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The Rights of Very Young Children in the Digital Environment of the Family Home: Findings From a UK Survey of Children 0–36 Months and Their Parents

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ABSTRACT

As digital technologies have become increasingly embedded in daily family life, there has been a growing international concern about children's protection, provision and participation rights in a digital environment. Recognising this, the Committee on the Rights of the Child published General Comment No. 25 *Children's Rights in Relation to the Digital Environment* (CRC, 2021), giving detailed advice on implementation issues in this area and calling for up-to-date research about children's digital lives. This paper makes a significant contribution to that much-needed knowledge base by reporting the findings of an online survey conducted with parents and legal guardians ($n = 1444$) (hereafter parents) of children aged 0–36 months across socially and ethnically diverse families in the four UK nations. The survey represented phase one of a larger three-phase project, 'Toddlers, Tech and Talk', funded by the Economic and Social Research Council, which aimed to build an empirically robust body of knowledge about how 0-3-year-olds' lives intersect with digital technologies at home in socially and ethnically diverse families in inner-city, urban and rural communities. The survey found that nearly all family homes have Wi-Fi connection, that many homes have a wide range of digital devices and that very young children engage in a wide range of digital activities both with their parents and on their own. Parents' mediation practices are shaped by parental digital practices and attitudes, with concomitant implications for children's digital rights. Implications are highlighted.

1 | Introduction

The United Nations Convention on the Rights of the Child (UNCRC) (United Nations 1989), an international human rights treaty, was adopted by the UK in 1991. It contains 54 articles which outline the civil, political, economic, social, and cultural rights to which all children, regardless of their age, gender, and other characteristics, are entitled. It is accompanied by general comments, published by the Committee on the Rights of the Child (CRC), which give detailed advice on implementation.

To date, there are 26 general comments. General Comment No. 25 (CRC 2021) focuses on children's rights in the digital environment. This is a pivotal document in a fast-changing society, and the challenges posed in its implementation are significant (Green et al. 2024).

With regard to these challenges, national and international research shows that more and more children are born into homes where digital technologies feature prominently in their families' everyday lives (Marsh et al. 2020; Chaudron et al. 2015) and they engage in diverse digitally mediated activities, such as watching TV programmes online, reading digital books, playing with digital toys and games, finding information online, and interacting with distant family and friends via social media platforms (Arnott et al. 2019; Griffith and Arnold 2019; Zhao and Flewitt 2020; McArthur et al. 2022). These everyday digital practices offer rich opportunities to promote young children's social, cultural, educational, and developmental rights (children's participation rights) yet also raise concerns about the longer-term impacts of inequality of access (children's provision rights) and about the potential harms to child development and wellbeing associated with 'digital exposure' (children's protection rights). They also draw attention to the pivotal role played by parents in facilitating and balancing the interplay of their children's participation, protection, and provision rights through their mediation practices, which frame children's access to and engagement with the digital environment (Goodall et al. forthcoming; Livingstone and Third 2017; Livingstone and Blum-Ross 2020).

Informed in its inception by the work of Livingstone et al. (Livingstone et al. 2024), General Comment No. 25 is pivotal. First, it defines the term digital technology noting that this 'covers a vast array of types and usages encompassing information and communications technologies, including digital networks, content, services and applications, connected devices and environments, virtual and augmented reality, artificial intelligence, robotics, automated systems, algorithms and data analytics, biometrics and implant technology' (CRC 2021, para 3, 1). Second, it highlights the societal implications of the expansion of digital technology noting that 'there is a growing reliance on its various forms for social, educational, cultural, work related, political, and economic reasons', (CRC 2021, para 2, 1). Third, it highlights both the potential benefits and harms of digital technology, noting the challenges in balancing and responding appropriately to the interplay and interdependent relationship between children's rights to digital provision, participation, and protection. Finally, it stresses the need for detailed research to inform both our understanding of children's rights in the digital environment and the development of implementation plans.

Within this context, this article aims to inform developments in policy and practice by presenting and discussing findings of a UK-wide survey about digital technology ownership and use in the family homes of our youngest children, aged 0–36 months. The paper opens with a brief overview of research in this field regarding children's rights to provision, participation, and protection as defined in the UNCRC.

2 | Research Regarding Very Young Children and Digital Technology

2.1 | Provision Rights—Very Young Children's Access to and Ownership of Digital Technology

A fundamental focus of the UNCRC is children's equitable access to services, goods and the benefits they afford. Indeed, General Comment No. 25 (CRC 2021, para 4, 1) notes that for all children 'if digital inclusion is not achieved, existing inequalities are likely to increase, and new ones may arise'. Existing survey-based research that focuses on children aged 0–3 years and digital technology in family homes reveals that while there is widespread global access to and ownership of digital technology by young children, there are notable variations across and within countries, cultures, and different demographic groups (Azevedo et al. 2022; Alroqi et al. 2022; Dong et al. 2022; Dardanou et al. 2020; Bellagamba et al. 2021). Some studies have found associations between different sociodemographic variables and children's use of digital technology including child age, household income, maternal educational level, maternal age, and maternal well-being (Przybylski and Weinstein 2019; Shin et al. 2021; Krogh et al. 2021).

2.2 | Participation Rights—Use of Digital Technology by Very Young Children and Parents

With regards to very young children and their participation rights, the focus in the UNCRC is the promotion of children's rights to exercise their own evolving agentic capacity and competences in using digital technology whilst also safeguarding their best interests and protection. General Comment No. 25 (CRC 2021, para 20, 4) states that account must be taken of 'the changing position of children and their agency in the modern world, children's competence and understanding, which develop unevenly across areas of skill and activity, and the diverse nature of the risks involved. These considerations must be balanced with the importance of exercising their rights in supported environments and the range of individual experiences and circumstances'. Research consistently indicates that very young children own and use digital technology. For example, Azevedo et al. (2022), in a survey of 435 Brazilian mothers of infants aged 0–36 months, noted that 92% of infants were first introduced to digital media before the age of 1 year. Drawing on data from 630 children aged 12 months in the KUNO kids birth cohort study that was conducted in Bavaria. Durham et al. (2021) found that 45% of children had used digital media by their first birthday (TV and smartphones being the most frequent first device exposed to). Importantly, as explored further below, very young children's participation rights cannot be considered in isolation from their protection rights. There are significant concerns regarding young children's exposure to digital technology, in particular screentime (Veldman et al. 2023), and there are guidelines that state that exposure to screentime should be avoided before the age of 2 years (WHO 2019). There are also significant concerns regarding the protection of children's privacy rights and their protection from bullying, harassment, exploitation, and harm (Green et al. 2024).

2.3 | Protection Rights—Parental Mediation Practices and Young Children's Engagement

How children access technology and exercise their rights are mediated primarily by the adults around them. Within the family home, the role and responsibilities of parents, their attitudes towards digital technology and their everyday digital practices, are central considerations. The UNCRC (United Nations 1989) both acknowledges the responsibilities and duties of parents to protect their children from harm and the obligation of governments to make available appropriate parental services and supports. In the digital environment, General Comment No. 25 (CRC 2021, para 21, 4) outlines states' obligations 'to support parents and caregivers in acquiring digital literacy and awareness of the risks to children in order to help them to assist children'. Research studies confirm that parental attitudes towards anxieties and about confidence with digital technology play an important role in children's use of digital technology (Dong et al. 2022; Shin et al. 2021; Wan et al. 2021). Dong et al. (2022), for example, found that parents who believe digital literacy is essential for their children's development tend to be comfortable with their children actively engaging with digital technologies at home. Conversely, O'Connor and Fotakopoulou (2016) found in their survey that 61.5% parents reported multiple concerns about under-3s using touch technologies, including addiction/dependency, loss of innocence, negative physical effects, cognitive, social, language, and physical delay, and accessing inappropriate content. This survey also found that lack of informed guidance, particularly around 'safe' lengths of time for 0–3s to use touch screens, was a concern for many parents, who lacked trust in official guidance and research-based evidence.

As illustrated in the review of key research studies above, surveys carried out internationally and nationally regarding young children and digital technology have generated a wealth of knowledge (Marsh et al. 2020) regarding child access to and activities with digital technology. However, gaps remain in our knowledge about how and in what ways very young children engage with digital media and how parents in diverse socio-economic circumstances and ethnic communities support their very young children's learning with technology at home (Flewitt and Clark 2020; Gillen et al. 2018). Furthermore, there are gaps in understanding how issues such as digital inclusion, security, and privacy are balanced in family homes. It is against this backdrop that this article reports the findings of an online survey conducted with parents and legal guardians ($n = 1444$) of children aged 0–36 months across socially and ethnically diverse families in inner-city, urban, and rural communities in England, Northern Ireland, Scotland, and Wales.

3 | The Overall 'Toddlers, Tech and Talk' Project Aims, Objectives, and Design

The overall aim of the research project was to address key questions about how the home lives of children aged 0–36 months intersect with digital technologies in diverse families across the four UK nations: Scotland, Northern Ireland, Wales, and England (Flewitt et al. 2024). A three-phase mixed method approach was used, comprising a phase 1 survey involving a minimum of $n = 270$ responses per nation, followed by phase 2 interviews with 10 parents per nation ($n = 40$) and 5 practitioners per nation ($n = 20$), and phase 3 case studies in the family homes of children aged 0–36 months (10 per nation, $n = 40$). This paper reports findings from the phase 1 survey and considers these in relation to children's rights in the digital environment. Below, we briefly outline the survey design, development, and implementation.

3.1 | Design and Development of the Survey

The survey was designed to ask parents of children aged 0–36 months about their household internet connectivity and types of digital devices owned in the household, and more specifically owned by 0–36-month-olds; children's and adults' digital media use at home; adults' attitudes, confidence, and concerns about their very young children's use of technology; and demographic information. A draft survey, designed and developed in July and August 2022, was piloted with 10 respondents (each of the four participating nation teams recruited minimum two respondents), and the feedback was received via Qualtrics in November 2022. While most respondents found the survey easy/very easy to complete, some changes were made to the layout, length of the survey, and the accompanying instructions on the basis of comments received.

The final survey comprised 34 questions. Three compulsory 'qualifying' questions were asked at the beginning of the survey to ensure that respondents were (1) the legal guardian of a child aged 0–36 months; (2) UK residents; and (3) aged 18 years or over (this adult age requirement was stipulated by the institutional research ethics approval process). For the remainder of the survey, parents were not obliged to answer questions on personal demographic data. The survey was also designed in such a way that on completion, participants were asked if they would like to receive a copy of the summary findings and/or consider taking part in study phase 2. If participants were interested, they were asked to click on a link at the end of the survey, which redirected them to a separate page, where they could leave contact details for the research team to connect with them at a later date by. All personal details were kept separately from the survey data and were destroyed once the summary report was finalised and sent to those respondents who requested a copy.

3.2 | Ethical Approvals

Initial ethical approval for the survey, participant information sheets (PIS), and consent forms was secured by the lead university (Manchester Metropolitan University) on 20.09.22, followed by ethical approval from the collaborating universities (Lancaster University, Queen's University Belfast, Stirling University, and Swansea University). An amendment for approval to retain summary IP information for the sole purpose of tracking response rates per nation was lodged by the lead university (Manchester Metropolitan University) on 22.12.22 and approved on 03.01.23 and was subsequently approved by collaborating universities' ethics committees. PIS and consent forms were updated accordingly. This amendment was requested after it was discovered that survey participants were not routinely including their postcodes, which meant that it was not possible to track response rates by nation. A further amendment to the ethical approval for the survey was lodged by the lead university

on 24.03.23 to engage with a UK-based online survey panel provider, namely, Panelbase (which is now known as Norstat UK). Approval for this was granted on 01.04.23. Approval was also secured from all collaborating universities, and PIS and consent forms were updated.

3.3 | Procedures

3.3.1 | Participant Recruitment

The target sample was parents of children aged 0–36 months in diverse socioeconomic and ethnic groups, living in diverse rural, urban, and inner-city locations across the four UK nations. An open call online recruitment strategy was adopted through parenting and early childhood professional social media platforms, including Twitter feeds and blogs for parenting websites used by majority and minority ethnic communities (such as Best Beginnings, Mumsnet, Netmums and Black, Asian, and Minority Ethnic (BAME) networks). Additionally, the questionnaire was promoted via the project advisory board members' and project team's networks in each UK nation (including, for example, National Children's Bureau, National Literacy Trust, Scottish Book Trust, Early Years Scotland, Education Scotland, Starcatchers, N8 Child of the North, Home-Start, Sure Start, The Froebel Trust, Refugee Council, Early Years Alliance, Nursery World, as well as Prolific and TikTok platforms). Participants were adult (aged 18 years+) mothers, fathers, and legal guardians of young children aged from birth to 36 months. Those excluded were parents aged under 18 years and those who were not responsible for the home-based care and education of 0–36-month-old children.

3.3.2 | Open Call Survey

Following a further period of refinement and pilot testing, the survey was launched online 07.12.22, using the Qualtrics platform, deploying the open call participant recruitment strategy outlined above. To maximise accessibility to a wide population, the survey was available in print or as an oral interview (e.g., for visually impaired respondents). The survey and supporting promotional materials were translated into significant languages of UK minority populations, namely, those most frequently cited by minority populations in the 2011Census data as "can't speak English well" or "not at all" at the time of completing the survey design and launch, 'languages spoken at home' data were not available from the more recent UK Census (2021). At the time, these languages were Arabic, Bengali, Chinese, French, Gujarati, Panjabi, Polish, Romanian, and Urdu. The survey was also available in Welsh and, to enable the inclusion of recent asylum-seeking populations, in Farsi and Ukrainian. In the event, all surveys were completed online, and no alternative formats were requested.

3.3.3 | Panel Provider

By March 2023, over 550 respondents had completed the open call survey, but the response rate had slowed significantly. To augment responses, a UK-based online survey panel provider was commissioned to secure a nationally representative sample of 1000 respondents (250 from each of the four regions of the United Kingdom). Following ethical approvals, a soft launch aiming to achieve a minimum of 100 responses per nation was completed. A further 150 responses per nation were sought, and the survey was closed at the end of June 2023. The combined approaches generated 1603 valid responses, which were encrypted and stored on Qualtrics servers protected by firewall systems.

3.3.4 | Analysis

Of the 1603 survey responses, 45 did not provide a response to the precise child age question and a further 114 either did not provide a valid response or indicated that their child was outside the age of the study. All subsequent analyses were based on cases where the age range of the child was 0–36 months ($n = 1444$) and were conducted in SPSS V29 and Jamovi V2.4.11. Frequency tables were produced for all key variables to provide a descriptive overview of the data. Multiple linear and logistic regression analyses were then conducted in SPSS to test associations between a range of outcomes and various parent, child, and household demographics. With regards to parental attitudes and confidence, four scales measuring different aspects of parental attitudes towards toddlers and technology were developed. Each scale consisted of five items measuring attitudes towards digital devices and child wellbeing, attitudes towards digital devices and child learning, parent confidence in supporting and safeguarding their child in using digital devices, and parent anxiety towards their child's use of digital devices. Exploratory and confirmatory factor analysis identified a three-factor structure as the best fit for the data. This comprised a 7-item 'parental attitude towards digital devices, child health, and wellbeing' scale, a 4-item 'parental attitudes towards digital devices and child learning' scale, and a 4-item 'parental confidence in supporting their child's use of digital devices' scale. The survey findings presented below highlight the complexities involved in understanding and legislating for children's rights in the digital environment of the family home and the nuanced and complex interplay of child and parental characteristics, parental attitudes, and confidence and wider social structural issues.

4 | The Survey Findings

4.1 | The Children

The sample of children aged 0–36 months surveyed was balanced in relation to age in months and gender. The children's age was relatively evenly distributed in months as follows: 0–6 months ($n = 149$); 7–12 months ($n = 118$); 13–18 months ($n = 165$); 19–24 months ($n = 273$); 25–30 months ($n = 360$); and 31–36 months ($n = 379$), resulting in a total of 1444 (Figure 1). 48% of children ($n = 687$) were reported as female and 52% ($n = 749$) as male. 4% ($n = 63$) of respondents indicated that their child had a disability. This is lower than expected given that, difficulties in defining and ascertaining the true extent of disability aside, UK-wide prevalence rates for children with a disability are somewhat higher at approximately 10% (Kirk-Wade et al. 2024). With regards to children's disability type, the main reported disability was social/behavioural challenges (reported

CHILD AGE IN MONTHS	NUMBER	PERCENTAGE
0-6	149	10.3
7-12	118	8.1
13-18	165	11.4
19-24	273	18.9
25-30	360	24.9
31-36	379	26.2
Total	1444	100

FIGURE 1 | Child age group in months.

by 28 respondents), followed by a learning disability (20 respondents), and smaller numbers of respondents who identified their child as having either a visual, hearing, and/or mobility disability or issues with dexterity. 11 respondents did not complete the question asking for detail of the disability.

4.2 | The Demographic Characteristics of the Respondents

The survey respondents were mostly mothers 80.6% ($n=1161$), mainly in the 31-40-year-old age group (59%; $n=849$ participants), mainly married (61%, $n=861$), and employed (85% or $n=1226$). Most reported that they had a degree or higher 60% ($n=850$). Household income was fairly evenly split across the income brackets from £15 600/annum to £51 999 per annum (67% respondents, $n=908$). Furthermore, most respondents identified their ethnicity as English/Welsh/Scottish/Northern Irish/British (73.1%, $n=1043$). 79% ($n=1430$) respondents said they exclusively spoke English at home. While this highlights sample bias, there is also interesting and substantive diversity within the sample of respondents, as indicated below.

It is notable that despite the broad, commonly shared characteristics of the sample outlined above, there is noteworthy diversity based on the extensive efforts made to design the survey in such a way as to engage with a wide range of respondents. This included making the survey available in different formats and languages, advertising it in different ways and different places, revising the survey at the pilot stage to ensure it was accessible, and targeting respondent groups. As a result, our survey respondents included 17.8% ($n=257$) who were fathers, 0.8% ($n=11$) who were legal guardians, and 0.8% ($n=12$) who described themselves as 'other'. Among respondents who selected 'other' ($n=12$), their connections with children included roles such as grandparents ($n=5$), foster carer ($n=1$), aunt ($n=1$), child minder ($n=1$) (all acting as legal guardians), and not stated ($n=4$).

In relation to the ethnic and cultural contexts of the very young children's lives at home, again, further diversity is noted in that 8.3% ($n=118$) of the respondents identified as Irish, 5% as White Other/Gypsy/Traveller, 3.9% ($n=56$) as any other mixed/multiple ethnic background, 3.9% ($n=56$) as Asian/British Asian background, 5.2% ($n=74$) as Black/Black British/African/Caribbean, and 0.6% ($n=9$) as 'Other' (including Arab). Interestingly, 19% ($n=269$) of the total sample reported speaking English and another language at home, and 2% ($n=36$) reported speaking other language(s) at home and not using English. In terms of languages spoken at home, the most popular were English, Welsh, Irish (Gaelic), Spanish, Polish, French, Arabic, Urdu, Bengali, Panjabi, British Sign Language, and Chinese, in that order. Some respondents selected the free-text box' Other' languages spoken at home, and of these, 51 languages other than English were noted, with German, Scots, and Yoruba as the most popular' Other' languages. With regards to family location, 79% ($n=1137$) respondents said they lived in either a city, a town, or a suburb. 21% ($n=295$) said they lived in a semi-rural or rural village area.

General Comment No. 25 (CRC 2021) makes clear that the role of the parent is crucial in negotiating, facilitating, and supporting the balance between very young children's provision, protection, and participation rights in the digital environment of the family home. How and in what ways parents mediate their very young children's access to and ownership and use of digital technology cannot be considered in isolation from other parental characteristics including their socio-economic, education, cultural, and linguistic background. As noted earlier, these provide the complex and nuanced context in which very young children's access to and ownership of digital technology takes place. The following sections illustrate these complexities by organising findings in relation to the broad provision, participation, and protection rights as defined in the Convention on the Rights of the Child (United Nations 1989) and General Comment No. 25 (CRC 2021).

4.3 | Very Young Children's Access to and Ownership of Digital Devices (Provision Rights)

In relation to provision rights (do very young children have access to digital technology?), our survey indicated that nearly all respondents had a Wi-Fi connection (with only $n=4$ indicating they did not, plus $n=2$ respondents who did not answer this question). In addition, most respondents indicated that they had several different types of devices in their homes, with the average number of devices within their homes being 12.55 (SD = 5.74, Range = 39.00, Min = 1, Max = 40) and the

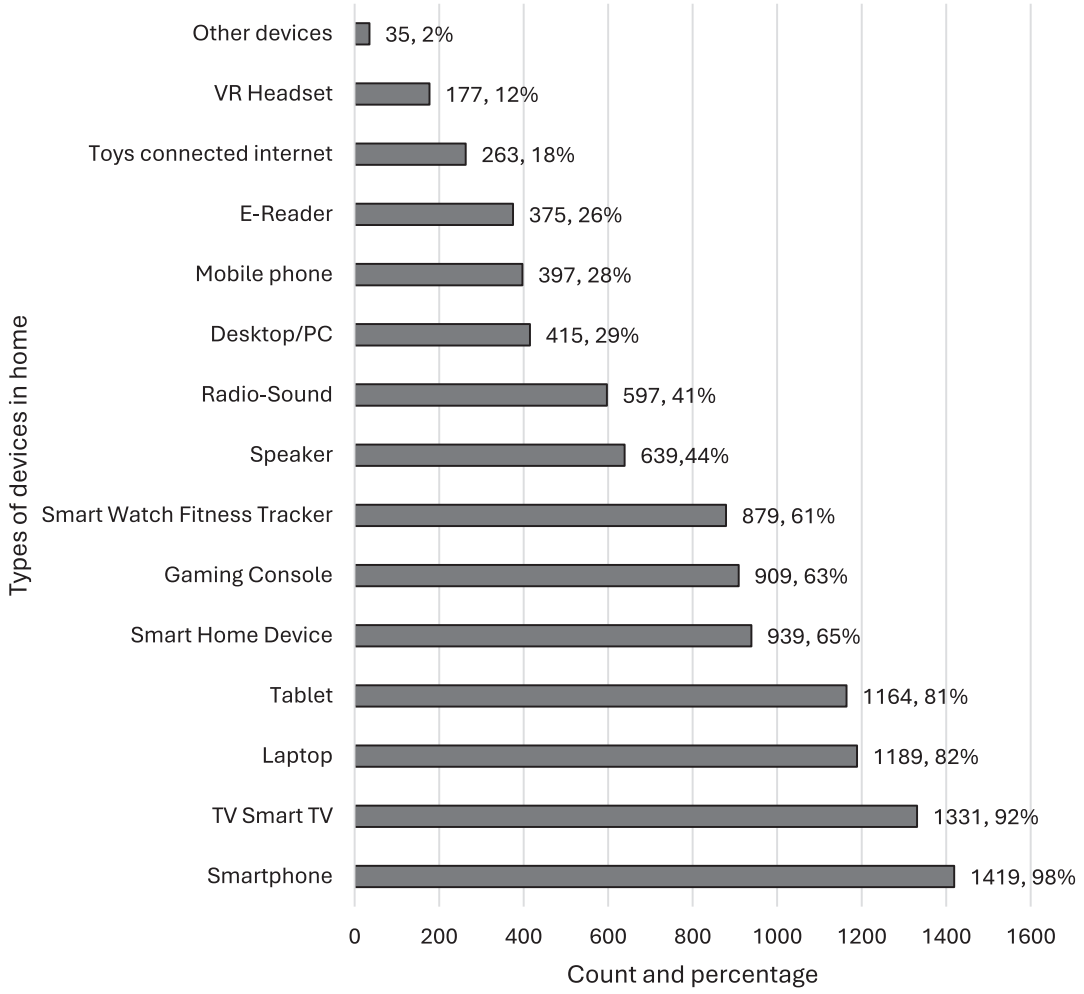

FIGURE 2 | Range of devices that families with 0–3 s have in their home.

average number of different device types in the home being 7.43 (SD = 0.97, Range = 13, Min = 1, Max = 14). Most respondents indicated that they had a broad range of device types within their homes; the most popular being smartphones (98%, $n = 1419$ indicated they had a smartphone with internet access, apps, access to emails), followed by TVs/smart TVs (92%, $n = 1331$), then laptops (82%, $n = 1189$), tablets (81%, $n = 1164$), smart home devices (such as Amazon Echo or Google home) (65%, $n = 939$), gaming consoles (63%, $n = 909$), and smart watch/fitness trackers (61%, $n = 879$). 18% ($n = 263$) reported owning internet-connected toys, and 12% ($n = 177$) said that they had a VR headset. Respondents could enter free text in the category 'Other' devices. Responding to this option, the most popular devices reported by parents used by their child were Yoto player ($n = 9$), Toniebox ($n = 8$), and Amazon Fire kids tablet ($n = 2$) (Figure 2).

These findings illustrate the multiplicity of devices, their type, and their functions, in the home environments of 0–36-month-old children, thereby drawing attention to the extent to which digital technology is very much embedded in many aspects of very young children's daily lives. The findings also reveal that it is not simply that young children live in family environments where digital technology belonging to other family members is all around them but that many also own their own digital device(s) and engage in digital activities both with family members and/or by themselves. Hence, for example, while 42.3% respondents said their 0–36-month-old child owned no devices, 39.7% reported that their child owned one device, 13.5% respondents reported that their child owned 2–3 devices, and a further 4.5% reported that their child owned 4 or more devices. Respondents indicated that the average number of different devices owned by their child was 0.97 (SD = 1.44, Range = 14.00, Min = 0, Max = 14). 41% ($n = 587$) respondents indicated that their child owned a tablet, 12% ($n = 169$) owned a smartphone, 9% ($n = 125$) owned a TV or smart TV, 8% ($n = 118$) have web-connected toys, and 5% ($n = 70$) owned a gaming console (Figure 3). These data must be understood with the proviso that we cannot be sure how survey respondents interpreted the word 'own'. For example, phases 2 and 3 findings suggest that 'owning' a device may mean 'bought for a child' or that a device had been handed down to a child rather than purchased for the child's sole use.

At first sight then, the descriptive characteristics of the survey confirm that many very young children have access to and/or own their own digital technology which they enjoy with parents and/or by themselves for social, entertainment, and educational reasons. However, a more detailed analysis, in simple linear regression, found that parent age, marital status, employment status, income, highest educational qualification, ethnicity, language spoken within the household, and child age were all associated with the range of devices within the household (Table 1). Notably, as both parent age and income increased, the range of devices increased.

	TYPES OF DEVICES IN HOME		NUMBER OF DEVICES IN HOME					DEVICES OWNED BY CHILD	
	N	%	Mean	SD	Range	Min	Max	N	%
Smartphone	1419	98.3	2.22	.937	5	0	5	169	11.7
Mobile phone	397	27.5	.36	.818	5	0	5	61	4.2
Laptop	1189	82.3	1.40	.996	5	0	5	54	3.7
Tablet	1164	80.6	1.44	1.126	5	0	5	587	40.7
Desktop/PC	415	28.7	.32	.568	4	0	4	31	2.1
E-Reader	375	26.0	.33	.625	4	0	4	21	1.5
Radio-Sound	597	41.3	.52	.765	4	0	5	28	1.9
Speaker	639	44.3	.62	.904	5	0	5	27	1.9
Smart Home Device	939	65.0	1.12	1.202	5	0	5	60	4.2
Gaming Console	909	63.0	1.02	1.092	5	0	5	70	4.8
Smart Watch Fitness Tracker	879	60.9	.99	.988	5	0	5	27	1.9
TV Smart TV	1331	92.2	1.75	1.103	5	0	5	125	8.7
VR Headset	177	12.3	.14	.439	4	0	4	12	.8
Toys connected internet	263	18.2	.29	.765	5	0	5	118	8.2
Other devices	35	2.4	.03	.202	3	0	3	16	1.1

FIGURE 3 | Devices in household and those owned by child.

Socio-economic factors were also associated with range of device types in that compared with those in employment, those who were unemployed reported a significantly lower range of device types. Furthermore, compared with those with no qualifications/GCSEs only, respondents with A-levels, certificates or diplomas, and those with a degree or higher had a wider range of devices within their household. Lastly, an association with ethnicity was noted namely compared with those with a 'Black, Asian and Minority' ethnicity, those with a 'White' ethnicity had a wider range of devices within their household.

While the survey showed that income and educational status were the strongest predictors of range of devices and device types, the strength of the relationship between predictors and the number of different household device types was generally weak; for example, an age increase of 20 years only increased the number of devices by 0.5, while parents with an A-level, certificate, or diploma had on average only one more device type than those with no qualifications/GCSEs only. The model was statistically significant and explained 7% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 1.994. An examination of the VIF showed no problems with multicollinearity, and all values ranged from 1.028 to 3.451.

We explored this further by considering the range of child-owned devices (this refers to the number of different types of digital devices in the household reported as being owned by the child, based on a count of yes values in response to questions asking about 15 device types). The range of different device types in the household and those owned by the child, while clearly related, varies depending on parent attitudes towards device usage for young children, as well as the different types of devices other adults and older children in the house might have access to and therefore do not match each other. The correlation between the two was checked. It is relatively weak ($r = 0.373^{**}$). In multiple linear regression, parent age, gender, marital status, income, ethnicity, nation of residence, and child disability status were significant predictors of the range of devices owned by children (Table 2). As income increased, the range of devices that children owned also increased, but as parent age increased, the range of devices that children owned decreased.

Mothers reported that their child owned a significantly smaller range of devices than reported by fathers. Compared with married parents, single parents reported that their child had a significantly wider range of device types, while parents cohabiting reported that their child had a significantly smaller range of device types. Compared with those who lived in England, the children of parents who lived in Northern Ireland owned a smaller range of device types. Children with a disability owned a significantly wider range of devices compared with those without a disability.

TABLE 1 | Multiple linear regression for range of locations in which child uses devices (by parent and child characteristics).

Variable name	*B*	Std. Error	Beta	*t*	Sig.
Constant	2.484	0.282		8.815	<0.001
Mother (reference category = father)	0.015	0.125	0.003	0.119	0.905
Parent Age	**−0.021**	**0.008**	**−0.076**	**−2.612**	**0.009**
Marital Status = Single (reference category = married)	**0.391**	**0.152**	**0.080**	**2.574**	**0.010**
Marital Status = In a registered civil partnership (reference category = married)	0.137	0.346	0.011	0.397	0.691
Marital Status = Co-habiting in a partnership (reference category = married)	0.100	0.115	0.025	0.869	0.385
Marital Status = Separated/Divorced (reference category = married)	0.582	0.382	0.041	1.524	0.128
Employment Status = Unemployed (reference category = employed)	**−0.690**	**0.202**	**−0.102**	**−3.423**	**<0.001**
Employment Status = Inactive (reference category = employed)	−0.194	0.194	−0.028	−1.004	0.315
Income	**0.107**	**0.035**	**0.097**	**3.045**	**0.002**
Highest Educational Qualification = A-Level/Cert/Dip (reference category = None/GCSEs only)	0.102	0.163	0.028	0.626	0.531
Highest Educational Qualification = Degree or higher (reference category = None/GCSEs only)	−0.031	0.169	−0.009	−0.182	0.855
Ethnicity = White (reference category = Black, Asian and Minority Ethnicity)	−0.141	0.144	−0.029	−0.979	0.328
Language = English and another language (reference category = English only)	**−0.248**	**0.118**	**−0.058**	**−2.101**	**0.036**
Language = Another language only (reference category = English only)	0.126	0.297	0.011	0.423	0.673
City, town, or suburb (reference category = Rural/semi-rural Location)	0.113	0.114	0.027	0.989	0.323
Country of Residence = Scotland (reference category = England)	−0.011	0.156	−0.002	−0.069	0.945
Country of Residence = Wales (reference category = England)	−0.275	0.160	−0.061	−1.713	0.087
Country of Residence = Northern Ireland (reference category = England)	−0.299	0.165	−0.065	−1.813	0.070
Child Age	**0.041**	**0.004**	**0.251**	**9.164**	**<0.001**
Child Gender (reference category = female)	0.036	0.091	0.011	0.397	0.691
Child Disability (reference category = child without disability)	0.230	0.231	0.027	0.996	0.320
Distribution	**0.511**	**0.145**	**0.146**	**3.533**	**<0.001**
Model Statistics		$F(22, 1253) = 6.880, (p < 0.001)$			
R^2			0.108		
Adj. R^2			0.092		

Note: Results significant at the 0.05 level have been highlighted in bold.

Parent gender and income were the strongest predictors of child device ownership, although, as with other models, the strength of the relationship was generally weak; for example, mothers reported that their child owned, on average, 0.4 less device types than fathers. The model was statistically significant and explained 15% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 1.758. An examination of the VIF showed no problems with multicollinearity and all values ranged from 1.028 to 3.451. Together, these findings support existing research indicating that parental characteristics (in particular education, socio-economic background, and income) are associated with the number and range of devices in the family home. Novel in our findings is the suggestion that the UK's very youngest children are exposed to digital inequalities at a very young age. This has clear implications for their provision rights.

4.4 | Very Young Children's Use of Digital Technology (Participation Rights)

With regard to children's participation rights in the digital environment of the family home, our survey findings revealed that most very young children are enabled, facilitated, and

TABLE 2 | Multiple logistic regression for children often playing on devices by themselves (by parent and child characteristics).

Variable name	*B*	Std. Error	Wald	df	Sig.	Exp (*B*)	95% CI for exp (*B*)	
							Lower	Upper
Constant	0.582	0.448	1.691	1	0.193	1.790		
Mother (reference category = father)	**−0.499**	**0.175**	**8.117**	**1**	**0.004**	**0.607**	**0.431**	**0.856**
Parent Age	−0.007	0.012	0.404	1	0.525	0.993	0.970	1.016
Marital Status = Married (reference category = single)	−0.140	0.216	0.424	1	0.515	0.869	0.570	1.326
Marital Status = In a registered civil partnership (reference category = single)	−0.581	0.527	1.217	1	0.270	0.559	0.199	1.571
Marital Status = Co-habiting in a partnership (reference category = single)	−0.460	0.240	3.673	1	0.055	0.632	0.395	1.010
Marital Status = Separated/Divorced (reference category = single)	−0.609	0.576	1.118	1	0.290	0.544	0.176	1.682
Employment Status = Unemployed (reference category = employed)	−0.393	0.301	1.706	1	0.192	0.675	0.374	1.218
Employment Status = Inactive (reference category = employed)	−0.499	0.318	2.466	1	0.116	0.607	0.325	1.132
Income	0.094	0.053	3.197	1	0.074	1.099	0.991	1.219
Highest Educational Qualification = A-Level/ Cert/Dip (reference category = None/GCSEs only)	**−0.480**	**0.226**	**4.506**	**1**	**0.034**	**0.619**	**0.397**	**0.964**
Highest Educational Qualification = Degree or higher (reference category = None/GCSEs only)	**−0.824**	**0.237**	**12.106**	**1**	**< 0.001**	**0.439**	**0.276**	**0.698**
Ethnicity = White (reference category = Black, Asian and Minority Ethnicity)	**−0.980**	**0.201**	**23.860**	**1**	**< 0.001**	**0.375**	**0.253**	**0.556**
Language = English and another language (reference category = English only)	−0.281	0.184	2.344	1	0.126	0.755	0.527	1.082
Language = Another language only (reference category = English only)	−0.242	0.429	0.318	1	0.573	0.785	0.339	1.820
City, town, or suburb (reference category = Rural/semi-rural Location)	−0.101	0.174	0.338	1	0.561	0.904	0.642	1.271
Country of Residence = Scotland (reference category = England)	0.231	0.212	1.184	1	0.277	1.260	0.831	1.909
Country of Residence = Wales (reference category = England)	0.036	0.221	0.027	1	0.870	1.037	0.672	1.600
Country of Residence = Northern Ireland (reference category = England)	−0.097	0.231	0.177	1	0.674	0.907	0.577	1.427
Child Age	**0.030**	**0.007**	**19.656**	**1**	**< 0.001**	**1.031**	**1.017**	**1.045**
Child Gender (reference category = female)	−0.108	0.137	0.625	1	0.429	0.897	0.686	1.174
Child Disability (reference category = child without disability)	**0.663**	**0.310**	**4.581**	**1**	**0.032**	**1.941**	**1.058**	**3.563**
Distribution	**1.016**	**0.220**	**21.313**	**1**	**< 0.001**	**2.762**	**1.794**	**4.252**
Model statistics								
Omnibus Tests of Model Coefficients	χ^2 (22, $N = 1276$) = 164.415, ($p < 0.001$)							
Nagelkerke R^2	0.173							

Note: Results significant at the 0.05 level have been highlighted in bold.

permitted to use digital devices in a range of locations including (in order of popularity) in the home, car, restaurants, when visiting friends/family, when at nursery, on public transport, in pushchairs, when out shopping, and walking. The most frequent activities that very young children do *on their own* with digital devices included watching children's TV shows and videos, playing games, taking and looking at photographs, and accessing YouTube clips across smartphones, tablets, and laptops (Figure 4). Conversely, the most frequent activities that parents do with their 0–36-month-old child on digital devices included taking photographs, looking at family photographs and videos, speaking with family and friends, watching children's TV shows and children's films, playing music, and watching YouTube clips (Figure 5).

As previously discussed, the picture is more complicated than descriptive analysis suggests. In multiple linear regression, parent age, marital status, employment status, income, language used within the home, and child age were significant predictors of the range of locations where children used devices (Table 1). As parent's age increased, the range of locations where their children used devices decreased. Compared with married parents, single parents reported that their children used devices in a wider range of locations. Compared with those in employment, the children of parents who were unemployed used devices in a significantly narrower range of locations. As income decreased, the range of locations children used devices also decreased. Compared with those who spoke English only, children of parents who spoke both English and another language within the home used devices in a smaller range of locations. As children's age increased, the range of locations in which devices were used increased.

Child age was the strongest predictor for the breadth of locations where children used digital devices, followed by parent employment status. However, as with other models, the strength of the relationship was generally weak; for example, an increased child age of 10 months increased the range of locations by 0.4, while unemployment reduced the range of locations by 0.7. The model was statistically significant and explained 9% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 1.911. An examination of the VIF showed no problems with multicollinearity, and all values ranged from 1.029 to 3.451.

In our survey, children's use of digital devices to play on their own is a dichotomous variable based on parents reporting that their child often plays with devices by themselves across any one of five different device types (smartphone, mobiles, tablet, laptop, and PC). In multiple logistic regression, parent gender, education status, ethnicity, child age, and child disability status were all associated with parents reporting that their child often plays alone on at least one device (Table 2). Fathers were 1.6 times more likely than mothers to report that their child did this (based on the inverse of OR = 0.61). Parents with no qualifications/GSCEs only were 1.6 times more likely to report this than parents with A-levels, certificates, or diplomas (based on the inverse of OR = 0.62) and 2.3 times more likely than those with parents with a degree or higher (based on the inverse of OR = 0.44). Parents of 'Black, Asian, and minority' ethnicities were 2.6 times more likely than those of 'White' ethnicity

	SMARTPHONE		MOBILE (CALLS OR TEXTS ONLY)		LAPTOP		TABLET		DESKTOP	
	N	%	N	%	N	%	N	%	N	%
Often	231	16.3	71	18.1	73	6.2	269	23.1	40	9.7
Sometimes	337	23.8	82	20.9	108	9.1	319	27.5	34	8.2
Rarely	336	23.7	75	19.1	85	7.2	184	15.8	24	5.8
Never	513	36.2	165	42.0	919	77.6	390	33.6	316	76.3
Total	1417	100.0	393	100.0	1185	100.0	1162	100.0	414	100.0

FIGURE 4 | How often a child plays alone on different digital devices.

	SMARTPHONE		MOBILE (CALLS OR TEXTS ONLY)		LAPTOP		TABLET		DESKTOP	
	N	%	N	%	N	%	N	%	N	%
Often	365	25.8	92	23.4	91	7.7	284	24.4	35	8.5
Sometimes	527	37.2	120	30.5	166	14.0	355	30.5	51	12.3
Rarely	389	27.5	79	20.1	235	19.8	259	22.3	47	11.4
Never	136	9.6	103	26.1	695	58.6	265	22.8	281	67.9
Total	1417	100	394	100	1187	100	1163	100	414	100

FIGURE 5 | How often a parent uses different digital devices to play with their child.

to report that their child often played alone on digital devices (based on the inverse of OR = 0.38).

Each unit increase (1 month) in child age increased the likelihood of parents reporting that their child often played on devices on their own by 1.03. Parents whose children had a disability were almost twice as likely as parents whose child did not have a disability to report that their child often played on devices on their own (OR = 1.94). The model was statistically significant and explained 17% of the variance. An examination of the VIF (as calculated by linear regression) showed no problems with multicollinearity and all values ranged from 1.028 to 3.451.

Parents' use of digital devices to play with their child is also a dichotomous variable based on parents reporting often using devices to play with their children across any one of five different device types (Smartphone, mobiles, Tablet, Laptop, PC). In multiple logistic regression, parent gender, income, educational status, ethnicity, language, and child disability status were all associated with parents reporting that they often played with their child on at least one device (Table 3). Fathers were more than 1.4 times as likely as mothers to report often using digital devices to play with their child (based on the inverse of OR = 0.72). A unit increase in income increased the odds of parents often using devices to play with their child by 1.11.

Compared with parents with a degree or higher, those with no qualifications/GCSEs only were 1.75 times more likely to report often using devices to play with their children (based on the inverse of OR = 0.57) while parents with a 'Black, Asian and Minority' ethnicity were more than twice as likely to report this than those with a 'White' ethnicity (based on the inverse of OR = 0.44). Parents who spoke English only were more than three times as likely than those who spoke another language only to report often playing with their child on devices (based on the inverse of OR = 0.31). Parents whose children had a disability were nearly twice as likely to report often using a device to play with their child than parents whose child did not have a disability (OR = 1.89). The model was statistically significant and explained 10% of the variance. An examination of the VIF(as calculated by linear regression) showed no problems with multicollinearity, and all values ranged from 1.028 to 3.451.

Another important aspect regarding children's use of digital technology that we explored in the survey is the contextual and relational context in which this use occurs. Namely, how and in what ways children's engagement with digital technology is shaped, guided, and structured by parental mediation practices. In our survey, we asked respondents to indicate the range and frequency of types of support that they offer to their child when using digital devices. Table 4 highlights that parents reported most frequently (1) showing their child how to use a device, (2) joining their child on an activity, and (3) supervising their child's use of digital technology. Specific activities most frequently indicated included pointing to items on the screen or explaining items to their child, helping their child learn words, letters, sounds, shapes, and colours, helping their child physically hold and move the device, talking with their child about the content, suggesting fun activities, giving praise, and setting parent controls to make sure their child is safe (see Goodall et al. forthcoming).

These findings are important in reinforcing the contingent, contextual, and conditional nature of children's participation rights in a digital environment. Very young children's participation rights are not absolute but are mediated through relational contexts, namely, as shown here through the parent–child relationship. Furthermore, the survey findings illustrate the crucial role of parents and their characteristics in determining how the balance between very young children's provision, protection and participation rights in the digital environment of the family home are negotiated, facilitated, and supported. Other important considerations are parental attitudes towards and confidence with digital technology, as reported below.

4.5 | Parental Attitudes Towards Digital Technology and Their Children (Protection Rights)

In our survey, we found that in relation to child health and wellbeing, nearly half the respondents (49.4%, $n = 713$) strongly/somewhat agreed that digital technology was damaging to children's mental health and that young children use digital technology too much and too early (70%, $n = 1011$). This compares with parental attitudes towards child learning, where most respondents strongly/somewhat agreed that digital technology offers opportunities for young children to develop skills with numbers (83.4%, $n = 1203$) and for young children to develop creative skills (e.g., drawing, painting, taking photo, and making short videos) (75.2%, $n = 1084$).

When analysed in further detail, our survey results showed that parental attitudes towards digital technology and child health and wellbeing were significantly associated with both child age and the language spoken at home. Those who spoke English only were more positive than those who spoke English and another language and those who spoke another language only (Table 5). Parents of older children were more positive than parents of younger children. The model was statistically significant, although the strength of the associations was weak, and the model only explained 3% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 2.026. An examination of the VIF showed no problems with multicollinearity and all values ranged from 1.028 to 3.441.

With regards to parental attitudes towards digital devices and child learning, in multiple linear regression, parent gender, income, language spoken in the home, child age, and gender were all associated with parent attitudes towards digital devices and children's learning (Table 6). Compared to fathers, mothers were significantly less positive, and as income decreased, attitudes became less positive. Compared to those who spoke English only, parents who spoke both English and another language, and parents who spoke another language only, were significantly less positive. Parents of older children were more positive, while parents of a male child had significantly more positive attitudes towards learning with digital devices than those who had a female child. Child age and parent income were the strongest predictors, but the associations were weak and, although statistically significant, the model only explained 5% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 2.035. An

TABLE 3 | Multiple logistic regression for parents often using devices to play with child (by parent and child characteristics).

Variable name	*B*	Std. Error	Wald	df	Sig.	Exp (*B*)	95% CI for exp (*B*)	
							Lower	Upper
Constant	0.177	0.420	0.177	1	0.674	1.193		
Mother (reference category = father)	**−0.336**	**0.167**	**4.055**	**1**	**0.044**	**0.715**	**0.515**	**0.991**
Parent Age	−0.003	0.011	0.079	1	0.779	0.997	0.976	1.018
Marital Status = Married (reference category = single)	−0.080	0.204	0.153	1	0.696	0.923	0.619	1.377
Marital Status = In a registered civil partnership (reference category = single)	−0.419	0.488	0.737	1	0.391	0.658	0.253	1.712
Marital Status = Co-habiting in a partnership (reference category = single)	−0.236	0.222	1.133	1	0.287	0.790	0.511	1.220
Marital Status = Separated/Divorced (reference category = single)	0.167	0.525	0.101	1	0.750	1.182	0.422	3.308
Employment Status = Unemployed (reference category = employed)	−0.244	0.276	0.780	1	0.377	0.783	0.456	1.346
Employment Status = Inactive (reference category = employed)	0.089	0.268	0.109	1	0.741	1.093	0.647	1.846
Income	**0.105**	**0.049**	**4.637**	**1**	**0.031**	**1.111**	**1.009**	**1.223**
Highest Educational Qualification = A-Level/ Cert/Dip (reference category = None/GCSEs only)	−0.400	0.217	3.399	1	0.065	0.670	0.438	1.026
Highest Educational Qualification = Degree or higher (reference category = None/GCSEs only)	**−0.565**	**0.226**	**6.267**	**1**	**0.012**	**0.568**	**0.365**	**0.885**
Ethnicity = White (reference category = Black, Asian and Minority Ethnicity)	**−0.822**	**0.192**	**18.276**	**1**	**< 0.001**	**0.440**	**0.302**	**0.641**
Language = English and another language (reference category = English only)	−0.026	0.165	0.025	1	0.874	0.974	0.706	1.345
Language = Another language only (reference category = English only)	**−1.188**	**0.463**	**6.594**	**1**	**0.010**	**0.305**	**0.123**	**0.755**
City, town, or suburb (reference category = Rural/semi-rural Location)	0.074	0.161	0.212	1	0.646	1.077	0.785	1.477
Country of Residence = Scotland (reference category = England)	0.205	0.203	1.020	1	0.313	1.228	0.824	1.829
Country of Residence = Wales (reference category = England)	0.341	0.210	2.645	1	0.104	1.407	0.932	2.123
Country of Residence = Northern Ireland (reference category = England)	0.172	0.216	0.637	1	0.425	1.188	0.778	1.814
Child Age	0.009	0.006	2.140	1	0.143	1.009	0.997	1.021
Child Gender (reference category = female)	−0.044	0.127	0.119	1	0.730	0.957	0.747	1.227
Child Disability (reference category = child without disability)	**0.630**	**0.307**	**4.212**	**1**	**0.040**	**1.878**	**1.029**	**3.428**
Distribution	**0.988**	**0.201**	**24.076**	**1**	**< 0.001**	**2.687**	**1.810**	**3.988**
Model statistics								
Omnibus Tests of Model Coefficients	χ^2 (22, N = 1276) = 147.141, (p < 0.001)							
Nagelkerke R^2	0.149							

Note: Results significant at the 0.05 level have been highlighted in bold.

TABLE 4 | Multiple linear regression for parent confidence in using digital devices (by parent and child characteristics).

Variable name	*B*	Std. Error	Beta	*t*	Sig.
Constant	15.965	0.621		25.696	<0.001
Mother (reference category = father)	**−0.643**	**0.275**	**−0.070**	**−2.333**	**0.020**
Parent Age	−0.025	0.018	−0.042	−1.417	0.157
Marital Status = Single (reference category = married)	0.296	0.335	0.028	0.885	0.376
Marital Status = In a registered civil partnership (reference category = married)	−0.535	0.762	−0.020	−0.702	0.483
Marital Status = Co-habiting in a partnership (reference category = married)	0.141	0.254	0.016	0.556	0.578
Marital Status = Separated/Divorced (reference category = married)	−0.605	0.841	−0.020	−0.719	0.472
Employment Status = Unemployed (reference category = employed)	**1.065**	**0.444**	**0.073**	**2.397**	**0.017**
Employment Status = Inactive (reference category = employed)	**1.200**	**0.427**	**0.079**	**2.812**	**0.005**
Income	−0.060	0.078	−0.025	−0.766	0.444
Highest Educational Qualification = A-Level/Cert/Dip (reference category = None/GCSEs only)	−0.268	0.360	−0.034	−0.744	0.457
Highest Educational Qualification = Degree or higher (reference category = None/GCSEs only)	−0.359	0.372	−0.049	−0.965	0.335
Ethnicity = White (reference category = Black, Asian and Minority Ethnicity)	**−0.964**	**0.317**	**−0.091**	**−3.040**	**0.002**
Language = English and another language (reference category = English only)	**−1.074**	**0.260**	**−0.117**	**−4.128**	**<0.001**
Language = Another language only (reference category = English only)	**−1.291**	**0.655**	**−0.054**	**−1.971**	**0.049**
City, town, or suburb (reference category = Rural/semi-rural Location)	−0.065	0.252	−0.007	−0.256	0.798
Country of Residence = Scotland (reference category = England)	0.076	0.343	0.008	0.221	0.825
Country of Residence = Wales (reference category = England)	0.232	0.354	0.024	0.656	0.512
Country of Residence = Northern Ireland (reference category = England)	0.236	0.364	0.024	0.647	0.518
Child Age	**0.056**	**0.010**	**0.159**	**5.706**	**<0.001**
Child Gender (reference category = female)	0.026	0.201	0.004	0.129	0.897
Child Disability (reference category = child without disability)	0.144	0.509	0.008	0.282	0.778
Distribution	0.211	0.319	0.028	0.661	0.509
Model statistics		$F(22, 1253) = 4.426$, $p < 0.001$			
R^2			0.072		
Adj. R^2			0.056		

Note: Results significant at the 0.05 level have been highlighted in bold.

examination of the VIF showed no problems with multicollinearity, and all values ranged from 1.011 to 3.443.

4.6 | Parents Managing and Promoting Their Children's Safe Digital Practice

At a broad level, our survey found that most respondents strongly/somewhat agreed with the statements that they have all the skills to support their child (66.1%, $n = 953$), that they know how to keep their child safe ($n = 1049$, 72.7%), and that they know where to access support and advice (60.1%, $n = 868$). However, in multiple linear regression, parent gender, employment status, ethnicity, language spoken in home, and child age (Table 4) were all associated with parent confidence in using digital devices (higher scores represent more confidence, lower scores less confidence). Mothers were less confident than fathers. Compared to parents in employment, unemployed parents were more confident. Compared to those who spoke English only, parents who spoke both English and another

TABLE 5 | Parental mediation practices.

Types and frequency of parental support	*N*	Percentage
Show my child how to use the device (e.g., touch, tap, slide)	694	48
Join my child in the games or activities they want to do	620	43
Supervise my child's device use (e.g., stay in the room, keep an eye on what child is doing)	620	43
Point to items on the screen and name or explain them to my child	609	42
Help my child to learn words, letters, sounds, shapes and colours	606	42
Help my child physically to hold or move the device	593	41
Talk with my child about the content or about what they are doing	593	41
Set limits on my child's use (e.g., how long they can play, which apps they can use)	588	41
Suggest fun games, apps or activities which my child will enjoy	551	38
Praise my child when they do something well	551	38
Set parent controls in the device my child uses to make sure my child is safe	530	37
Sit with my child without interfering unless they get stuck	484	34
Leave my child to use the device on their own so I can get on with something else (e.g., wash up, make a phone call, attend to a sibling etc.)	425	29
Help my child to solve problems in their game or activity	369	26
Suggest games, apps or activities which I think will help my child to learn	354	25
Encourage my child to complete a task	258	18
Suggest games, apps or activities that encourage my child to be imaginative or creative	258	18
Other	75	5

language and parents who spoke another language only were significantly less confident than those who spoke English only. Parents of 'Black, Asian, and minority' ethnicities were less confident than parents of 'White' ethnicity. Parents of older children were more confident than parents of younger children. Parent ethnicity and language spoken within the home were the strongest predictors. However, the associations were weak, and although the model was statistically significant, it only explained 6% of the variance. There was independence of residuals as assessed by a Durbin-Watson statistic of 1.945. An examination of the VIF showed no problems with multicollinearity, and all values ranged from 1.028 to 3.451. These differences in parental attitudes and confidence, although small, do have implications for the exercise of children's rights in the digital environment of the home—in particular how and in what ways parents negotiate the complex issues of digital inclusion, privacy and safety and ensure that their children's provision, protection, and participation rights are all upheld.

5 | Discussion and Implications

Overall, our survey findings lend weight to the existing body of research, which indicates that nearly all very young children live in households that are Wi-Fi connected (Ofcom 2023) and where digital technology exists in various forms in their daily lives. In addition, far from being passive onlookers to the digital technology that is present in family homes, very young children own and use various digital devices on their own as well as with their parents for a range of educational, social, and entertainment purposes. Furthermore, very young children's provision and participation rights in the digital environment of the family home cannot be considered in isolation from the complex interplay of child, parental, and wider social structural and contextual considerations.

Our survey has shown that the age and disability of a child, the socio-economic, educational, cultural, and linguistic background of parents, and parental attitudes towards and levels of confidence with digital technology all provide the unique family contexts in which children's rights in a digital environment are negotiated, lived, and experienced, concurring with wider research (HL Paper 219, 2023; Office for National Statistics (ONS) 2019; Ofcom 2023). The significance of some findings, in particular that children with a disability owned a significantly wider range of devices compared to those without a disability and were twice as likely to play on digital devices on their own than those who did not have a disability, requires further exploration and is the subject of a forthcoming separate paper, which brings together findings from all three phases of the study and aims to provide rich, deep, meaningful, and triangulated consideration of children with disabilities aged 0–3 and digital technology at home.

In summary, the survey findings from the Toddlers, Tech, and Talk project lend weight to the urgent need to ensure that our very youngest children's needs and rights are considered in debates about digital inclusion. Our findings highlight that from birth, children are exposed to inequalities of access in ways that have potential to restrict the social, educational, and cultural

TABLE 6 | Multiple linear regression for parent attitudes towards digital devices and child learning (by parent and child characteristics).

Variable name	*B*	Std. Error	Beta	*t*	Sig.
Constant	16.218	0.476		34.051	<0.001
Mother (reference category = father)	**−0.511**	**0.212**	**−0.073**	**−2.412**	**0.016**
Parent Age	−0.019	0.014	−0.041	−1.358	0.175
Marital Status = Single (reference category = married)	0.169	0.256	0.021	0.660	0.510
Marital Status = In a registered civil partnership (reference category = married)	−0.612	0.596	−0.029	−1.028	0.304
Marital Status = Co-habiting in a partnership (reference category = married)	0.133	0.195	0.020	0.682	0.496
Marital Status = Separated/Divorced (reference category = married)	−0.872	0.644	−0.038	−1.354	0.176
Employment Status = Unemployed (reference category = employed)	−0.119	0.340	−0.011	−0.349	0.727
Employment Status = Inactive (reference category = employed)	−0.011	0.327	−0.001	−0.033	0.974
Income	**−0.149**	**0.060**	**−0.082**	**−2.496**	**0.013**
Highest Educational Qualification = A-Level/Cert/Dip (reference category = None/GCSEs only)	−0.105	0.276	−0.017	−0.382	0.702
Highest Educational Qualification = Degree or higher (reference category = None/GCSEs only)	0.000	0.285	0.000	−0.001	0.999
Ethnicity = White (reference category = Black, Asian and Minority Ethnicity)	−0.465	0.243	−0.057	−1.912	0.056
Language = English and another language (reference category = English only)	**−0.436**	**0.200**	**−0.062**	**−2.180**	**0.029**
Language = Another language only (reference category = English only)	**−1.340**	**0.502**	**−0.074**	**−2.672**	**0.008**
City, town, or suburb (reference category = Rural/semi-rural Location)	−0.185	0.193	−0.027	−0.957	0.339
Country of Residence = Scotland (reference category = England)	0.335	0.263	0.046	1.277	0.202
Country of Residence = Wales (reference category = England)	0.299	0.271	0.040	1.105	0.269
Country of Residence = Northern Ireland (reference category = England)	−0.060	0.279	−0.008	−0.216	0.829
Child Age	**0.022**	**0.008**	**0.081**	**2.895**	**0.004**
Child Gender (reference category = female)	**0.368**	**0.154**	**0.067**	**2.392**	**0.017**
Child Disability (reference category = child without disability)	−0.462	0.390	−0.033	−1.186	0.236
Distribution	**0.594**	**0.245**	**0.103**	**2.428**	**0.015**
Model statistics		$F(22, 1250) = 3.858$, $p < 0.001$			
R^2		0.064			
Adj. R^2		0.047			

Note: Results significant at the 0.05 level have been highlighted in bold.

benefits that can be accrued from safe, supported digital technology use (Green et al. 2024). In a recently published guide by UNICEF and the Carnegie Trust (Bowyer et al. 2021), digital inclusion is defined as having several domains which map onto children's provision, protection, and participation rights, namely, a strong internet connection; sustainability of access; a device; a safe online environment; and the right skills and supports. These recommendations are in tune with our own survey findings that any implementation plans regarding children's rights in a digital environment must take a contextual view that considers the characteristics of the child, their family, and their context and must be informed by nuanced knowledge about families' daily lives living with digital technology. Survey research can only point to trends. In this project, we have gained deeper insights through our interviews and case studies conducted with 40 families in their homes. Also significant is the substantial knowledge on children's rights in a digital environment gained through the work of Livingstone and Third (2017) (Livingstone and Blum-Ross 2020; Green et al. 2024).

Through our own findings, we aim to lend weight to this significant body of work by first insisting that the UK national survey

carried out by Ofcom (2024), which focuses on children's and parents' media use and attitudes, informs policy developments, and currently omits consideration of children under the age of 3 years, is amended to include children from birth to 36 months old. Second, we are working to ensure our findings support ongoing work regarding implementation ideas and plans associated with General Comment No. 25, noting that parents in family homes require accessible, constructive, consistent, and clear advice based on the realities of their daily lives, of which digital technology forms a significant part (Livingstone and Sylwander 2025). Our findings indicate that guidelines developed *with* parents and children rather than *for* them are likely to be most helpful. Tailored to take account of the differing needs, characteristics, contexts, and experiences of children and their parents, made available through the various networks in which families are embedded (such as health, early years education and childcare services, for example) and based where possible on delivery through these informal support groups, might best help support parents to facilitate their very young children's rights in a digital environment.

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Ethics Statement

All aspects of the project have been approved by the ethics committees of all partner institutions involved.

Consent

In line with ethical approvals, all participants involved in the study were engaged in a voluntary consent process, supported by access to participant information sheets.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data on which this article is available on request and will be deposited on the UK Data Service in line with funding requirements from the Economic and Social Research Council.

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