PARENTAL PERSPECTIVES OF CHILDREN'S USE OF INTERNET CONNECTED TOYS

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Abstract

Internet Connected Toys (IoToys) are becoming increasingly popular among very young children (birth to seven years) within families. Meanwhile, increasingly complex and multipurpose digital devices and IoToys require new attitudes, aptitudes and competences on the part of parents.
This qualitative study focused on examining how children interact with IoToys at home and in early childhood education. Data were collected using a multi-method approach over an eight-month period. We conducted interviews with parents and teachers, observed children and collected videos of children's use of IoToys to capture daily habits, experiences and attitudes in two contexts: home and education. Data were collected in four regions: England, Central Scotland, Northern Ireland and Greece. A synergy between social ecology and family systems theory theoretical approach was used.
This chapter reports data gathered within 11 home settings in England and adopts a parental perspective on the use of IoToys. Results indicate that parents feel digitally literate but have concerns about the use of IoToys at home. In particular with their ability to deal with uncontrollable pop-up advertisements and inappropriate pop-up images and, at an emotional level, their feelings about their own digital skills. The findings suggest that parents' view of IoToys pose opportunities and challenges for entertainment and learning, but they expressed the need for support to be able to choose safe and high-quality digital content for their children.

Key-words: Internet of Toys (IoToys), children 0-7, home, early childhood education.

Introduction

With digital households evident in developed countries, parenting has received increasing attention from researchers who seek to shed light and offer some guidance and advice on how to regulate or manage children's technological interactions (e.g. Livingstone, Blum-Ross, Pavlick, ⊠lafsson, 2018; Palaiologou, 2017; Sergi, Gatewood Jr., Elder, & Xu, 2017; Smahelova, Cermak, & Smahel, 2017; Wartella, Rideout, Laurricella, & Connell, 2013). Most of this research is focused on screen-based devices and examines how parents and children use technology at home, the quality and quantity of their screen time exposure and online risk factors. It concludes that parents have concerns with technology, especially online use, are confused with the advice they receive and lack the necessary support to address questions such as 'what technology is appropriate?', 'how long children should use technology?' and 'what the online threats are?'.

Some (i.e Livingstone et al. 2015) have tried to link technology use at home with parenting styles. Similarly, Wartella et al., (2013) when surveying parents on digital media use in households proposed three types of parenting: media-centric, media-moderate and media-light parents. They associated these styles of parenting with the variety of media "ecologies" that each household have and concluded that parental choices of the technology used can shape children's behaviours. However, they concluded that the technology used by children was not the main concern of parents, instead they were concerned with more traditional issues such as their children's health, education and wellbeing. Others link technology use to the family's income. Livingstone et al. (2018) examined parental perspectives on digital media, they surveyed parents in the UK with children aged from birth to 17 years old. They found that parents believe that activities that are digitally mediated and facilitated bring families together (i.e video calls, playing games together), but

noted that this more evident in high income families who tended to be more engaged in their children's digital activities.
Concerns are also highlighted in the literature about family dynamics in digitally mediated households. Livingstone et al. (2018), for example, suggested that digital activities can lead to conflict between children and parents on time spent on screen and with children's preferred online activities. They identified that:

"for digital and non-digital dilemmas online searches are the first port of call for parenting questions. But other sources of support in parents' lives – partners, friends and relatives, health professionals or a child's school – are seen as better resources for non-digital questions more than digital ones. Notably, few parents feel they can turn to their own parents for digital advice, suggesting a generation gap that leaves parents unsupported when it comes to these essential and sometimes divisive issues" (p. 1).

Similarly, Palaiologou, (2017), focusing on the perspective of parents with children under the age of five, raised concerns around harm, commercial exploitation, parental neglect (i.e offering children an iPhone, so they can get on with household chores), social medial exploitation and noted that parents' digital competencies might be less advanced than their child's ability level. It was concluded that parents are confused and lack clarity about the guidance available.
With the speed of technological advancement and since the introduction of internet-connected things and with internet connected toys (IoToys) entering households in developed countries, it is anticipated that parents will find themselves seeking advice and guidance on how to integrate novel devices. It is likely that as technology develops rapidly and enters households prior to evidence-based research, parents will experience what Stephen and Edwards (2018) call techno tales, which spread anxiety and moral panic. In this chapter, which forms part of a bigger project, the key aim is to identify parental perspectives on the use of IoToys.

Theoretical approach

In our work (Arnott, Palaiologou and Gray, 2019a and b), we were interested in examining how children use IoToys from a holistic perspective in all aspects of their lives (home and school, families and education, formal and informal contexts). The theoretical framework for the qualitative study upon which this chapter is based is social ecology. This relates closely with systems theory which argues that social phenomena cannot be examined in isolation from all its components. In our work we attempt to marry social ecology and systems theory as both focus on the holistic richness of phenomena in their own context and attempt synergy between the social and the human development (Bookcin, 1993, 1995a, b).

A key element in social ecology and systems theory is the study of phenomena as systems. Through these lenses a social phenomenon as an entity can be seen to have a number of interrelated and interactive factors. Thus proponents of social ecology and systems theory study the dynamic of what happens to an aspect of a system that impacts on another one and how this changes the equilibrium of the system (Bookcin 1995 a and b, Ackerman 1959, Jackson 1965). Systems theory has also been adopted in the field of psychology for the study of families (see Ackerman, 1959; Jackson, 1965; Bowen, 1978). Using this approach a family is viewed as an emotional unit which operates as part of a larger family system and social ecology. Each member of the family has a role to play and the emotions of one member of a family has an impact on the other members of the family. A family as an emotional unit functions

when there is an equilibrium of feelings among all its members. They also promote the idea that to understand and support children well, family systems are key components of this understanding.

There is now research emerging (i.e Bito et al., 2018; Huber et al., 2018), that examines the use of technology in families and concludes that technology is now part of a family's daily activities and is not seen as different or unusual. Based on systems theory and social ecology, we base our research on the family systems and its social ecology. Thus in line with contemporary research, we view IoToys within the repertoire of activities within the family system. Thus, in our project we collected data from observations of children when they interacted with IoToys at home and we developed a multi-method approach to collect family perspectives, reactions, emotions and experiences. In our work we were not

"concerned with the construction of models that can be applied in all contexts. Instead the focus is on entities and their complexities and supports the idea that systems are not fragmented (unlike models) and all interwoven factors that are involved [and] are interacting in a continual manner" (Palaiologou, and Male 2018, p. 76).

Consequently, in this chapter, our discussion is informed by the view that families and their social landscapes in the digital age are not two separate systems but interwoven with each family needing to be studied and understood as an entity to respect its identity, diversity, roles, hierarchies, rules, rituals, customs and cultures.

The study

This chapter is based on a larger multi-methods study: An Ecological Exploration of the Internet of Toys in Early Childhood Everyday Life. It was conducted in England, Scotland, Northern Ireland and Greece. The project reflects the social ecology and systems theory that a phenomenon cannot be studied from one angle but requires a multi-methods approach with our data collected from children, parents, early childhood educations practitioners and teachers at home and education. Findings from the project are reported in Arnott, Palaiologou and Gray 2019 a and b, Palaiologou, Arnott and Gray under review.

In this chapter we report data from one of our research questions: What are the parental perspectives of the use of IoToys? We present data from eleven interviews with families conducted in England.

The interviews were semi-structured, and lasted for approximately forty five minutes and when possible both parents were present. The interview questions were around what types of IoToys are using the family, how and when they are used and what the parents' views were about the use of IoToys at home. We were also interested in finding out what their views were about how IoToys were portrayed in the media and what their views are about the inclusion of IoToys in their daily life. All the interviews were digitally recorded with the permission of the parents. The overall data was approximately five hours of recordings. All the recordings were returned to the parents for their approval and once the parents confirmed that we could use them, each was analysed. As this project had a limited budget, interview recordings were not transcribed by professional transcribers, but were uploaded to NVivo and imported to the TranscribeMe where the recordings were automatically transcribed and downloaded into our NVivo project files. Once this process was completed the interviews were analysed thematically. Initially, as we were concerned viewing families as a system, individual codes emerging from the relevant literature were clustered together to become axial codes which gave us the themes presented in the following sections.

The families were selected purposively among all the other parents who participated in the study as they had included IoToys as part of their children's play portfolio. The families had children from birth up to 6 years and 10 months. All families can be classified as belonging to the middle-upper socioeconomic and educational backgrounds as illustrated in Table 1.

Table 1
Participants demographics

Gender (n=22)	Ages	Education	Employed	Not in employment*
11 mothers	25-46	Undergraduate degree (8) Post graduate degree (3)	8	3
11 fathers	29-48	Undergraduate degree (6) Postgraduate degree (5)	11	None

*Mothers' choice not to work thus not unemployed but choose not to be in employment

The interviews took place in the families houses with both parents present. The EECERA (2015) ethics code of practice was followed. Participation was on a voluntary basis with participants having access to the data at all times. All the participants gave permission for their interviews to be used for publishing purposes with their anonymity retained. As the sample reported here is small, the nationality of the participants is not reported as they might be identified due to the demographic information presented.

Results

The data from the interviews demonstrated:

1.There is a breadth of digital literacy and confidence amongst parents within families.

2.There is a variety and diversity among families in relation to their digital habits and particular with IoToys.

3.Parental concerns about IoToys were at Practical and Emotional levels.

Parental practices with IoToys varied among the families and parents did not seek on perspective guidance of IoToys but one that respect the social ecology of its family.

Digital Literacy of Parents:

All the families in the English cohort perceived themselves as being digitally literate. In the question 'to what extent they feel confident with the use of technology' all of them rated themselves competent users of technology. However, seven mothers and six fathers said that they felt they struggled to keep up with their children's rate of technological advancement.

In the questions as to whether they would characterise themselves as having high levels of digital literacy and being critical in terms of their ability to choose, they felt confident to use and support their children with IoToys play, with fifteen parents considering that they were able to fit fully this description. The rest felt that they were capable of handling IoToys and supporting their children, but considered their skills limited, with one father saying that he was self-taught with IoToys use:

"I can't hide behind my finger [...] I do not always understand the technology as well as my four year old son, I do not have the skills to keep up and I am trying, this is where I want help, not to tell me for how long [meaning screen time], how much, what to do, but to help me with understanding the technology, this is the only way to support my children."

And another mother said:

"As you can see I have an iPad, iPhone and work with a computer every day, but the technology is moving and moving. Last night [name of child age 4yrs and 6 months] he asked me to buy him an app for [name of IoToy] and I spent two hours reading reviews and checking with my husband whether it was for his age or not. Ok we can do this, but what about other parents? "

Our participants were purposefully chosen as we were interested in their views of IoToys use in households. However, in the questions about parental competencies, dispositions, attitudes and aptitudes towards IoToys use, evidence from the data showed that parents (responses among 11 mothers and 11 fathers) characterised themselves as:

1.Advanced (7 responses (R), meaning confident and able to follow all the technological developments without support

2.ompetent users (7 R), meaning that they can use technology, but they have to work on their skills with "new" types of technology and felt they do not use technology to its full potential, and in need for some support;

3.Accommodating (8 R), meaning that they willingly integrate technology in their households as they felt it was important for their children's entertainment, play and learning but they felt they lacked skills to understand what good quality digital context is.

Use of IoToys at home

Thematic analysis of the interviews with parents identified the following themes in relation on how IoToys are used in their households (Table 2).

Table 2
Parental perspective of how IoToys are used at households (no of responders=22)

Themes	**Sub Themes**
Roles	Parents can offer mediation with the IoToys
	Children offer mediation to parents
Boundaries	Parents choose what was suitable for children
	Parents allowed free time activities with no adult presence
	Parents were present when children playing with IoToys
Rules	Parents had rules of IoToys use
Mediation	Parental direct mediation
	Parental indirect mediation
	Negotiation between parents and children
	Parental disengagement
Play	Parents expressed that their children played with IoToys
	Parents choose and use IoToys as a play toy the main criterion
Learning	Development of dispositions and skills towards technology
	Academic learning
Educational use	Parents did not choose or use IoToys as the key criterion

The data showed varied practices among families with IoToys. Some families allowed children free access to IoToys at any time. The IoToys were in the same area as their other toys and children did not need permission to access or play with them. Some other families had rules in terms of the use of IoToys. For example, in one family the children had to ask permission to take the IoToys and play and in another one play time with IoToys was limited to weekends. When parents were asked how they decided their practices with the IoToys there were varied responses. Some of the families (4) view IoToys as forming another aspect of their children's toys:

"His [IoToy] is his pet, he can play any time he likes "(mother)
"Her [IoToy] lives in her bedroom and she says goodnight every night, actually when it arrived this Christmas it has replaced her teddy [laughter] thank God ! [original emphasis] for that as the teddy was filthy [laughter] "(mother)

Others (7) though, had a set of rules on the use of IoToys compared to the use of other toys. Asked why they set rules around IoToy use they responded that, they had concerns (3 families) about what the media say about the use of children and technology and did not want their children to be exposed to technology more than a certain number of hours per week. Four families said that they restrict the use of IoToys to certain times of the day or the week (for example weekends), in line with their family lifestyle. Overall, all of the families include IoToys in family life to suit their family rhythms and habits.

The data also revealed that families believe that IoToys are integrated into but do not consume family life. The majority of parents (19R) felt that there was equilibrium amongst their children's activities at home. They felt that the media exaggerate claims regarding average households where, it is claimed, "children are glued on the technology" (father). For example, one Mother rationalised her choice of balance in children's digital and non-digital lives:

"When they [children] come home, they can play with the IoToys on their own, then it is dinner as a family, and then we try to do something altogether, whether it is playing with IoToys or a walk or watching TV, but we do not see IoToys as anything different from their other toys" (mother).

Parental Concerns

Parental concerns predominantly related to the quality of children's experiences with IoToys (practical-Table 3) and how the family unit were viewed in society (emotional) rather than considering the devices as addictive; a typically portrayed concern around screen-based media. We found that parents' concerns were practical focusing on the characteristics and functions of IoToys (as in Table 3) and emotional in relation to their feelings towards IoToys.

Table 3
Practical concerns

Themes	**No of Responses (n=22, no of mothers=11 and no of fathers= 11)**
Free internet apps and their quality	20
Uncontrollable pop-up advertisements	20
Inappropriate context pop-up images	20
Internet safety and risks	18
Cost	17
Support on the skills required the digital users and digital volunteers expressed the need for support with their skills, so they can in turn support their children's play;	15
The ages that the IoToys are marketed are not responding to the ages the children use it	15
The accuracy of the description and characteristics of the IoToys on the selling websites	15
The accuracy of the ratings and the reviews on the selling websites	15

At an emotional level (parents' feelings towards IoToys), of concern was the belief that there is not much advice or guidance on IoToys. In addition, they felt the advice and guidance that did exist either was not applicable to their own family's digital habits (15 R) or did not help them to orient their digital practices to foster optimal use of IoToys (16 R).
Parents raised concerns about feelings of "guilt" or "shame" fuelled by a culture of blame about the use of technology:

"Sometimes when I picked them up from the nursery they give us this magazine about parenting or in the parents' evenings they tell us no technology during week and only certain hours in the weekend. I can see this when they played with the iPad but the IoToys are different [...] I do not tell that mine are playing all week with the IoToys as not sure if it is a good thing to say" (mother).

In the question as to 'what their views are about the discussion of children either being addicted to digital toys or moving away from physical and more traditional toys?' parents said that they do not see this as a risk factor and that it is down to parents to teacher their child resilience, as they do in all areas of life:

"There was a period that my three-year-old only wanted to eat fried food and nothing else, we did not worry that she was getting addicted. When we bought her first IoToy, this was the only toy she wanted. The same Christmas her grandmother visited us and brought her a tea set [toy replica] our daughter forgot the IoToys and here [pointing to the researcher the play area], all dolls in a raw and they drink tea [laughter]. Children will always play with what is new and then the balance comes" (father).

Some parents believe that their child's technological experiences exist alongside other typical family experiences. Perhaps this was because they do not see IoToys as screen time but as "*more advanced toys [similar for example to] when the walking and talking dolls first appeared in our lives"* (mother). Here we begin to see a recognition from parents in the ways in which IoToys are perceived, shifting the conceptualisation of technology in households away from screen-based abstract media, to child-centred artefacts.

Discussion

As this is a small sample of parents and from a middle-upper socioeconomic and educational background we cannot make strong general statements on parental perspectives regarding the use of IoToys. However, we conclude that as IoToys become increasingly ubiquitous and affordable (Chaurdon et al. 2017, Mascheroni and Holloway, 2017,) and, although we cannot predict how technology will be developed in the future, that IoToys will change the landscape of children's play with technology in the 21st century. Thus, we argue that advisory and regulatory bodies need to start including the use of IoToys in their guidance to accommodate the tactile nature of this type of technology.

From the evidence of our data that showed varied digital practices with IoToys among families, we propose that guidance on family digital practices, habits, rules and boundaries is required to support and empower parents to develop their own skills, dispositions and critical digital literacy. This involves establishing a balance between telling them what to do and supporting them in finding a balance that suits their own family digital rhythms. In this way, they will feel greater confidence in shaping their family's personal digital habits. We argue that there is a need to have an equilibrium between advising parents about what to do and in assisting them in developing digital habits oriented around their own family system.

In our research the digital users and the digital volunteers groups of parents raised concerns that they would have been "eager to feel more confident" (father), firstly, for themselves as they could have supported their children better rather than "doing catching up all the time" (mother) and secondly as they could develop various types of mediation when playing with IoToys.

We propose that at policy, research and advice level parenting in the digital age needs a safe place to discuss, share and talk about technology without being judged on individual family digital practices and habits.

Parents with high digital literacy (advanced) showed a more critical approach to the use of IoToys, spent more time playing with their children and in choosing active mediation over restrictive technical tasks; thus recognising the opportunities that IoToys offer their children's play. They were also more relaxed about integrating them into their child's play and more likely to allow them time to use online resources, than parents with lower technical skills (competent users and accommodators). However, parents who considered themselves as either digital users or accommodators had practical and emotional concerns that appeared to restrict them from taking full advantage of IoToys potentialities and the opportunities they offer to children's play; although they had integrated them in their households. Also, they felt they could not choose the "right or safe high quality" (father) digital content for their children.

Conclusions

From data with eleven families on the use of IoToys from a synergistic approach between social ecological lenses and family systems theory, our data showed that parents seek information about "what-is" rather "what is not" and seek advice and guidance "that engaged in a continual self-organised process" (Brookcin, 1993, p. 5)

Although attempts have been made to provide guidance and support to parents in the digital age, especially with online risks, we argue that it is equally important to understand the rituals, customs, habits, and rhythms of individual families. We propose that there is a necessity to co-construct and co-create the advice and guidance of technology usage and the digital context in households especially in light of the expansion of IoToys with parents as partners rather than just as information recipients. Families need to be understood for their wholeness, their experiences that shape and are shaped of expectations by experiences concerning "what is" so they can find their own digital habits in the social ecology that they and their children live in.

While advice and guidance in parenting for the digital age is trying to deal adequately with the challenges of this age, we argue that there is a need for a far reaching transformation of the guidance mentality from a talk down care approach, into one of complementarity, in which advice is supportive of parents and deeply appreciative of the richness of the wholeness of the family as a system. Rather than giving tokenistic advice, we propose that the role of advice and guidance is not to see technology use by families as unnatural activities but the creation of a continuing process of working with families for developing potentially rational behaviours by empowering families rather than treat them as passive recipients.

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