

Digital Devices in Early Childhood Play: Digital Technology in the First Two Years of Slovene Toddlers' Lives

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Abstract

This article offers a first insight into the digital environment of Slovenian toddlers. We report on the use of digital technology and toys allowed by parents in their children's home environment. The study is based on the results of an online questionnaire completed by parents of 26 Slovenian children up to 2 years of age ($M = 17.8$ months; $SD = 5.6$). On average, 9% of all children's toys are digital toys and they spend 10% of their play time playing with digital toys. Among the most commonly, but still only occasionally, used digital toys or technology are smartphones and tablets. Compared to other types of digital technology, parents believed that screen-based digital toys in particular supported their child's skills development. Ultimately, parents do not strongly associate digital technologies with positive developmental and educational effects, but rather they believe that digital technology provides entertainment, enables information-seeking and keeps children busy. Nevertheless they allow, or will allow, the child to use digital technology mainly because they believe it enables learning. Further research, if needed, will be carried out to look closely at the children's use of digital technology and its effects on young children's development.

Keywords: infants, toddlers, digital toys and technology, parents' attitudes.

Цифровые устройства в играх детей младшего возраста: цифровые технологии в первые два года жизни словенских малышей

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Аннотация

Настоящее исследование посвящено цифровой среде, в которой растут словенские дети. В статье представлены данные о цифровых технологиях и игрушках, используемых детьми с разрешения родителей в домашней обстановке. Исследование основано на результатах онлайн-опроса родителей 26 детей в возрасте до двух лет ($M = 17,8$ месяцев; $SD = 5,6$). В среднем 9 % всех детских игрушек являются цифровыми, и дети проводят 10 % своего игрового времени с цифровыми игрушками. Среди распространенных, хотя и редко используемых цифровых игрушек или технологий – смартфоны и планшеты. Родители считают, что цифровые игрушки с монитором, по сравнению с другими видами цифровых технологий, способствуют развитию их детей. По большому счету, родители не видят положительного влияния цифровых технологий на развитие и образование детей – они считают цифровые технологии скорее источником информации и развлечений, способных занять ребенка. Тем не менее взрослые разрешают или планируют разрешать ребенку использовать цифровые технологии, поскольку они считают, что это способствует его развитию. Планируются дальнейшие исследования с целью более детального изучения того, как цифровые технологии влияют на развитие детей младшего возраста.

Ключевые слова: новорожденные, дети младшего возраста, цифровые игрушки и технологии, отношение родителей.

Introduction

Today's children are growing up in environments saturated with electronic and digital technology. They are exposed to it from birth (Brito et al., 2018; Vittrup et al., 2016; Wooldridge & Shapka, 2012). They observe communication that takes place through digital screen technology, for example, video calls with relatives. Before the age of one, they can start using mobile digital devices with a swipe-based user interface, where they move items on the screen independently by touching and swiping the screen. They watch photos and videos on mobile devices, play digital games and use apps (Arnott et al., 2018). The proliferation of digital technologies is affecting socialisation and perception

of reality (materiality of physical and digital and transmedia practices) and the child's agency (Istenič, 2021b).

Children start playing with digital technology before the age of two. It allows them to have fun, learn, and create. They are particularly attracted to mobile touch screen technology. It seems that this is more due to the activities it enables rather than due to the device itself. Children's entertainment, social life, and play are becoming increasingly digital (Chaudron et al., 2018; Rideout & Robb, 2020). However, the use of digital technology is not yet a mainstream activity in the lives of young children. They are also engaged in many other activities, such as outdoor activities and playing with non-digital toys and objects (Chaudron, 2015; Chaudron et al., 2018). In a study with 10 Slovenian families, Chaudron et al. (2018) found that parents predominantly direct their children up to the age of eight towards attending music school and outdoor activities.

Our research aims to identify the still largely unexplored digital home environment of Slovenian children up to the age of two. We focused on the use of digital technology in the home environment, the use of which is mostly facilitated by parents. We are interested in understanding with what aim do, or would, parents let children utilize digital technologies. We are therefore interested in understanding what skills they think their children are learning from digital technology and what positive effects they expect from its use.

The importance of play for children's development

Play can be defined as any activity that is chosen by the child and results in enjoyment and satisfaction (Lindon, 2001). Play is a process, a self-selected, holistic, and appropriately safe experience. Play is dominated by curiosity and willingness. It is different for everyone and everyone plays with one's own, individual aims (Else, 2014; Klarin, 2017).

Developmental psychologists stress the importance of play. Play is a very complex and complete activity in which a child spends most of his or her time. All aspects of a child's development occur through play and are expressed in play (Klarin, 2017). When children play, they are essentially learning (Huber et al., 2018). Children's play changes with age and development (Marjanovič Umek & Kavčič, 2001).

Play is essential for children's optimal development (Healey & Mendelsohn, 2019). It has an important role in children's physical development (Healey & Mendelsohn, 2019; Klarin, 2017) as children develop physical strength and motor skills through play. It helps to lay the foundations for further learning, as the same cognitive processes take place during play as during learning. It is through play that children learn the most (Klarin, 2017). The play encourages creativity and divergent thinking. Further, the play facilitate children's development of social and emotional skills, such as sociability, relationships with peers and adults, cooperation, responsibility, independence, respect for rules, empathy, solidarity, self-control and communication (Healey & Mendelsohn, 2019; Klarin, 2017).

Play is the foundation of healthy child development (Lester & Maudsley, 2007). Given the importance of play for children's development (Huber et al., 2018), adults pay attention to children's play and its development.

Playing with digital toys and devices

Since the birth of the World Wide Web, Google, social networking sites, YouTube, the touchscreen smartphone, app stores and the iPad, children in modern, technologically advanced societies have been living in quite intensive contact with information and communication technology, which is changing rapidly (Genc, 2014). It is also increasingly accessible to very young children. Furthermore, hardware and software manufacturers

are developing products specifically targeted at children under 3 years of age (Wooldridge & Shapka, 2012). Today, one-year-olds have access to videos, websites, computer games, video games and apps designed specifically for them (Cingel & Krmar, 2013). Digital technology is changing children's play environments (Isikoglu Erdogan et al., 2019).

Today, children's rooms still contain toys that do not run on batteries, electricity or solar power (e.g., plush toys, dolls, puzzles, blocks), and that we have called traditional for the purposes of this research. In addition, children have toys that run on batteries, electricity or solar power, but do not include computer technology (e.g., remote-controlled toys, electronic children's books with interactive keys).

With the development of digital technology, new types of toys have been added, bringing with them new ways of playing (Marsh et al., 2016). Digital screen toys, or toys with computer technology and a screen that run on batteries, electricity or solar power, have emerged, such as children's cameras, camcorders, children's computers with digital screens and many more. Digital toys without screens, i.e. toys with computer technology but without a screen, are also available. They run on batteries, electricity or solar power, and some can be connected to the internet. This group currently includes so-called smart toys, connected toys, toys that listen and toys for learning the basics of computer programming (Brito et al., 2018; de Albuquerque & Kelner, 2019; Fantinato et al., 2018; McReynolds et al., 2017; Peter et al., 2019). Connected toys collect, generate, deliver and communicate data. A toy is no longer just an interface in communication. It has become an actor in the communication process, as the toy can follow, listen to, watch, talk to, and even address the child (Peter et al., 2019).

The internet is becoming an integral part of the lives and development of new generations (Klarin, 2017) from an early age. It has also led to a change in the way children use television, which was more in focus of children's attention until the introduction of mobile digital screen technology. Rideout and colleagues (2003) found that 68% of USA children under the age of two use screen-based digital media in a typical day, which at that time meant watching broadcast television programmes, videos and/or DVDs, using computers and playing video games. Television had the lion share of the digital media with 43% of children under 2 watching it every day.

A survey of 10 Slovenian families (Chaudron et al., 2018) showed that children aged up to 8 years use screen technology mainly to watch cartoons; most often on TV, but also on laptops and tablets, which they used to access content on the YouTube platform. Even among Australian children under eight years of age, watching television remains the most popular screen-based media activity (Huber et al., 2018). But the way it is used has changed. Rideout and Robb (2020) revealed that American children watch mostly online videos on TV and other screens on websites that are often accessed on mobile devices. This is followed by viewing video content via streaming TV platforms such as Netflix, NOW TV, Amazon Prime, and Infinity. The content starts at the user's request by clicking on the desired content in the selection. The original way of watching broadcast TV content is only the third way of TV viewing. Smart TV offers more interactivity, variety, and personalisation (Chaudron et al., 2018). In 2020, US children under two spent on average 49 minutes each day with different types of screen technology (Rideout & Robb, 2020).

Today's children, therefore, also use computer technology with screens that is not primarily intended for play but can also be used for play, such as smartphones, tablets, laptops, PCs, etc. Technology used by children has an impact – both positive and negative – on children's physical, cognitive, social, and emotional development, and behaviour (Rideout & Saphir, 2013).

Young children's access to mobile digital devices is increasing

Different types of information and communication technology are increasingly present in the daily lives of even very young children, just a few months old (Genc, 2014; Rideout et al., 2003). This is especially true for mobile digital technology, such as smartphones, laptops, and tablets. More and more parents around the world are giving their children access to 'smart' mobile devices (smartphone, tablet) almost from birth (Rideout & Saphir, 2013). Between 2011 and 2013, the number of mobile technology users among US children under two tripled (Levine et al., 2019; Rideout & Saphir, 2013). The frequency and the amount of time children spend using mobile devices are also increasing (Rideout & Saphir, 2013).

In 2020, 40% of US children under two years of age were using or playing with mobile digital technology. On average, they used it for 7 minutes a day, mainly to watch online videos (30%), watch TV and movies (26%), play games (12%) and use apps (10%). Today, 8% of US children own a tablet by the age of two, 4% own a smartphone and 4% own an iPod touch or similar device (Rideout & Robb, 2020). However, qualitative research among parents of 10 Slovenian children under the age of eight shows that the parents in the sample do not consider it necessary for their child to have their own smartphone (Chaudron et al., 2018).

Mobile digital technology is more convenient for young children than stationary computers, where they need help to use a mouse and keyboard. Young children are able to use a smartphone and tablet independently somewhere between 10 and 14 months of age. They are then able to touch something with just their index finger, which allows them to touch and slide their finger across the screen as if the device was designed for them (Holloway et al., 2015). The onset of a child's use of touchscreen technology is therefore linked to the child's development of fine motor skills (Bedford et al., 2016). Since the introduction of the iPad in 2010, digital devices are increasingly suited to children's fine motor capacities (Arnott et al., 2018). Tablets are the most popular digital device among children thanks to their screen size, portability and ease of use of the touch screen (Chaudron, 2015). When playing with digital screen devices, children's manipulations of toys become virtual (Istenič, 2021a).

In a study involving 715 parents of English children aged from 6 to 36 months, Bedford et al. (2016) found that 51% of children aged from 6 to 11 months used touch technology for an average of about 9 minutes a day, and that time increased as children got older. In the 19-25 months age group, the proportion of users rose to 81% and the average time of use to 25 minutes.

Hourcade and colleagues (2015) analysed children's tablet use skills based on videos uploaded to YouTube. They found that as children get older, their ability to use it increases. Children up to 12 months of age touch the device randomly, do not fully understand the apps and lack precision. They tap the device with their palm and all their fingers. Egbonu and Yingxiu (2018) add that at six months old children are attracted by the sound and images on screen devices, and at twelve months they can open apps by touching or scrolling through photos on the screen. Between the ages of 12 and 17 months, they become moderately dexterous users, tapping the screen with their fingers. This level is reached by 80% of child users between 18 and 23 months. They can tap and scroll on a screen with a single finger. They are able to understand and use basic children's apps, but they need help to access them (Hourcade et al., 2015). At 18 months, toddlers may be able to turn the device on and off, play simple touch games such as jigsaws, and use drawing apps. At 2 years of age, they can play games, draw and manipulate apps on the device (Egbonu & Yingxiu, 2018).

The main reasons why American parents allow their children up to two years old to use digital screen technology are: so that the child learns something from watching the content; because it is fun for the child (Cingel & Krcmar, 2013; Rideout & Robb, 2020); because parents need time for housework (Rideout & Robb, 2020).

In addition to their convenience, apps created specifically for children and downloaded by adults on mobile devices contribute to the appeal of mobile devices for young children (O'Connor & Fotakopoulou, 2016). Healey and Mendelsohn (2019) define apps and screen games as virtual toys that are designed to mimic and possibly replace physical toys. In this context, we think of apps as content that is uploaded to digital devices. The use of mobile platforms and apps is growing among young children and, on the other hand, so is their supply. American children most commonly use apps with educational games, games that are just for fun, and creative apps, for example, for drawing and making music (Rideout & Saphir, 2013). Children's apps are advertised and displayed with promising prospects for children's education. Some have been downloaded to digital devices more than 100,000,000 times (Meyer et al., 2021).

The power of parents in the use of digital technology

Parents play an important role in guiding play, supporting their child during play (Klarin, 2017) and providing early play experiences that can contribute to their children's development (Eisen et al., 2021). Parents also play an important role in the choice of toys, especially toys for young children. Toys are defined here as any play equipment (Healey & Mendelsohn, 2019; Kudrowitz & Wallace, 2010), as children often play with objects that were not specifically designed for play (Kudrowitz & Wallace, 2010).

In our society, toys are an integral part of the parent-child relationship (Farnè, 2007). Toys are no longer seen as something children play with but as mediators in child development (Healey & Mendelsohn, 2019). For very young children, the choice of toys and games (e.g., apps) is almost exclusively made by parents, who are guided by their views, beliefs and opinions about the toy and the game it enables. Parents, as buyers of toys or apps, gain "power" over their child's play: they influence it by guiding the child to use certain objects instead of others. Above all, they decide, according to their own educational criteria, whether a toy or game is suitable or not for their child (Farnè, 2007). Thus, children's use of digital technology and the content they access through it are largely based on their parents' choices (Rideout & Robb, 2020).

Parents' attitudes toward digital devices

Parental mediation in the child's use of technology influences the child's early contacts with technology (Istenič, 2021a) and parents are child's role models (Plowman et al., 2008). Parental decisions and control of their young children's activities and the resources they have access to are influenced by parents' attitudes for children's use of digital technology (Plowman et al., 2012). European parents have a generally positive attitude toward digital technology, but also feel that children's use of it needs to be monitored and regulated. The benefits of children's use of digital technology are less clear to parents than the problematic aspects (Chaudron, 2015). Parents of the 10 Slovenian children in Chaudron et al.'s (2018) study also had a positive attitude toward digital technology in their children's lives, but did not think that young children need to use it yet. They controlled the children's time of use, but also wanted to ensure their children's use of digital technology. Moreover, Slovenian households with children were significantly better equipped with computers, including tablet computers, and internet connectivity, than those without children.

Many parents are convinced of the educational benefits of digital technology. They believe it can usefully support a child's intellectual development. Such beliefs seem to be related to the amount of time they allow their children to spend with each type of digital technology (Isikoglu Erdogan et al., 2019; Rideout et al., 2003). As Lauricella and colleagues (2015) note, parents with a positive view of technology can tolerate and encourage their child's use of technology, while parents with negative attitudes can hinder and prevent their child's use of technology. Isikoglu Erdogan and colleagues (2019) add that parents' beliefs about the importance and appropriateness of digital play for their child can influence the quality of and opportunities for children's digital play in the home environment.

US parents' attitudes about children using digital screen technology are overwhelmingly (70%) very positive about its impact on their child's learning. They believe digital technology to have a positive effect on children's creativity (40%), social skills (33%), ability to concentrate (37%), emotional maturity (23%), behaviour (26%) and physical activity (19%). Except for the effect on physical activity, opinions on positive effects outweigh negative ones (Rideout & Robb, 2020).

Research goal and research questions

The survey aimed to gain a first insight into the use of digital technology by Slovenian infants and toddlers under the age of two years: what types of digital devices and apps young children use in their play, how often, and what their parents think about it. Based on the literature reviewed we expected that (1) the participating children have digital toys and play with them; (2) parents allow children to use different types of digital devices; (3) children also use child apps on these devices; (4) parents believe that digital technology supports their child's development of particular skills; and (5) parents are allowing their child to use digital technology, or plan to do so in the near future for various reasons.

Method

Measures

Based on the literature reviewed (Brito et al., 2018; Cingel & Krcmar, 2013; de Albuquerque & Kelner, 2019; Fantinato et al., 2018; Genc, 2014; Healey & Mendelsohn, 2019; McReynolds et al., 2017; Peter et al., 2019; Rideout & Saphir, 2013; Wood et al., 2016) we designed a survey, tapping parental observations and attitudes regarding their infants' and toddlers' use of digital technology. It includes close-ended questions and statements referring to:

a) General information on the child (sex, age, age in relation to other children in the family, type of living environment) and parent (age, relationship to the child).

b) Types of toys that children have, their play time with each type of toy and with the computer screen technology in relation to the child's total play time. The following types of toys and technology were assessed:

– Traditional toys (such as plush toys, dolls, puzzles and all other toys that do not run on batteries, electricity or solar power);

– Simple electric and electronic toys without screens (battery-powered, electric or solar-powered, but not involving computer technology; e.g., remote-controlled toys, interactive cubes, children's computers without digital screens, electronic children's books with interactive buttons, musical bouncy eggs);

– digital toys without screens (toys with computer technology but without a screen; some can be connected to the Internet. Toys powered by batteries, electricity or solar; e.g. smart toys, connected toys, toys that listen, toys aimed at teaching the basics of computer programming);

– digital screen toys (toys with computer technology and a screen that run on batteries, electricity or solar power, e.g., children’s cameras, camcorders, computers with digital screens, etc.);

– computer technology with screens that is not primarily for gaming but can also be used for gaming (smartphone and tablet, laptop, PC, etc.).

For each type, the participating parents estimated the percentage it represents in relation to all the child’s toys and the percentage of the child’s play time with it in relation to the child’s total play time. While assessing the children’s play time, parents also assessed children’s play with regular everyday objects from their common everyday environment, which are not counted as digital technologies.

c) The frequency of child’s use of digital technology and apps. In the digital technology category, the frequency of use of smartphone, tablet and other types of computers was assessed; in the apps category, the frequency of use of educational games, creative apps, apps based on a character the child knows from a TV show, apps intended to get the child used to personal hygiene, apps for bedtime stories, and apps with games that are just for fun. Frequency of use was assessed along a 5-point scale with values of 1 (never), 2 (occasionally), 3 (at least once a week), 4 (every day) and 5 (several times a day).

d) Parental belief regarding the skills and knowledge facilitated by each type of toy. Parents reported which type(s) of toy(s) supported their child’s skills in the field of sensory development, motor development, cognitive development, emotional development, listening and observation, and visual and spatial orientation.

e) Parental beliefs regarding positive effects of children’s use of digital technology. Parents were asked to tick all the positive effects of digital technology for children: hand-eye coordination, reaction times, development of social skills, development of problem-solving skills, development of basic maths skills, development of basic reading skills, development of basic language skills, interest in science, interest in arts and crafts, interest in history, development of pre-academic skills, interest in what is going on in their environment, information-seeking, entertainment and keeping them busy.

f) Parental reasonings for allowing or intending to allow their child to use digital technology. Along a 5-point scale (1 – not at all contributing; 5 – very much contributing to the decision to allow digital technology), parents rated the following reasons: enables learning; a reward for child’s good behaviour; a reward if the child does not misbehave; the child asks for it; the child likes digital technology; the child can watch his/her favourite show; helps the child to relax; part of the child’s daily routine; child resting for a while; parents can do the housework; helps parents to de-stress; parents get some free time.

Participants

We obtained data for 13 girls, and 13 boys, aged from 0 to 2 years. The average child’s age was 18 months ($M=17.8$; $SD=5.6$). Families lived in rural (12), suburban (6), and urban setting (8). The participating adults were predominantly children’s mothers, with the exception of one aunt. For this reason, we will also use the term parents to refer to respondents from here on. The average age of respondents was 33.5 years ($SD=4.3$; range from 27 to 42 years).

Procedure

The data were collected via an online questionnaire from February to March 2021. At the beginning of the survey, the respondents were informed about the purpose of the study and anonymity of their responses. The questionnaire was completed voluntarily and without any financial incentive. 29 participants started the survey, but three of them quit immediately after the introductory set of general questions were excluded from the data analyses.

Results

The presence of digital technology in children's play

First, we analysed the shares of different types of children's toys (Table 1). As expected, the children in our sample have digital toys among their toys and play with them. However, children have relatively few digital toys and digital technology of their own by the age of 2 and only a very small part of all children's toys are digital. While the traditional toys represent three quarters of all toys, all types of digital toys and technology represent modest 9%. In the category of digital toys and technology, the presence of screen-based computer technology dominates (around 6% in total), which the respondents consider being the most supportive for the development of their child's individual skills as compared to other types of digital technology or digital toys (see Table 5).

Table 1. Average percentage (%) of each type of a child's toy in relation to all child's toys.

Type of toys	M	SD	Min	Max
Traditional	74.1	17.6	30	97
Electrical and electronic	17.3	11.34	0	40
Digital without screens	.8	5.5	0	20
Digital screen	.7	3.8	0	10
Screen based computer technology	.8	.8	0	20

Note. $N = 18$; responses for 8 participants were flawed and thus omitted from the analyses.

Table 2. Average percentage (%) of the child's play time with each type of toy in relation to the total play time.

Types of toys	M	SD	Min	Max
Traditional	50.00	21.45	20.00	90.00
Electrical and electronic	14.69	13.10	0.00	50.00
Digital without screens	1.31	3.40	0.00	10.00
Digital with screens	2.50	5.77	0.00	20.00
Computer technology	5.94	7.79	0.00	20.00
Everyday objects	25.56	20.39	0.00	70.00

Note. $N = 16$; responses for 10 participants were flawed and thus omitted from the analyses.

By the age of 2, children in our study spent the least time playing with digital technology compared to other types of toys and compared to playing with everyday objects (Table 2). Play time with different types of digital technology in total does not exceed 10% of a child's total play time, while half of the children (out of 16 valid responses) did not use any type of digital technology at all.

Use of digital devices

Next, we explored parental reports on the frequency of children's use of digital devices. As presumed, the results presented in Table 3 suggest that adults allow children under two years of age to use different types of digital devices.

Table 3. Frequency of child use of individual digital devices (N = 22)

Device	M	SD	Min	Max
Phone	2.1	1.1	1	5
Tablet	1.6	1.0	1	4
Computer	1.5	0.7	1	3

Note. Data is missing for 4 participants. Possible range of scores is from 1 (never) to 5 (several times a day).

Children in our study use digital devices, but not very frequently. Adults occasionally give them a smartphone and a tablet to use. Our results are consistent with findings of a study with a national sample of US children (Levine et al., 2019) suggesting that among mobile media children under three years of age most likely use mobile phones (61%) and tablets (51%).

Furthermore, our study found that some of the target children have never used a phone, tablet or other type of computer, while some children use a tablet every day and a smartphone several times a day (Max=5).

Based on our results, we conclude that some Slovenian children start using mobile digital technology, which is not primarily intended for play but can also be used for play, before the age of two years. They mainly use touch mobile digital technology. It should be noted that this study was performed with a small sample and the results need to be replicated with a larger, possibly representative sample.

Use of apps

Parents reported on their child's frequency of use of different types of apps. Concise with our hypothesis, the results suggest that children under the age of two years use various apps.

Table 4. Frequency of child use of each type of app (N = 22)

Types of applications	M	SD	Min	Max
Educational games: jigsaw puzzles, character sorting, memory game, maths and reading games, letter recognition	2.3	1.1	1	5
Creative apps for drawing, making music or creating videos	1.7	1.0	1	4
Apps based on a character the child knows from a TV show	1.5	.7	1	3
Apps for getting the child used to personal hygiene	1.3	.6	1	3
Good night storytelling Apps	1.6	.8	1	4
Games that are just for entertainment	1.9	1.1	1	5

Note. Data is missing for 4 participants. Possible range of scores is from 1 (never) to 5 (several times a day).

Table 4 shows that some of the target children have never used the apps. On average, children occasionally used apps with educational games, such as jigsaw puzzles, character sorting, memory games, maths and reading games and letter recognition, and apps with games that are just for fun. Out of 22 children, 18 used educational games apps; two of them, aged 14 and 22 months, used them every day; while one, 17 months old, also used creative apps several times a day, every day. In addition, one 22-month-old child used

creative apps every day. The 14-month-old user of educational games apps mentioned above also uses apps with games that are just for fun every day. The results therefore suggest that some child app users are not limited to using one type of app.

On average, the participating Slovenian children do not receive bedtime stories via apps, with the exception of one 12-month-old child who listens to a story every day via the app. As we did not ask the parents if they do not tell bedtime stories or tell them with the help of a book, this question remains open for future studies.

On average, our children hardly ever use apps to get them used to personal hygiene and apps based on a character they know from a TV show. The latter were used by 13% of children under a year of age and 39% of children aged 2 to 4 years in a large, nationally representative US sample (Rideout & Saphir, 2013) based on. The differences between the participating Slovenian children and American children could be attributed to the differences in age span under study or to different cultural backgrounds. We assume that the Slovenian children are also familiar with such transiently popular and profitable characters, but that their environment is less permeated by their presence than that of their American peers. The intensified commercialisation of American children's childhoods has led to these characters appearing in many ways in the child's environment during the period of their popularity; not only in cartoons, colouring books, jigsaw puzzles, children's books, and films, but also on clothing, food products, embodied in the form of plush toys, etc. They become an integral part of the child's home environment. Our toddlers' childhoods may be less imbued with these characters, and so they may be less likely to ask their parents for apps starring them. Parents may also be less likely to upload them to their children's digital devices.

Parental attitudes and opinions

The participants in our study were also asked which types of toys facilitate different areas of their children's development (Table 5). With regard to digital toys, only a small proportion of parents reported their facilitating role in children's development and this was particularly true for digital toys without a screen. The latter, according to parents, do not contribute at all to the child's cognitive and emotional development. One participant out of 22 believes they can support children's motor development, and two believe that they support the development of visual and spatial orientation. According to three of the participating parents, these toys can help with listening and observation. And according to four parents, the toys help with cognitive development.

Table 5. Number of respondents (total N = 22) who think that a particular type of toys facilitates the development of specific skills

<i>Skills and knowledge</i>	<i>Traditional toys</i>	<i>Electrical and electronic</i>	<i>Digital without screen</i>	<i>Screen based</i>
Perceptual development	21	6	0	0
Motor development	22	0	1	1
Cognitive development	15	8	4	6
Emotional development	22	2	0	3
Listening, observation	18	7	3	6
Visual and spatial orientation	21	3	2	3

Screen-based digital toys are slightly better in parents' eyes: 6 out of 22 parents think they support listening, observation, and cognitive development; 3 think they support emotional development, visual and spatial orientation. On the contrary, a vast majority of participating parents attributed an important role to traditional toys for all areas of child development. Given the findings that in the children of our sample the screen-based technology is slightly more prevalent among digital toys (Table 1), it is necessary to understand why this is the case. Is it because parents offer it to children more often, as they believe it to be more educational?

Table 6. Number of respondents (total $N = 18$) who recognise the positive effects of digital technology for children

<i>Positive effects</i>	<i>f</i>
Promotes hand-eye coordination	3
Stimulates the strengthening of reflexes	2
Encourages the development of social skills	1
Encourages the development of problem-solving skills	4
Encourages the development of basic mathematical skills	6
Encourages the development of basic reading skills	3
Encourages the development of basic language skills	0
Stimulates interest in science	0
Stimulates interest in arts and crafts	1
Stimulates interest in history	0
Allows child to search for information	12
Provides entertainment	12
Encourages the development of the skills needed to succeed in school	2
Keeps child busy	9
Stimulates the child's interest in what is happening in his/her environment	0

The results presented in Table 6 show that respondents did not generally attribute many positive effects to digital technology for children. The exception is the perception that it provides fun (67%). Furthermore, two-thirds of parents in our study rate that digital technology enables children to find information.

Half of the participating Slovenian parents also agree that digital technology keeps children busy; the capacity of digital technology to promote the development of problem-solving skills is appreciated by a third of respondents and the capacity to promote the development of basic mathematical skills by only a fifth.

Thus, in partial support of our fourth hypothesis, our findings suggest that a proportion of participating adults (but not all) believed that digital technology supports certain skills in their child and has a positive effect on children.

Respondents were asked to rate the extent to which the reasons listed in Table 7 contribute to allowing their child to use digital technology now or in the near future. As expected, various reasons contribute at least partially to parental decision to allow the children to use digital technology.

Table 7. Respondents' ($N = 17$) average agreement with the reasons for allowing a child to use digital technology

<i>Reasons</i>	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>
Facilitates learning	3.1	1.4	1	5
A reward for child's good behaviour	1.9	1.2	1	4
A reward for not behaving badly	1.9	1.1	1	4
The child asks for it	2.3	1.2	1	4
The child likes it	2.4	1.2	1	4
The child can watch his/her favourite show	2.2	1.2	1	4
Helps the child to relax	1.9	1.4	1	4
Part of child's daily routine	1.8	1.3	1	5
Small pause for the child	1.9	1.3	1	4
In the meantime, parents do the housework	2.4	1.4	1	5
Helps parents to relieve stress	2.1	1.3	1	5
In the meantime, parents have some free time	2.0	1.1	1	4

The strongest reason seems to be the educational potential for digital technology. However, some of the participants did not consider the educational value of digital technology to be an important reason for allowing their child to use it. Moreover, the following reasons also have some influence on the decision of our children's parents: the child can watch his/her favourite show, parents can relieve stress in the meantime and have some free time.

Discussion

As today's children are increasingly exposed to digital technology from birth on (Brito et al., 2018; Vittrup et al., 2016; Wooldridge & Shapka, 2012), their use of this technology needs to be thoroughly and comprehensively understood. Our research has brought us insight into the quite unknown digital world of Slovenian infants and toddlers. This first insight into the digital childhood of 26 Slovenian children under the age of two years suggests that while traditional toys and play are still prevalent in their homes, some children are also allowed to start using digital technology before the age of two years predominantly because their parents believe it enables learning.

Digital toys and digital technology in general represent only a small part of toys when compared to other types of toys available to the Slovenian children in our sample. Furthermore, the Slovenian infants and toddlers spend the least time playing with digital toys and technology. When they do so, they most often use smartphones and tablets. These results are consistent with findings with a national sample of US children (Levine et al., 2019) suggesting that among mobile media children under three years of age most likely use mobile phones (61%) and tablets (51%). Furthermore, Rideout and Robb (2020) report that 40% of US children under two years of age use or play with mobile digital technology. We did not collect data specifically for mobile digital technology, but 11 out of 16 children in our study never played with digital screen toys and computer technology. Research has shown that digital technology appeals to children (Chaudron, 2015; Eisen et al., 2021); however, Isikoglu Erdogan and colleagues (2019) found that parents of 500 American, Turkish, Chinese, and South Korean children, aged between 4 and 6 years, reported they were generally least inclined to having their children play with digital

technology compared to other types of play. Considering the young age of target children in our study, we conclude that their modest use of digital technology is influenced by their parents. Such parental decisions are in line with the American Pediatric Association Recommendations (AAP Council on Communications and Media, 2016), advising against the use of digital media for children under the age of two, except for video chat.

The children in our study occasionally use apps with educational games, such as jigsaw puzzles, character sorting, memory games, maths, reading games and letter recognition, and apps with games that are just for fun. Our results also suggest that some child app users are not limited to using one type of app only. Children's preferences for types of digital devices and apps are consistent with findings from international research (Huber et al., 2018; Rideout & Saphir, 2013). Some children use digital devices and apps several times a day, while others have never used them. Given that differences in the user's ages do not explain differences in the use of digital technology and apps, they may be attributable to parents' attitudes towards digital technology.

Most of the participating parents feel that digital toys, especially those without a screen, do not enhance their children's development. Parents consider screen-based digital toys to be slightly more efficient in this respect. Digital technology is generally not seen as having many positive effects for children. Like most parents of Canadian children (Wood et al., 2016), the majority of Slovenian parents believe that digital technology is primarily for entertainment. Parents of American, Turkish, Chinese, and South Korean children also point out the digital technology's provision of entertainment (Isikoglu Erdogan et al., 2019). A substantial proportion of Slovenian parents appreciate that digital technology enables the children to search for information and that it keeps the children busy. Also noteworthy is the finding that most of the participating Slovenian parents recognize the important role of traditional toys for all areas of child development. This is consistent with the results found with a sample of 60 US parents of 4- to 7-year-olds, who also think that screen technology is important for learning, but much less than playing with physical toys and objects, such as blocks, puzzles, and balls (Eisen et al., 2021). Furthermore, a much smaller proportion of Slovenian than Canadian parents (Wood et al., 2016) recognized the positive effect of digital technology on children's problem-solving and mathematical skills, but this difference could be attributed to older age of the Canadian children (46 to 76 months) than the children in our study.

Enabling learning is the most compelling reason for the participating parents of Slovenian children to allow their child to use digital technology in the present or in the near future, and this is also true for American parents (Rideout & Robb, 2020). Our results suggest a possible link between children's use of digital technology and parents' focus on their child's education. Parents associate digital technologies with an expected educational outcome, which sellers and producers of digital toys advertise when offering aforesaid toys. We therefore dare to ask: how much of the conviction in the educational capabilities of digital toys is purely due to marketing and advertising?

In sum, the results of the present study support the findings of Levine and colleagues (2019) that the current generations of young children represent the first generations of true digital natives.

Limitations and future directions

The present study is not without limitations. First, the sample size was small, hindering the generalizability of our findings. Studies with larger (possibly representative) samples of infants and toddlers are needed. Second, the study relied on a new measurement instrument, thus impeding the comparability of our results with findings of previous studies. A common measure is needed to increase the comparability or research

findings across countries and over time. Nevertheless, the survey was rather extensive and provided reports on many characteristics of infants' and toddlers' use of digital technology not investigated before in Slovenia. Furthermore, the measure used tapped parental observations of children's use of toys. Future studies could complement our findings by relying on experts' evaluations of children's play with traditional and digital toys. Still, parental reports are highly relevant in assessing (young) children's environment and behavior as parents spend a lot of time with their children in diverse situations and over long periods of time. Moreover, parental beliefs affect their parenting practices and decisions regarding toys available to children. Further research is also needed to elucidate the role of various factors in young children's use of digital technology (e.g., parental education, SES, child's attendance of preschool) and its effects on children's development.

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