile device usage were eye irritation (83%), confusing virtual reality with real world (74%), and having sleep disorders (65%). The most commonly perceived benefit was communicating with distant relatives (47%). Becoming obese was considered a high risk by 51% and a low risk by 32% of respondents.
Dardanou, 2020, Norway, Portugal and Japan (55)	Among the three countries, the majority of the parents stated that using touchscreens entertained their children (mean = 0.47, SD = 0.50), followed by helped their children learn new knowledge (mean = 0.35, SD = 0.48), learn new skills (mean = 0.34, SD = 0.47); and in being creative (mean = 0.17, SD = 0.38). Among the Portuguese parents, 50% expressed concerns about their children's use of touchscreens, predominantly related to their children becoming dependent on technology and not socialising with their peers and environment. Furthermore, 82% of these parents believed that technologies do not enhance cognitive development for 0-3-year-olds, do not stimulate creativity, and that children's health, specifically their vision, is affected negatively. Among Norwegian parents, 50% expressed concerns about 0-3-year-olds using touchscreens, while 90% of Japanese parents stated concerns about their children's touchscreen usage. A total of 29% of Norwegian parents and 12% of Japanese parents reported that early use of technology use would help children when they start at school.
Dong, 2022, China (56)	NR.
Eales, 2021, USA (57)	Parents' perceptions of media use as helpful vs. hurtful were not different pre- to post-COVID-19. Mean score (with higher scores indicating 'more hurtful') pre COVID-19 was 3.19 (SD=0.51) and mean score post COVID-19 was 3.21 (SD=0.60).
Ebbeck, 2016, Singapore (58)	The majority of parents/caregivers identified that touch screen devices were most risky for children's intellectual (55%) and physical (53%) development. Intellectual development consisted of risks related to addiction, undesirable contents and over-dependence. Physical development consisted of risks related to vision deterioration, inactive lifestyle and radiation. Most parents/caregivers (60%) believed touch screen devices may benefit children's intellectual development. This included benefits related to improved academic outcomes, creative and interactive learning, and enhanced learning process.
Fan, 2022, China (59)	A total of 55% of the parents believed that short-video apps could broaden children's horizons and help them understand the diversity of cultures and societies; 49% of the parents believed that short-video apps entertained their children and cultivating their personal hobbies;

	and 44% of the parents believed that short-video app would help their child learning language and life skills. A total of 52% of the parents were concerned that their child had too much screen time, and 27% of the parents were concerned about unsafe content such as violence and bad language.
Farima, 2023, Moldova (60)	A total of 92% of the parents believed that the use of electronic devices could cause health problems in children; 26% of the parents believed that electronic devices contribute to the harmonious development of children; 17% believed that they have a beneficial effect on children; and 20% believed that devices help the child learn to read, write, and speak.
Garcia-Conde, 2020, Spain (61)	Mean score for parents believing that TV/screen is harmful for their child was 1.91 (SD = 1.02), with a higher score indicating parents' belief that TV/screen is less harmful. Mean score for parents believing that TV/screen is healthy entertainment for their child was 1.98 (SD = 0.90), with a higher score indicating parents' belief that TV/screen is more entertaining.
Gjelaj, 2020, Kosovo (62)	A total of 67% of the parents reported positive attitudes towards using digital technologies for their young children. The most common perceived benefits associated with children's technology use were language development (28%) and acquiring technology skills (25%). A total of 43% of the parents believed using technology would promote children's school readiness. When considering concerns about the negative effects of technology on their child's development, 59% of the parents reported concerns about their child engaging in less active play time, 52% reported concerns about their child spending less time playing in the yard; and 36% reported concerns about developing physical disorders.
González-Sanmamed, 2023, Spain (63)	Overall, parents rated the risks associated with children using mobile devices higher than the benefits. With a higher scorer indicating higher perceived risk, the risks with the highest scores were "access to inappropriate content" (mean=4.12, SD=1.24), "commit/suffer cybercrimes" (mean=4.02, SD=1.28), and "addiction" (mean=3.95, SD=1.34). The perceived benefits with the highest scores were "entertainment" (mean=3.47, SD=1.14), "educational utility" (mean=3.45, SD=1.24), and "more access to information" (mean=3.38, SD=1.37).
Grané, 2023, Spain (64)	A total of 85% of the parents believed that some applications were educational; 70% believed that technology entertained children; and 63% believed that technology is fun for children to use. On the other hand, 78% of the parents believed that technology is additive for children and 46% believed that they are harmful for children under 6 years.
Griffith, 2023, USA (65)	NR.
Halpin, 2021, Australia (66)	Mean score for parents' perception on how their child's screen use affects their child's health, development and daily functioning and their own wellbeing was 5.62 (SD=1.06, range=3.13-9.61), with higher scores indicating perceptions of more positive effects.

Hamilton, 2016, Australia (67)	The highest mean scores for the parents' beliefs on benefits of children's screen time were found for "promoting healthy habits" (mean=5.42, SD=1.57) and "improving my child's social skills" (mean=5.27, SD=1.64), with higher scores indicating parents' finding the benefit more likely. The highest mean scores for the parents' beliefs on costs of children's screen time were found for "increase parent-child confrontations" (mean=4.01, SD=2.05) and "increase whining behaviour in my child" (mean=3.93, SD=1.99), with higher scores indicating parents' finding the cost more likely.
Hatzigianni, 2014, Australia (68)	The most commonly held reasons among parents for why their child should use computers were to improve educational skills (40%), technological skills (38%) and to prepare their children for future employment (35%).
Howie, 2020, Australia & USA (69)	Parents reported the highest agreement with the statements "Using mobile technology will increase the amount of time my child spends sitting" (mean=4.3, SD=0.8) and "Using technology will reduce my child's physical activity" (mean=4.0, SD=1.0). Parents agreed with items on mobile technology being good for their child's education (mean=3.4, SD=0.9), harming social skills (mean=3.2, SD=1.1), making their child at risk to online predators (mean=3.3, SD=1.1), and having overall benefits (mean=3.2, SD=0.9). Parents disagreed with mobile technology being bad for education (mean=2.5, SD=0.8), being good for their child's education when used in childcare (mean=2.6, SD=1.1), improving social skills (mean=2.2, SD=0.8), and being a risk overall (mean=2.8, SD=1.0). Parents were neutral (mean=3.0, SD=1.0) on mobile technology causing their child discomfort and pain.
Hutton, 2018, USA (70)	Results at first data collection (prenatal) showed that most mothers believed that television viewing by children <3 months old were "not important" (64%) or "somewhat important" (22%) for their development. Results from the second data collection (~2 months old) were similar, with 53% of mothers believing television viewing was "not important" and 25% of mothers believed television viewing was "somewhat important" for healthy development.
Ihmeideh, 2017, Jordan (71)	For the physical or health aspect of the role of technology, parents scored a mean value of 3.52 (SD = 0.77) on enhancing children's movement skills and physical activity; 3.50 (SD = 0.67) on raising children's health awareness; and 3.75 (SD = 0.92) on increasing children's knowledge about safety procedures in their life. For the intellectual aspect, parents scored a mean value of 4.17 (SD = 0.83) on developing children's thinking skills; 4.03 (SD = 0.77) on helping children develop creativity; 4.29 (SD = 0.82) on improving children's language and literacy; 4.18 (SD = 0.83) on developing children's problem-solving skills; and 4.05 (SD = 0.81) on developing children's numeracy skills. For the emotional aspect, parents scored a mean value of 3.96 (SD =

	0.78) on helping children in controlling and managing their emotions; 4.30 (SD = 0.80) on protecting children from fear, shyness, and anxiety; and 3.86 (SD = 0.95) on helping children sympathize with others and identify with community members. For the social aspect, parents scored a mean value of 3.32 (SD = 0.82) on increasing children's awareness of their society and its problems; 3.45 (SD = 0.68) on helping children cultivate feelings of belonging and citizenship; 3.68 (SD = 0.91) on helping children communicate and interact with others; and 3.18 (SD = 0.74) on helping children know both, their social rights and duties. For the moral aspect, parents scored a mean value of 3.52 (SD = 0.75) on helping children cultivate positive morals and values; 3.63 (SD = 0.96) on helping children exercise the highest ethics; 3.67 (SD = 0.88) on helping children distinguish between good and evil, right and wrong; and 3.94 (SD = 1.05) on helping children maintain the prevailing good practices and traditions. For the religious aspect, parents scored a mean value of 4.01 (SD = 0.79) on developing children's positive attitudes toward their religious teachings; 4.14 (SD = 0.87) on helping children learn about certain religious duties; and 4.12 (SD = 0.88) on helping children acquire religiously inspired social etiquette. For the aesthetic aspect, parents scored a mean value of 3.84 (SD = 0.92) on increasing children's ability to understand and appreciated the arts (acting, singing, theatre); 3.38 (SD = 0.92) on helping children tidiness, order and consistency; 4.14 (SD = 0.91) on helping children experience things and appreciate their beauty; and 3.62 (SD = 0.99) on helping discover and develop children's preferences, interests and skills.
Ilgar, 2018, Turkey (72)	More than 70% of the mothers believed that computer games had a negative impact on children's dependency (93%) and socialisation (88%), and that computer games reduced time for family interaction (88%). Less than 50% of the mothers believed that computer games contributed positively to children's perception, attention, and memory development (45%); creativity (37%); exploratory learning (31%); and self-production (22%).
Istemic, 2023, Slovenia (73)	Parents generally viewed traditional toys more favourably than digital screen toys across various developmental domains. A total of 17% of the parents believed digital toys stimulated sensory development, and 94% believed traditional toys did the same. A total of 6% of the parents believed digital toys stimulate motor development, compared with 93% for traditional toys. Digital toys were perceived to promote cognitive development by 45% of the parents compared with 73% for traditional toys. A total of 15% believed digital toys enhanced emotional development, whereas 87% of the parents linked traditional toys to this. Digital toys were perceived by 43% of the parents as being able to encourage listening and observation, compared with traditional toys being perceived by 74% of the parents. Visual-spatial orientation was believed to be promoted by digital toys by 19% of the parents, whereas 84% believed this was stimulated with traditional toys.

Istemic, 2023b, Slovenia (74)	For parents' attitudes towards digital technology for child's development and learning, parents rated the highest on the items of "I want the child to enjoy their childhood and not become addicted to technology" (mean = 4.48, SD = 0.73), "the use of a computer can promote long-term physical, emotional, or intellectual development damage" (mean = 4.15, SD = 0.90) and "my child should first learn to interact with the physical world, s/he has a lifetime to interact with the virtual world" (mean = 4.12, SD = 0.99). Parents would limit screen time to an hour daily (mean = 4.06, SD = 0.99), and they believed that screen technology could only be used under the supervision of parents (mean = 4.07, SD = 0.85). Parents indicated concerns about the influence digital technology has on a child's development and learning (mean = 3.79, SD = 1.01) and believed that a child develops better without digital technology (mean = 3.69, SD = 1.06). Parents believed that a child would not fall behind other children academically if his or her use of technology tools is restricted in the early years (0-3 years) (mean = 3.70, SD = 1.37). For parents' perspective on child(ren)s play with traditional and digital toys, parents rated the highest on the items of "during playtime the most important is communication between a child and engaged person" (mean = 4.13, SD = 0.84); and "more important is communication between a child and person present than a toy itself" (mean = 3.99, SD = 0.91). Parents believed that technology toys encourage children to be passive (mean = 3.38, SD = 1.00), preschoolers develop better without the technology (mean = 3.39, SD = 1.02); and that children under three should not use technological toys (mean = 3.64, SD = 1.06), but that some technological toys can enhance the child's development of early literacy (mean = 3.45, SD = 0.82) and enable a child to learn how to manipulate technology (mean = 3.50, SD = 0.67).
Jain, 2023, India (75)	NR.
Jin, 2013, Korea (76)	Parents scored a mean value of 4.19 (SD = 0.58) on interest in children's internet use, with higher values representing higher agreement on the items.
Joginder Singh, 2021, Malaysia (77)	Most parents (67%) believed that screen time improved their children's language skills, 7% believed that screen time had no effect on their children's language skills, and 8% believed that screen time had a deteriorated effect. The remaining 18% of the parents were unsure of the effects of screen time on their children's language skills.
Konok, 2020, Hungary (78)	A total of 32% of the parents reported a negative attitude towards child use of mobile touch screen devices, while 46% reported a neutral/mixed attitude, and 22% reported a positive attitude. Most parents believed that using a tablet/smartphone in early childhood can have both harmful (82%) and beneficial (77%) consequences.
Kostyrka-	Regarding the severity of various features of television and film that

Allchorne, 2017, UK (79)	were thought to be detrimental to young children's development, violent content was rated as the most harmful compared to inappropriate language, inappropriate behaviour and fast pace ($p < .001$, 95%CI: -0.63 to -0.32; $p < .001$, 95%CI: -3.5 to -1.2; $p < .001$, 95%CI: 1.11-1.61, respectively). Parents believed that the effects of popular media on children's development were somewhat positive ($p < .001$, 95% CI: 0.83 to 1.22); the effects of watching fast-paced programmes were somewhat negative ($p = .063$); the effects of watching educational shows were positive ($p < .001$, 95%CI: 2.24 to 2.48); and the effects of watching violent content were very negative ($p < .001$, 95%CI: -1.82 to -1.44).
Lee, 2022, Korea (80)	Parents scored a mean value of 3.06 (SD = 0.65) on the positive attitude toward media use, with higher values representing more positive attitudes. For negative attitudes toward media use on intellectual and social dimensions of a child's development, the parents scored mean values of 2.89 (SD = 0.73) and 2.83 (SD = 0.78), respectively.
Lepicnik, 2013, Slovenia (81)	When asked which competences the parents believed usage of information-communication technology (ICTs) mostly develops, 59% of the parents believed that ICTs partially develop child's learning competences; 54% of the parents believed that ICTs partially develop a child's motor competences; and 54% of the parents believed that ICTs partially develop child's self-expression competences. A total of 49% of the parents believed that ICTs partially develop child's language competences, and 42% of parents believed that ICTs partially develop child's social competences.
Li, 2015, China (82)	Between 60% and 80% of the parents believed that tablets could make children 'addicts' and that tablets could 'be prejudicial to health'.
Liibaen, 2023, Scotland (83)	Most parents believed that screen time has a negative impact on concentration (~40%), sleep (~40%), and social skills (~40%).
Little, 2019, UK (84)	NR.
Luo, 2023, Taiwan (85)	With higher scores indicating a higher level of agreement more positive attitude towards children's technology use among the parents, the highest means were found for the following statements: "rich audio and video help to improve interest in learning" (mean=3.62, SD=0.95); "provide a variety of learning content" (mean=3.50, SD=0.92); and "provide diverse stimuli for learning" (mean=3.44, SD=0.94). Regarding negative attitudes towards children's technology use, the highest scores were found for the following statements: "easily lead to the phenomenon of technology-use addiction" (mean=4.16, SD=0.87); "develop the habit of overreliance on audio-visual learning" (mean= 4.02, SD=0.83); and "affect the development of the optic nerve" (mean=3.94, SD=0.84).
Mansor, 2021, Malaysia (86)	NR.

Matziou, 2021, Greece (87)	A total of 48% of the parents did not agree that television affects their children, while 25% reported that television may affect children negatively.
Mikelic Preradovic, 2016, Croatia (88)	The positive attitudes of parents toward children's computer use were indicated by their high level of agreement with the following statements: "children learn new and useful things on computer" (M = 3.72, SD = 0.99); "when using computers, children gain valuable IT skills which will be useful for them in the future" (M = 3.98, SD = 0.91); and "computers can have only negative influence on children's development" (M = 3.91, SD = 1.03) with the last statement being inversely coded. The negative attitudes of parents were indicated by their high level of agreement with the following statements: "children who regularly use computer are at risk of developing dependence" (M = 2.26, SD = 1.08); "children engage in sport less frequently due to the increased computer usage" (M = 2.37, SD = 1.31); and "excessive use of computers may separate children from their parents and friends" (M = 2.47, SD = 1.23) with all three statements being inversely coded.
Milford, 2022, Australia (89)	NR.
Nabi, 2016, USA (90)	NR.
Natsiopoulou, 2013, Greece (91)	A total of 83% of the high socioeconomic status (HSES) parents and 76% of the low socioeconomic status (LSES) parents agreed or totally agreed that using computers offers joy and entertainment to the child. Among HSES parents, 56% agreed or totally agreed that using computers promotes participation in learning compared to 51% of the LSES parents. Computers were seen as enhancing imagination and creativity by 65% of HSES parents, compared to 49% of LSES parents who shared this view. Computers were considered to promote initiative by 43% of the HSES parents and 37% of the LSES parents agreed or totally agreed that using computers increase initiative. A total of 41% of the HSES parents agreed or totally agreed that using computers respects personal rhythms, while 47% of the LSES parents disagreed or totally disagreed.
Nikken, 2019, Netherlands (92)	Parents scored mean values of 3.48 (SD = 0.58), 3.00 (SD = 0.60) and 3.41 (SD = 0.58) on the positive effects of media on children's learning, social skills, and emotions, respectively, with higher scores indicating more positive perspectives. For the negative effect of media, parents scored mean values of 3.10 (SD = 0.80) and 2.95 (SD = 0.86) on children's behaviour and health, respectively, with higher scores indicating more negative perspectives.
Nikken, 2015, Netherlands (93)	The "positive media effects" score of the parental attitudes about media for children had a mean value of 3.55 (SD = 0.65), while the "media function as a pacifier" score had a mean value of 3.04 (SD = 0.72), with a higher score representing a more positive perspective.
Njoroge, 2013,	Parents of African American (OR = 4.16; 95% CI: 1.72-10.04) and

USA (94)	Asian American/Pacific Islander/Hawaiian (OR: 2.73; 95% CI: 1.42-5.24) children had significantly higher odds of agreeing with the statement “educational TV programs can help preschoolers to play better with each other”, compared with parents of non-Hispanic white children. Parents classified as high education/not low income had significantly lower odds of agreeing that “educational TV programs can help preschools learn to recognize letters and numbers” (OR = 0.52, 95% CI: 0.30-0.92); and the statement that “educational TV programs can help preschoolers play better with each other” (OR = 0.45, 95% CI: 0.30-0.69) compared with medium-education/not-low-income families.
Nwankwo, 2019, UK (95)	Majority of the parents (84%) were concerned that their children were spending a lot of time using screen devices, and 76% of them reported that their children were inactive due to this behaviour. Most parents (79%) agreed that screen time hinders and restricts their children from having a more active lifestyle.
O'Connor, 2016, UK (96)	Most of the parents (72%) perceived learning new skills as the benefits of their 0-3-year-olds using touch screens, while 52% and 39% of the parents perceived learning new knowledge and allowing them to be creative as the benefits of the use of touch screens, respectively. A total of 62% of the parents reported having concerns about their 0-3-year-olds using touch screens, and 26% of the parents expressed fears that their child may become addicted to their mobile devices.
Ophir, 2023, Israel (97)	In study 1, the mothers had a mean of 3.04 (SD=0.83), with higher scores indicating a more positive attitude towards children's screen use. For the negative attitude score, the mean was 3.61 (SD=0.80), with higher scores indicating a more negative attitude towards children's screen use. In study 2, the mothers had a mean of 2.68 (SD=0.77) for the positive attitude score. For the negative attitude score, the mean was 4.10 (SD=0.63).
Petegem, 2019, Belgium (98)	Parents had a mean score of 2.54 (SD=0.66) for negative attitudes toward children's digital gaming, with higher scores representing a more negative attitude.
Raj, 2022, Malaysia (99)	A total of 37% of the parents had a negative attitude towards children's screen time, while 63% had a positive attitude. The scores of parents' perception regarding the influence of screen time on their child's well-being were 8.0 ± 4.0 on physical wellbeing, 10.0 ± 4.0 on cognitive wellbeing and 6.0 ± 3.0 on social wellbeing, with one unit increase in parental perception score indicating greater perception of positive influence of screen time on child's wellbeing.
Raj, 2023, Malaysia (100)	With higher scores indicating a more positive perception of screen time on child's well-being, mothers in both the intervention and control groups had a mean score of 2.7 (SD=0.5-0.6) at baseline.
Rajalakshmi, 2023, India (101)	The most commonly held beliefs among caregivers were that digital media might cause behaviour problems (68%), sleeping problems (55%); and increase the knowledge of children (54%). Overall, 30%

	of the caregivers perceived that digital media has no positive effects and 11% of caregivers perceived that it has no negative effects.
Rosanda, 2022, Slovenia (102)	Parents mostly believed that digital toys with and without screens facilitated cognitive development (46%) and listening skills (41%). Of positive effects of digital technology, the most commonly held beliefs among the parents were that it encourages development of basic mathematical skills (33.3%), problem-solving skills (22%), basic reading skills (17%), and promotes hand-eye coordination (17%).
Sada Garibay, 2024, Mexico (103)	The mean score of parent perceived risk in their children's use of video streaming was 2.46 (SD=1.01), on a four-point scale with higher scores indicating stronger risk perceptions regarding media.
Seršen, 2024, Slovenia (104)	The majority of the parents (94%) perceived that children's programmes can have a positive contribution to their child's development and learning. For emotional development, parents perceived positive effects as fun and happiness while watching (n=35), relaxation and comfort before going to bed (n=22), and getting acquainted with emotions, expressing emotions and empathy (n=18). For imagination, creativity and thinking, parents perceived positive effects as development and stimulation of the imagination (n=32), encouraging curiosity and exploration (n=21), development and encouragement of creativity (n=8), and stimulating thinking and logical thinking (n=8). For social development, parents perceived positive effects as learning how to solve conflicts and problems (n=7), learning what is good and what is bad (n=6), and learning about interpersonal relationships and developing social skills (n=8). A total of 42% of parents responded that they don't have any concern, while 58% of the parents expressed concern. For emotional development, parents were concerned about the development of screen addiction (n=20), and emotional and behavioural issues (n=11). For cognitive development, parents were concerned about attention deficiency (n=7). For social development, parents were concerned about copying improper behaviour, bad habits or unreal images (n=12).
Solomon-Moore, 2017, UK (105)	Parents had a mean score of 3.8 (SD=0.8) for negative attitudes toward children's screen viewing, with higher scores representing a more negative attitude.
Stuckelman, 2023, USA (106)	NR.
Suresh, 2023, India (107)	Among parents of typically developed (TD) children, 50% reported having a neutral attitude towards their child's media technology and screen time use. Regarding the attitudes related to screen based devices use, 59% agreed or strongly agreed that screen-based devices prevent their children from interacting with others; 48% agreed or strongly agreed that their children are benefiting from screen based devices; and 40% disagreed or strongly disagreed that screen-based device usage has negatively affected their children's communication skills.

	Regarding the concerns related to screen based device use, 71 % agreed or strongly agreed that increased use of screen-based devices can result in a social deficit, less social interaction and isolation of their children, 66% agreed or strongly agree that increased use of screen based devices can negatively affect child's creativity and imagination; and 64% agreed or strongly agreed that excessive screen-based devices can impair their children's communication skills.
Tanusha, 2023, Malaysia (108)	The overall parents' perception regarding digital device use among their preschool children was mixed, with 30% perceived more benefits, 35% perceived more harm, and 35% were unsure of its effects. For the perception of risk, most parents perceived that digital device use would cause risk to their children's physical (72-91%) and intellectual domains (72-86%). Majority of parents perceived that digital device causes damage to eyesight (91%), results in device addiction (86%) and exposes their children to radiation (81%). For the perception of benefits, over half of parents perceived that digital device use promotes creative and interactive learning (63%), promotes technology awareness (65%) and is easily accessible and portable (63%).
Tay, 2021, Singapore (109)	Parents considered digital media use most important for improving the child's knowledge and for entertainment, with mean ratings of 3.13 and 3.38, respectively, with higher scores representing more important. Parents were most concerned about perceived harmful effects of digital media use as poor eyesight (mean = 4.08) and addiction (mean = 4.07), followed by lack of parental-child interaction (mean = 3.70), lack of physical exercise and play (mean = 3.49) and poor sleep (mean = 3.19), with higher scores representing more concerned.
Vaala, 2014, USA (110)	Mothers had a mean score of 3.93 (SD = 1.51) for attitudes towards letting their child watch more than an hour of TV/videos a day for at least several days each week, with higher values indicating more positive attitudes.
Vaiopoulou, 2021, Greece (111)	Parents in the "Negative Attitude" group, who did not appreciate educational apps and worried about their children's use, were more likely to be in the younger age group ($b = -0.075$, $p < 0.001$). Parents with higher knowledge of new technologies and who appreciated apps were most likely to belong to the "Positive Attitude" group ($b = 0.41$, $p < 0.01$). Parents in the "Negative Attitude" group believed that app causes conflict between parents and children to a higher degree ($b = 0.61$, $p < 0.0001$) compared to parents in the "Mild Attitude", "Positive Attitude" and "Indifferent Attitude" groups.
Vittrup, 2016, USA (112)	The media attitude score ranged from 17 to 41, with a mean of 28.82 (standard deviation (SD) = 4.74), showing a positive skew (i.e. positive perspectives). A total of 33% of parents agreed that media exposure at a young age (0–3 years) is important for early brain development, and 33%

	believed that children may fall behind other children academically if their use of technological tools is restricted in early childhood. Most parents (93%) believed that TV advertisements do influence young children; 11% believed that the use of computers can promote long-term physical, emotional, or intellectual developmental damage. A total of 69% of parents believed that introducing technological tools at a young age helps prepare children better for tomorrow's work force.
Vincent, 2021, France (114)	A total of 35% of parents believed that using smartphones and tablets had benefits for children's learning; 17% believed that the use helped develop dexterity; and 4% believed that the use calms, soothes and promotes concentration. In terms of perceived risk associated with using smartphones and tablets for children, 72% believed it caused isolation, 65% believed it caused restlessness, and 62% of parents believed it caused sleep disturbance.
Wang, 2024, China (113)	With higher scores indicating a higher level of agreement, the mean scores for the statement "children's use of electronic information tools is not good for their brains" were 2.890 (SD=1.120), 2.630 (SD=0.916) and 2.830 (SD=1.108) for mothers, fathers and grandparents, respectively. Mean scores for the statement "online activities (online games, movies) are detrimental to children's development" were 3.190 (SD=1.242), 2.880 (SD=1.246) and 3.230 (SD=1.198) for mothers, fathers and grandparents, respectively.

SD=Standard Deviation.

Discussion

This systematic review aimed to investigate questionnaires that have been used to measure perspectives of parents and health professionals on young children's technology use and to synthesize these perspectives. Overall, the majority of the included studies were of questionable methodological quality, particularly in terms of describing the development and validation of the questionnaires used for measuring perspectives. When assessing the questionnaires themselves, most items focused on asking participants about how technology could aid children's learning or how it could influence their physical health, emotions and behaviours, and social skills. As none of the studies recruited health professionals, we could only provide a synthesis of parental perspectives on young children's technology use. This synthesis indicated that parents generally had positive perspectives on the use of technology for academic and educational purposes, but concerns were expressed regarding the potential negative influences of technology on children's health and wellbeing.

High-quality methods for capturing the perspectives of parents and health professionals on children's technology use are essential for obtaining accurate, unbiased, and reliable data. The development of a valid and reliable questionnaire is an extensive process in which several steps are taken to ensure face, content, and construct validity as well as internal reliability (115, 116). Overall, while many studies included in this review reported some acceptable validity and reliability metrics, gaps remained in the consistent use of metrics, with only 15 studies evaluating more than one measure of validity and/or reliability (38, 51, 52, 56, 63, 71, 72, 75, 76, 85, 92, 98, 99, 107, 108). Moreover, only three studies specifically aimed to develop and validate a questionnaire for measuring parents' perspectives on children's technology use (32, 38, 111). Among these, the study by Balaban et al. (2016) conducted the most detailed validity and reliability analysis, assessing content, construct and internal validity as well as test-retest reliability. In contrast, the study by Al-Balushi et al. (2016) only evaluated face and content validity, and the study by Vaiopoulou et al. (2021) only evaluated construct and internal validity. Overall, these findings suggest there is a need for further development of high-quality questionnaires within this research field.

When assessing the focus of questionnaire items used to measure perspectives, there was a lack of clarity and heterogeneity in the definition of technology adopted by studies. Most studies used the term "*digital media*" or "*digital devices*", which covered a range of hardware, software, and content. The lack of specificity could have influenced the responses from the study participants. For example, for the same item, some respondents may have thought of digital media as being social media, while others may have considered it to be television programs or learning apps. This could lead to inconsistent or even contradictory results and limit the accuracy and comparability of study findings. When considering the questionnaire items' focus, most items aimed to measure perspectives related to the potential impact of technology on how children learn, their physical health, emotions and behaviours, as well as social skills and interactions. It is worth noticing that the phrasing of the items themselves differed substantially both within and between studies, with some being negatively phrased (e.g. "*[computers] have a negative impact on children's socialisation*" used in Ilgar et al. (2018) and others being positively phrased (e.g. "*[digital media] help children communicate and interact with others*" used in Ihmeideh et al. (2017)). It may be that the assumptions underlying the item development (e.g. that technology use is harmful) and phrasing of the items directly influenced how participants interpreted the question and thereby how they chose to reply (117). Specifically, negatively phrased items might have primed the respondents to focus on potential harms of technology use, whereas positively phrased items might have encouraged considerations of potential benefits. The framing of questions may also be influenced by the discipline context of the research team. As a result, the overall conclusions drawn about parental perspectives on children's technology use may

be biased.

Despite the lack of construct clarity and large variability in phrasing of items, some general trends were found when synthesising the parental perspectives reported among the included studies. In general, positive perspectives were reported in relation to how technologies can be used for enhancing children's learning, particularly in terms of academic skills and digital literacy. In contrast, concerns were often raised about technology's impact on children's physical health, emotions and behaviours. Mixed perspectives were found in relation to children's social skills. Such positive and negative perspectives on young children's use of technology have also been reported for early childhood educators (118). Our results also concur with the findings of previous qualitative studies of parents (18-20). The reviews by Choy et al. (2024), Chong et al. (2023), and Visier-Alfonso (2023) reported parental concerns about technology negatively impacting their children's physical (e.g. eyesight and sleep patterns), attention issues, and social development. However, Choy et al. (2024) also reported that parents believed that digital devices could positively contribute to children learning new skills. Taken together, the findings from previous qualitative studies and our quantitative results suggest that parents have mixed perspectives on the role of technology in their children's life. These perceptions are likely influenced by a range of factors, including sociodemographic, cultural influences, parental age, age of their children, and parents' own experiences with technology (16). Moreover, parental mixed perspectives may also be related to a lack of clear, evidence-based guidance on healthy technology use (17), although existing evidence does support parents' perspectives that technology use has potential risks and benefits (5).

Practical implications

Based on our evaluation of questionnaires used for capturing the perspectives of parents on children's technology use, it is apparent that more work is required for developing high-quality questionnaires within this research field. The lack of validated questionnaires to capture the perspectives of health professionals also highlights a need. For such questionnaires to be accurate, unbiased and reliable, we suggest that several steps be taken. Firstly, we would advise researchers to clearly define the research question, target population, their literacy level, and constructs aimed to be measured. Some of the key considerations include the type of technology, the age of children, purpose of technology use, and setting in which technologies are used as these are likely to influence adults' perspectives. For example, gaming consoles could be more appropriate to ask older children about, who are commonly more exposed to this technology compared to younger children (3). We would also encourage researchers to carefully consider which aspects of technology to measure, including not only the amount of time using technology (i.e. quantity), but also the content and context in which it is used (i.e. quality). Secondly, when developing the items and item response categories, we suggest using clear and concise language with balanced statements regarding potential benefits and risks associated with children's technology use to ensure that the respondents are not led toward a particular answer. Finally, we highly recommend that researchers thoroughly evaluate the validity and reliability of their questionnaire by using well-established approaches for measuring face, content, construct, and internal validity as well as assessing stability over time. Until further validated questionnaires are developed, we recommend the use of existing questionnaires with substantive validity evidence, such as the Balaban et al. (2026) questionnaire, if it matches the study's research question.

Our synthesis of perspectives revealed that parents have mixed views on the role of technology in their children's lives. While the potential benefits of technology particularly for enhancing academic skills and social interactions were acknowledged, concerns were often expressed about potential negative impacts on children's physical and mental health and overall development. These findings suggest parents are cognisant of the complex role of

technology in young children's lives, and this aligns with prior reports that parents are struggling to navigate conflicting narratives surrounding children's technology use (17). Specifically, parents may be exposed to a broad range and, at times, controversial guidance from educators, health professionals, and media sources, making it challenging to make decisions regarding healthy technology use. The basis for parent perspectives should be investigated, including what influences their perspectives. Prior research has reported sources parents use to gain information about health issues (16), but whether parents have the ability to independently develop a clear understanding of the evidence regarding the likely impacts of technology use on child outcomes is not known. Research should also investigate the impact of social desirability on parental perspectives. Further, perspectives may not be evidence-based but rather reflect parental views on ideal childhoods and other values. Thus, educators and health professionals supporting parents through the challenges of raising children in a digital world would benefit from a better understanding of how parents' perspectives are developed, and how these relate to their decision making regarding their children's use of technology.

Strengths and limitations

Strengths of this systematic review included the developed search strategy applied in a wide range of databases as well as the cross-checking of study screening, quality assessment, and data extraction independently by two authors. The development of a comprehensive, theory-based, two-level coding framework for classifying the focus of the questionnaires and the items used was another strength. This framework, based on the Child-Technology Interaction model (14), enabled a structured and systematic approach for assessing the diverse ways in which studies measured parental perspectives. Although we acknowledge that some codes could be classified under multiple dimensions of the Child-Technology Interaction model, the application of this structured framework enhances the reproducibility of our findings and provides an early foundation for future research seeking to improve the measurement of perspectives on children's technology use.

Only reports published in English were considered for inclusion and potentially relevant studies might have been missed due to unclear titles or abstracts and AI supported screening. Moreover, we aimed to report how perspectives on children's technology use may depend on the population group (e.g., parents and health professionals) and the age of the child. However, these assessments were not feasible as the participants in included studies were parents and the age of the children was rarely specified.

Conclusion

This systematic review found that parents' perspectives on children's technology use have frequently been assessed using questionnaires. However, the quality of the questionnaires was generally low, with limited evidence on psychometric properties. Further, definitions of technologies make it difficult to establish to what extent the existing literature is examining variations in technologies relative to parent perspectives. Study participants consisted of parents only, highlighting a clear evidence gap in understanding health professionals' perspectives on children's technology use. The reported parental perspectives were mixed. While positive views were found considering the use of technology for enhancing children's learning and skill development, concerns were commonly raised about potential negative impacts on children's physical health, emotions and behaviours. As parents' perspectives may influence their children's use of technology and potentially associated development, there is a need for better-quality tools to measure adults' perspectives, understand how perspectives are developed, and how they influence practice.

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Conflict of interest

None declared.

Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Author's contributions

All authors have substantially contributed to the study. CLR, DH, JZ, and LS were involved with conception. All authors were involved in the design of the review. CLR and IPHA conducted the searches, study selection and data extraction. CLR, DH, and JZ developed the coding framework. CLR drafted the manuscript and performed revisions. All authors provided substantial feedback, editing and approved the final manuscript.

Abbreviations

CFA: Confirmatory Factor Analysis.

NR: Not Reported.

PCA: Principal Component Analysis.

Q-SSP: the Quality Assessment Checklist for Survey Studies in Psychology.

RMSEA: Root Mean Square Error of Approximation.

SD: Standard Deviation.

SRMR: Standardized Root Mean Square Residual.

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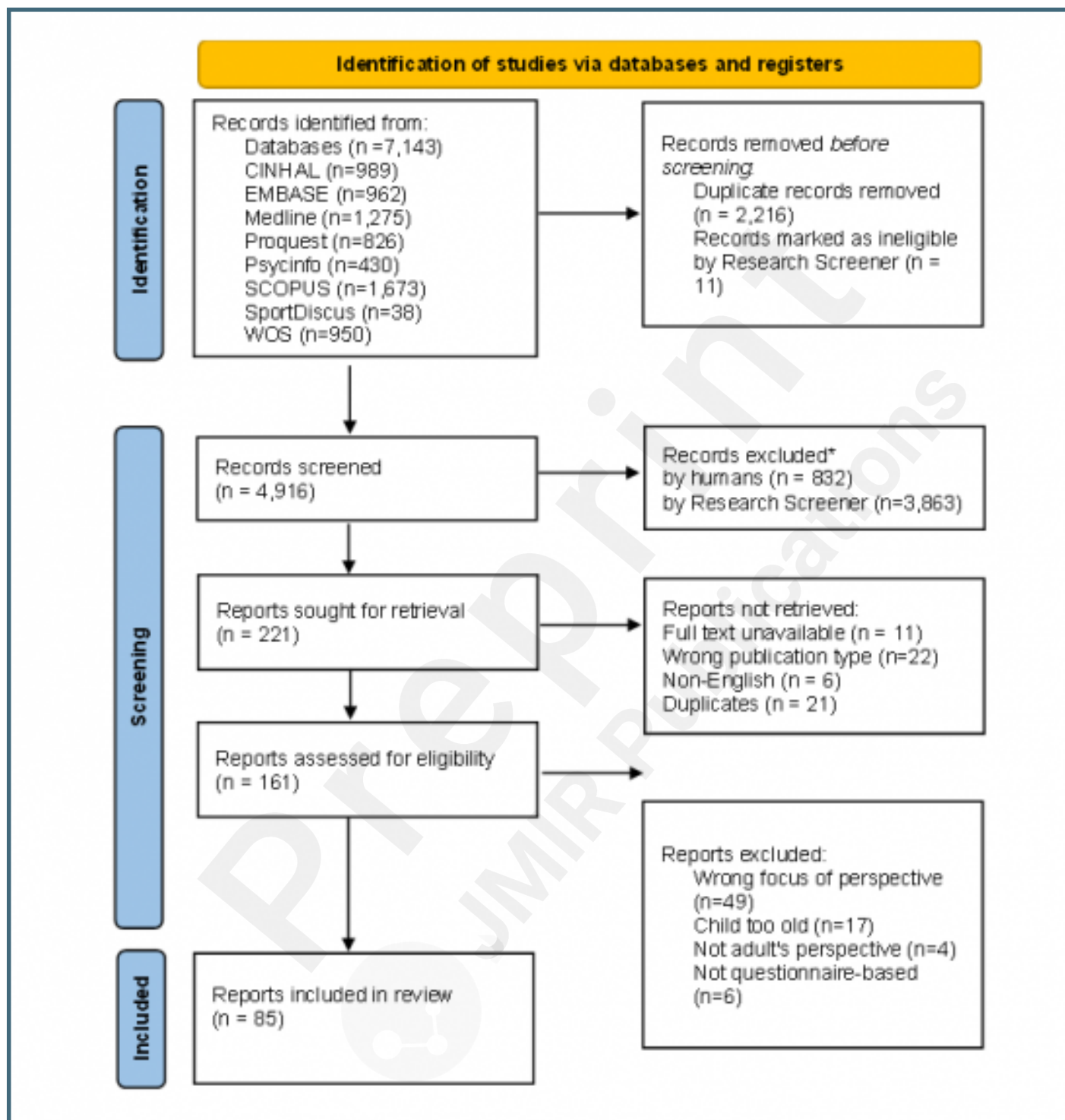
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Supplementary Files

Figures

PRISMA flowchart of included studies.



Multimedia Appendixes

Table 2. Characteristics of included studies.

URL: <http://asset.jmir.pub/assets/4912121140a967bbecc552263f725fc1.docx>

Table 3. Characteristics of questionnaire used.

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