Parent-Child Interactions: What is the Role of Smartphones?

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Abstract

Background

The importance of parent-child attachment in supporting child wellbeing and development has been well-documented in the literature. However, modern technologies may act as a barrier to parent-child interactions. Currently, literature suggests many parents identify decreased feelings of social connectedness and lower levels of attention quality when using their smartphones while caring for children. However, no research to date has explored children's perspectives of parental smartphone use.

Aims

This research explored the perceived impact of parental smartphone use on children, by gathering both children's and parents' perspectives. Two principal research questions identified were:

1. How do children perceive parental smartphone use?
2. What are parents' experiences of using smartphones when caring for children?

Methods

Children's perspectives were elicited using a Short Story Methodology, with children asked to complete one of three story variations. Parental perspectives were gathered using an online questionnaire, consisting of both open and closed ended questions. Closed ended questions were taken from the Distraction in Social Relations and Use of Parent Technology (DISRUPT) scale (McDaniel, 2016), while open-ended questions asked parents about their experiences of their smartphone use when spending time with children. Descriptive analyses were performed on the quantitative data, while the qualitative data was analysed using thematic analysis.

Results

Children identified negative emotional responses in relation to the disrupted parent-child interactions. Children also discussed negotiations that occur with caregivers when interactions are disrupted. Parents identified a number of ways in which smartphones intrude on family life, as well as external pressures and personal factors which cause them to engage in smartphone use.

Conclusions

Exploring the impact parental screen time has on children may provide valuable insights when examining the ecological factors that may be influencing child development. For educational psychologists, these factors are important to consider when supporting children and their families.

Keywords: parenting, phubbing, smartphone use, parent-child interactions

Declaration

I hereby declare that this thesis represents my own work and has not been submitted for the purpose of obtaining any other qualification. This thesis was submitted in partial fulfilment of the requirements for the degree of Doctorate in Educational and Child Psychology, Mary Immaculate College, Limerick.

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Introduction

Within this introduction, a brief overview of the research area is presented. Key terms used throughout the study are also defined. The researcher's own positionality is outlined, with reference to her practice and experiences as a Trainee Educational Psychologist to date. The structure and layout of the thesis is provided, in accordance with research guidelines provided by Mary Immaculate College.

Research Area

Smartphones have become one of the most prevalent technologies in Ireland, with majorty of adults owning at least one device (Gibney & McCarthy, 2020). With increased access to smartphones, it is important to examine the perceived impact such devices have on children's emotional health and wellbeing. Much of the research to date has explored children's screen time, with many potentially harmful effects identified (Kim et al., 2017). However, the detrimental impact of screen time is debated, as some researchers suggest that the harmful impact of screen time is often confounded by a variety of individual risk factors (Orben, 2020), and is mediated by parent-child interactions and monitoring of device use (Livingstone & Franklin, 2018). However, while there has been a lot of discussion in recent years about children's screen time, less is known about the impact of caregiver device use.

Of the research that looks at parental smartphone use, much of the focus has been on examining the impact on the quality of parent-child interactions. Parent-child interactions have been shown to be crucial in supporting child development and learning (Landry et al., 2001; Landry et al., 2006). However, it has been found that increased use of technology is associated with higher levels of distracted parenting (Kildare & Middlemiss, 2017), which in turn has been shown to be linked to increased risky behaviours and injury among children, with younger children more likely to engage in risky behaviour (Boles & Roberts, 2008). Mothers who engage more frequently with their devices were also shown to engage in fewer verbal interactions with their children (Radesky et al., 2015), suggesting distracted parenting not only has implications for child safety, but also for the quality of parent-child interactions, and potentially, for children's social and emotional wellbeing. To my knowledge, no study has yet explored children's perceptions or examined what feelings children identify in relation to their parents' smartphone use. Exploring children's perceptions of parental screen time may provide valuable insights into the ecological factors that may be influencing child development and child wellbeing.

Researcher's Positionality

My own interest in this topic area began by observing those around me. On buses and trains, shops and supermarkets, and in clinic waiting rooms, I observed parents and their children, sitting side by side but not interacting. Instead, one or both parties tended to be on a mobile device, generally a smartphone, watching videos or simply scrolling. I was particularly curious about the parents who seemed absorbed in their phones, about their motivations for engaging with their devices while with their children, and the potential impact this may be having on these children. While my own observations were merely anecdotal, I began to wonder what researchers were finding out about this phenomenon, and what empirical studies could tell me. Upon performing a database search however, I soon realised there was a paucity of literature exploring parental smartphone use. I became interested in exploring parent and child experiences of parental smartphone use, and wanted to know how about how this specifically impacted upon family functioning.

The Ontological and Epistemological Position of the Researcher

A critical realist paradigm (Bhaskar, 1975, 1989) was adopted by the researcher. According to critical realist perspectives, there is a distinction between the "observable" world and the "real" world, consisting of an objective reality. It is not possible to access the real world directly however, as our perceptions of reality are mediated by our own subjective experiences and constructions. However, critical realism determines that these unobservable, "real" phenomena manifest in observable events that can be measured and studied. In this way, critical realism makes clearly distinguishes between epistemology and ontology within research, as it makes distinctions between what is "real" (i.e. ontology), and how we can know or understand what is read (i.e. epistemology).

Overview of Thesis Layout

This thesis has been structured in line with the most recent research guidelines for the Doctorate in Educational and Child Psychology thesis submission, as recommended by Mary Immaculate College. The main body of the thesis consists of three sections. Firstly, a literature review is provided, which gives an overview of the current research relevant to the research area. Secondly, an empirical paper is included. This paper is formatted in the style of a journal article, and contains an account of the research methods employed in the study, the key findings of the research, and a discussion of these findings. The final section consists of a critical review paper, which outlines the considerations given to all aspects of the research

process, including the epistemological position of the researcher, the data collection and analysis approaches utilised throughout the research, ethical considerations and dilemmas encountered during the research process, and the implications of the research for policy, practice and future research. Strengths and weakness of these aspects are discussed, as well as potential alternative approaches that could have been selected. An impact statement outlining the critical impact of the current research study is also included.

Literature Review

Digital technologies are a ubiquitous presence in modern society. However, with the introduction of new technologies, there has been increasing concern over what impact these may have on all aspects of daily life. Numerous studies have examined the impact of technology use on health and wellbeing (e.g. Chang et al., 2019; Elhai et al., 2017), child development (e.g. Kim et al., 2017; Wu et al., 2012), family functioning (e.g. McDaniel & Coyne, 2016; Rudi et al., 2015), and relationships (e.g. Antonucci et al., 2017; Chotpitayasunondh & Douglas, 2016; González-Rivera & Hernández-Gato, 2019).

Technology use which disrupts everyday social interactions is increasingly being seen as an important area for research (Kildare & Middlemiss, 2017). This phenomenon, termed "technoference" (McDaniel & Coyne, 2016), may have implications for familial relationships, and, in particular, the parent-child relationship. Parental smartphone use is an emerging topic of interest in the literature. Research has shown that parental device use influences child behaviour, with positive correlations found between parent and child screen time (Lauricella et al., 2015). Bandura (1977) posits that children model and learn new behaviours from copying their parents, and therefore may develop unhealthy device habits from their social environment. However, the negative impacts of parental device use might be even more invasive, directly impacting on children's psychological wellbeing. The prevalence of technology in homes means that parents are frequently engaging in mobile device use throughout the day, including during time they are spending with their children. The presence of digital media during times in which families would normally connect and interact with each other may cause significant disruption to these interactions, impacting parent-child bonding and children's social and emotional development. Establishing the further impact parental screen time use has on children is important when examining the ecological factors that may be influencing child development. The purpose of this review is to determine the current understanding of this phenomenon in the literature, and to identify trends in recent research.

Characteristics of Mobile Device Use

Technology is ever-evolving, and with the advent of new technologies humans are constantly adapting to new ways of integrating and utilising new technologies across all aspects of their daily life. How people interact with technology in all aspects of life has changed drastically. Many modern workplaces have been transformed by the introduction of

a variety of technological devices, while the use of screens and devices in homes has also expanded greatly. The increasing reliance on technology in daily life has perhaps been accelerated by the global COVID-19 pandemic. Many employees have begun regularly working from home using laptops and home computers (Beck & Hensher, 2020; Beck et al., 2020), while schools and universities have turned to e-learning strategies such as virtual classrooms and online webinars to enable their students to access learning materials (Nic Dhonncha & Murphy, 2020; Srivastava, 2020).

Indeed, technology has become an increasingly integral part of everyday life, with many households owning multiple devices such as computers, smartphones and tablets. The Pew Research Center (2019b) estimates that over five billion people worldwide own a mobile device, and approximately half these devices are smartphones. In Ireland, recent research by Gibney & McCarthy (2020) found that 77% of all individuals aged between 16-74 years use a smartphone, with usage rates comparable between males (76%) and females (78%). Differences do emerge however when comparing smartphone usage across age groups. It was found that smartphone usage is highest in the 16-29 (95%) and 30-44 (96%) age groups, with 77% of those aged 45-59, and just 37% of those aged 60-74 using smartphones.

Age

There are significant differences in how different generations use mobile devices and technology. The ubiquitous nature of smartphone use means children are often exposed to mobile devices at a young age. Kiliç et al. (2019) found that by 60 months of age, approximately 75% of children had some experience of using a device, with the median age of first usage being 12 months. According to Goh et al. (2016), television and mobiles devices are the most commonly used technologies by children under the age of two, followed by computers and video game consoles. Explorations of parents' motivations for allowing screen time have found that parents give their children devices to enable them to complete housework and chores, to comfort their children when they are upset, and to increase their children's compliance during mealtimes (Kiliç et al., 2019; Kulakci-Altinas, 2020).

A study by Hosokawa and Katsura (2018) of six-year-old children found that 14% of children used mobile devices for an hour or longer each day, and among adolescents the rates have been found to be even higher. According to a study by Sánchez-Martínez and Otero (2009), almost all (96.5%) adolescents between the ages of 13 and 20 owned a mobile phone. The majority of these took their phones to school with them, and almost half kept it on or

engaged with their phone during class. Recent Irish research has uncovered changes in patterns of screen time use in children. Using data from a representative large-scale longitudinal survey, the *Growing Up in Ireland* (GUI) study, Bohnert and Gracia (2020) examined modern media use habits of Irish children. It was found that 73% of children born in 1998 spent over an hour watching television, compared to just 48% of those born in 2008. However, the usage of other forms of screen time use increased, with digital screen time of more than an hour rising from 13% as reported by the 1998 cohort to 28% as reported by the 2008 cohort. The findings suggest modern children are increasingly turning away from television viewing to other forms of screen use, such as tablets and smartphones. Researchers also found a decrease in children reporting that they used digital technologies for educational purposes, falling from 56% to 17% (Bohnert & Gracia, 2020). Among adolescents, international research has shown that teenagers frequently engage with a variety of digital technologies, including smartphones, mobile apps, and social media platforms (Villanti et al., 2017; Wartella et al., 2016), with texting and social networking emerging as particularly prevalent in adolescence (George et al., 2020; Ling et al., 2012). From the research, it is clear that mobile devices maintain a strong presence in children's lives from infancy to adolescence.

Among adults, the Pew Research Center (2019a) has found that 96% of American adults own a mobile phone, and that smartphone ownership specifically has increased from 35% in 2011 to 81% in 2019. Additionally, one in five American adults use their smartphone as their sole means of accessing the Internet while at home, in place of traditional broadband services. Device use in adults is common across all age ranges. However, some differences exist in how different generations use technologies, with older adults (65 years of age and older) were more likely to use those technologies that have been around longer, such as telephones, answering machines, and recording devices, than younger generations (Olson et al., 2011).

Gender

Gender appears to play little role in smartphone usage, with men and women generally using technology, including smartphones, the internet and social media, at similar rates (Pew Center Research, 2019). However, some differences do emerge when the way in which media devices are used by males and females. Multiple studies analysing patterns of male and female technology use have found females are more likely to use online services,

such as e-mail and instant messaging, as a way of interacting socially with others, while males will more often use these services as a means of conveying information (Boneva et al., 2001; Colley & Todd, 2002; Colley et al., 2004; Fox et al., 2007; Lee, 2003). There is evidence that these same patterns of device use also occur in children, For instance, Cotten et al. (2009) found that boys were more likely than girls to use technology in the home for recreational, non-social purposes, such as playing video games In terms of internet usage, girls are more likely to use time online interacting with peers on social networking sites (Gross, 2004), while boys used the internet to stream and upload digital media (Lenhert & Madden, 2007; Rideout et al., 2010). The research suggests that despite age or technological platform, females are more likely to use technology for social purposes, while males are more likely to use technology to access and share content.

Socio-economic Status (SES)

There are many demographic factors which influence device use and ownership. A wealth of research identifies SES as being associated with smartphone ownership and internet access and use skills (e.g. Baishya & Samalia, 2019; Hargittai & Hinnant, 2008; Livingstone & Helsper, 2007), and that those from lower socioeconomic backgrounds have fewer opportunities to use media tools (Zillien & Hargittai, 2009). Clark (2009) found that low-income families reported they spent less time using the Internet and other digital media, when compared with young people from higher income families. Some researchers point to a "digital divide" (Norris, 2001; Rice & Katz, 2003) not only in people's ability to access technology but also how they utilise it, their motivation for doing so, and their relative Information and Communications Technology (ICT) skills. Rice and Katz (2003) were among the first to investigate the digital divide in relation to mobile device use. They examined the impact of socio-economic factors on the adoption of both internet and mobile devices, and found that patterns of the internet and mobile phone were generally similar, with income and education being the most influential factors shaping the use of both technologies. Their research found that those were more highly educated or who had a higher income were more likely to have access to the internet and mobile technologies. Mascheroni and Ólafsson (2016) examined smartphone ownership and usage in children in a number of European countries, including Ireland. It was found that social inequality was associated with difference in access to devices, as well as with disparities in online activities.

Risks Associated with Mobile Device Use

The increasing prevalence of technology has led to discussion concerning the potential risks smartphones and mobile devices pose, particularly to children and young people. Smartphones in particular are often specifically chosen as a focus for research when examining mobile device use and technology, as they are ever present, portable, and provide easy access to many applications and websites (Ofcom, 2015). While smartphones may provide many benefits, for example allowing people to communicate with others, access information online, and plan and organise their calendars with efficiency and ease (Al-Daihani, 2018; Cho, 2015; Devitt & Roker, 2009; Pandey et al., 2013), research has also identified many detrimental effects of the technology. Many researchers point to what they term smartphone addiction, as a form of problematic smartphone use. Smartphone addiction is said to occur when adults and young people engage in smartphone usage to such an extent that it becomes problematic and interferes with daily life functioning. However, while some research has shown that smartphone addiction is an emerging phenomenon internationally (e.g. Chang et al., 2019; Haug et al., 2015; Ko et al., 2005; Li et al., 2015), other research has disputed the existence of smartphone addiction (e.g. Ellis et al., 2019; Panova & Carbonell, 2018), suggesting device use should be framed as habitual and not addictive.

Previous research has found associations between high levels of smartphone and technology use and markers of psychological distress, such as low self-esteem, self-regulatory problems, hyperactivity, and disruptive behaviours (Bianchi & Phillips, 2005; Bohnert & Gracia, 2020; Kim et al., 2009; Lee et al., 2014). Excessive use of mobile phones and social networking applications have been shown to have negative impacts on academic performance in several studies (Judd, 2014; Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013; Rosen, Carrier, & Cheever, 2013). Research has also found that mobile device use is positively correlated with poorer social interactions and social anxiety in young people (Enez Darcin et al., 2016). Yen et al. (2008) has claimed that some symptoms of smartphone addiction manifest similarly as in other forms of addiction, such as substance use, with adolescents displaying higher levels of hostility and depression associated with smartphone addiction.

Overuse of smartphones is associated with a number of health concerns in adults. Multiple studies have found that problems such as headache, earache, tinnitus, painful fingers and restlessness are positively associated with mobile phone usage (Cho et al., 2017; Chu et al., 2011; Stalin et al., 2016). Adult sleep is also impacted by smartphone use. Exelmans and Van den Bulck (2016) found that over half of all adults took their mobile phone to bed with

them. Sending and receiving text messages, and making phone calls while in bed predicted a number of sleep problems, including longer sleep latency, more sleep disturbance, and worse sleep efficiency.

Among children, use of smartphones has been shown to have a detrimental effect on learning and development across a number of domains (Kim et al., 2017). Children who are exposed to greater amounts of screen time are more likely to experience depression and mood disorders (Chang et al., 2019; Lemola et al., 2015; Sánchez-Martínez & Otero, 2009), as well as sleep disorders (Cain, & Gradisar, 2010; Hysing, el al., 2015; King et al., 2014; Lemola et al., 2015). Higher levels of device use in children also has implications for academic performance (Samaha, & Hawi, 2016; Sánchez-Martínez & Otero, 2009). For instance, Chang et al. (2019) found that children who performed poorly at school were more like to own smartphones, frequently engage in smartphone or tablet gaming, and regularly used social networking sites.

The wide-ranging effect of device use on children however remains a hotly researched phenomenon within current literature. A review by Orben (2019) found that while small negative associations have been found between technology use and wellbeing, much of the research in this area is often cross-sectional and exploratory, and does not often highlight the bidirectionality of results, or account for individual risk factors that may confound results. Beatty and Egan (2020), meanwhile, suggest that the wide-ranging applications of mobile devices, and the variation in how these devices are used in everyday life, mean it is not possible to determine what impact screen use as a whole has on child development. Instead, it is important to consider a number of factors when weighing the benefits and detriments of device use, including the amount of screen time children are engaging in each day, the type of content they are exposed to, the interactivity of device use, and the caregivers modelling and moderation of device use.

Research has identified that parents are aware of the possible negative impact of their children's exposure to technology and mobile devices. Plowman et al. (2010) found that a quarter of parents sampled felt that technology was harmful to children's health and development, potentially impeding children's ability to learn and develop social skills. They also raised concerns over their children being exposed to inappropriate content. Further research has identified parental concerns regarding their children's physical health in relation to developing sedentary lifestyles and harmful radiation effects (Genc, 2014; Toh, et al.,

2019; Warren, 2003).

Potential Benefits Associated with Mobile Device Use

Despite parent concerns about the perceived risks of smartphone use, many researchers suggest a more nuanced view of children's smartphone usage is warranted (e.g. Green & Bavelier, 2008: Greenfield, 2009). Bavelier et al. (2010) argue that the content associated with smartphone use is a far more important factor to consider when determining the impact of smartphone use on children. For instance, exposure to the children's television show "Dora the Explorer" has been shown to be associated with increases in vocabulary and expressive language skills in infants. This is in contrast to "Teletubbies", which has shown to be associated with a decrease in infants' skills across both measures (Linebarger & Walker, 2005). Bavelier et al. (2010) point to the need to consider technology as neither wholly good nor wholly bad but instead consider the forms technology use takes in our daily lives.

Mobile device use may also be beneficial in enhancing parents' wellbeing and parenting efficacy. For instance, in a study of Australian parents, Baker et al. (2017) found that 65% of parents used parenting websites to access support and information, while 45% used social media websites. Furthermore, over 44% of parents felt that smartphone applications were useful when accessing parenting programmes. Social media, readily accessible by smartphone, has also been shown to be a source of social support for parents, with many accessing social networking sites and forums in order to seek advice and information in relation to parenting (Haslam et al., 2017), and also to bond with other parents (Jang & Dworkin, 2014).

Similarly, technology can support parents in other aspects of family life. Lanigan (2009) discusses how technology enables parents to communicate spontaneously with other family members, enabling them to plan and organise family time together. For instance, families use technology to plan outings or vacations, or to get information about upcoming events or activities (Lanigan et al., 2009). Smartphones also enable family members to stay connected when not in close proximity to each other. Parents can remain connected to home life when at work, and can communicate with their children throughout the day (Lanigan, 2009) and respond quickly to potential child emergencies (Palen & Hughes, 2007), which in turn has been found to enhance parents' efficacy (Warren & Aloia, 2018). However, while smartphones may be beneficial in increasing parents' sense of connectedness to their families, they may also have a negative impact on family life. For instance, research suggests modern

technology means that parents find it difficult to disconnect from work while at home, and that work issues can sometimes spill over into family life (Chesley, 2005; García-Montes et al., 2006).

The Parent-Child Relationship

Research among adults and young people has found attention to devices is associated with changes in how people interact with each other. For example, Misra et al. (2016) found that even the mere presence of a mobile device caused conversation partners to rate conversations as less empathetic and of lower quality than conversations in which no device was present. Evidence suggests that mobile device use can impair a person's ability to attend to their surroundings and to other people. Among families, this has implications for how members of the household interact with each other, and, in particular, how parents and children interact.

The Importance of the Parent-Child Relationship

The relationship between parents and children is one of the most studied relationships in psychological research, due to its importance in shaping learning and development. It is well-established that parents play a crucial role in all aspects of their children's development, including their social, emotional, and physical wellbeing (Farrant & Zubrick, 2012; Yates, 2011). The importance of parenting is perhaps best theoretically established by research on attachment theory, as conceptualised by Bowlby (1958) and Ainsworth (Ainsworth & Bell, 1970; Ainsworth, 1973; Ainsworth, 1991). Infants and children require large amounts of frequent, response, sensitive caregiving in order to meet their physical and psychological developmental needs (Winnicott, 1960). This caregiving enables children to form secure attachment bonds with their parental figures (Bowlby, 2005). Children whose parents were not consistently available or responsive to their needs may develop insecure attachment styles (Ainsworth & Bowlby, 1991). Therefore, parental distraction and inattention towards children may have negative implications for the parent-child relationship.

The significance of strong parent and child bonds to a child's happiness persists into adolescence. A wealth of research has found associations between the parent-child relationship and adolescents' perceptions of their own self-worth, with more positive relationships associated with higher levels of self-worth (Arbona & Power, 2003; Birkeland et al., 2012; Kernis et al., 2000; Liable et al., 2004; Parker & Benson, 2004). This research highlights the importance of positive parent-child relationships in developing feelings of self-

worth in adolescents, and improving mental health outcomes (Garber, et al., 1997; Masselink et al., 2018).

Impact of Device Use on Parent and Child Interactions

Technology use among families and in the home has implications for how parents interact with their children. Smartphones have been recognised as an important tool in families in maintaining family connectedness and increasing opportunities for parents and children to communicate. For instance, Weisskirch (2011) found that parents reported greater feelings of closeness when adolescents initiated calls to them seeking social support. Likewise, Palen and Hughes (2007) found parents felt mobile phones were useful in enabling them to feel connected to family members who were not at home.

While smartphones may increase opportunities for parents and children to interact when apart, they can also be a source of family conflict. Of the research that looks at parental smartphone use much of the focus has been on examining the impact on the quality of parent-child interactions, as well as its impact on harmonious family relationships. A study by Hiniker et al. (2016) examined parent and child's perspectives of technology within the home, and the parental boundaries enforced around its use. It was found that context-based constraints (e.g. "no phones at the dinner table") were harder for children to live up to than rules which ban the use of certain activities or technologies outright (e.g. "no Instagram"), and that parents found these constraints more difficult to enforce. Hiniker et al. (2016) found that parents and children tended to agree that parents should also apply these constraints to themselves, and put away their devices when spending time with family.

Although much research has been conducted on family and child smartphone use, there is a paucity of research focusing exclusively on parental smartphone use and the resulting impact this has on children's social and emotional wellbeing. However, evidence from adult populations provide an indication of the potential impact of smartphone use on others. The term phone snubbing, or "phubbing", has been used to describe the phenomenon where a person will ignore others in order to attend to a smartphone or mobile device (McDaniel & Coyne, 2016). In adult populations, "phubbing" has been shown to be associated with more conflict over technology use, lower relationship satisfaction, more depressive symptoms, and lower life satisfaction (McDaniel & Coyne, 2016). Among parents, phubbing has been found to lead to greater conflict over technology use between parents, with higher levels of conflict further identified as a predictor of lower relationship

satisfaction and poorer perceptions of co-parenting quality (McDaniel et al., 2018).

Although the impacts of phubbing have been studied in adults, less is known about the impact it may have on parent-child relationships. However, from attachment theory research, it is possible to theorise that parental phubbing may be detrimental to this important relationship. According to Bowlby "giving time and attention to children means sacrificing other interests and other activities" (Bowlby, 2005, p. 2). Often, parents in the digital age are surprised at the level of daily attention needed to raise children. New parents are often already dependent on the use of social media to communicate and share with family members, and may find themselves having to sacrifice that time for social interaction. There may be a conflict then between the amount of time needed to care for their children and the amount of time parents would like to devote to their own social, emotional, and entertainment needs (Mattingly & Blanchi, 2003; Offer, 2016). It has been found that increased use of technology is associated with higher levels of distracted parenting (Kildare & Middlemiss, 2017). Distracted parenting has been shown to have adverse consequences for children's physical health, as it has been linked to increased risky behaviours and injury among children, with younger children more likely to engage in risky behaviour (Boles & Roberts, 2008). However, as attachment theory demonstrates, parents who are unavailable due to absorption in technological devices may have adverse consequences for other areas of children's wellbeing also.

While research suggests that phubbing may have negative implications for familial relationships, there are still questions about the exact nature of these implications. Adolescence is a time of increasing independence from parental influences. Therefore, parental smartphone use may not impact upon adolescents in the same way or to the same extent as in younger children. Older children and adolescents, for instance, may have access to smartphones of their own, which may change their attitudes to parental smartphone use. Older children and adolescents who do not have access to smartphones may also view them as aspirational, which may screw their perceptions of smartphone use as positive. This review therefore aims to determine in what ways parental smartphone use impacts upon children and adolescents.

Review Question

What impact does parental smartphone use have on the parent-child relationship and on outcomes for children?

Method

Literature Search

A literature search was conducted through to August 2020 using the databases Academic Search Complete, British Education Index, ERIC, Education Source, Medline, PsycARTICLES and PsycINFO. The search terms used to find articles are presented in Table 1.

Table 1

Search Terms Used During Database Search

1		2
"smartphone" OR "cell phone" OR "mobile device" OR "mobile phone"	AND	parent OR parental OR mother OR maternal OR father OR paternal

Inclusion and exclusion criteria were then applied to assess whether or not the articles should be included in the review (see Table 2). Articles which had not been peer-reviewed or which were not available in English were filtered out. Articles which centred on child or adolescent smartphone use were excluded from this review, to focus more specifically on parental smartphone use. Articles were initially vetted based on their title, and irrelevant articles were removed. The abstract of each article was then read to deem whether or not the article should be included in the literature review, and articles deemed irrelevant were discarded. The full text of the remaining articles was screened, and articles which did not meet the inclusion criteria were removed. A detailed overview of the screening process is outlined in Figure 1. Samples of articles removed after title and abstract screening are included in Appendix A. Full references of all articles removed after full text screening are also included in Appendix A.

Table 2

Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria	Rationale
1. Type of Articles	Peer-reviewed journal articles	Articles or other sources that are not peer-reviewed	To ensure all articles are scholarly and contain good quality research
2. Language	Articles published in English the language	Articles not published in the English language	To ensure the articles can be fully understood by the reviewer
3. Participant Demographics	Articles which focus on parental smartphone use	Articles which address child or adolescent smartphone use only	To focus more specifically on parental smartphone use
4. Patterns of Smartphone Use	Articles which focus on parents using their smartphones while caring for children in ways other than to communicate with them (e.g. through phone calls, text messages etc.)	Articles which concern parents using their smartphones to keep in contact with their children, or using their smartphones while not specifically caring for children	To focus on possible effects of parental distraction or neglect on children
5. Child Age	Parents who used mobile devices after	Parents who used mobile devices	To focus more specifically on

	their children had been born, and while their children were under the age of 18	while children were in the womb, or whose children were aged 18 or older	parents of children from infancy to adolescence
6. Device Use	Studies focusing on smartphone use or mobile device use	Studies focusing on non-mobile screens, such as PC or television screens	Many studies do not make the distinction between smartphones and other mobile devices. Therefore, to ensure all possible data was included, the distinction was not made for this review.

Ultimately, 25 articles were deemed to meet all the criteria for review (see Table 3). A table provided in Appendix B gives an overview of each study selected for review, including details of the sample size, study design, and outcomes.

Table 3

List of Articles Included for Review

Full Reference
Atlı, S., Gunuc, S., Kuss, D., & Baran, G. (2019). Impact of parents' technology use on 18- to 24-month-old infants' adaptive behaviors. *Adaptive Behavior*, *27*(3), 197-219.
Golen, R. P., & Ventura, A. K. (2015b). What are mothers doing while bottle-feeding their infants? Exploring the prevalence of maternal distraction during bottle-feeding interactions. *Early Human Development*, *91*(12), 787-791.
Hong, W., Liu, R. D., Ding, Y., Oei, T. P., Zhen, R., & Jiang, S. (2019). Parents' phubbing and problematic mobile phone use: The roles of the parent–child relationship and children's

self-esteem. *Cyberpsychology, Behavior, and Social Networking*, *22*(12), 779-786.

Johnson, D. J., & Hertlein, K. M. (2019). Parents' perceptions of smartphone use and parenting practices. *The Qualitative Report*, *24*(6), 1423-1441.

Kushlev, K., & Dunn, E. W. (2019). Smartphones distract parents from cultivating feelings of connection when spending time with their children. *Journal of Social and Personal Relationships*, *36*(6), 1619-1639.

Liu, R. D., Wang, J., Gu, D., Ding, Y., Oei, T. P., Hong, W., Zhen, R., & Li, Y. M. (2019). The effect of parental phubbing on teenager's mobile phone dependency behaviors: The mediation role of subjective norm and dependency intention. *Psychology Research and Behavior Management, 12*, 1059-1069.

Mangan, E., Leavy, J.E., & Jancey, J. (2018). Mobile device use when caring for children 0-5 years: A naturalistic playground study. *Health Promotion Journal of Australia*, *29*(3), 337-343.

McDaniel, B. T., & Radesky, J. S. (2018). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development*, *89*(1), 100-109.

Modecki, K. L., Low-Choy, S., Uink, B. N., Vernon, L., Correia, H., & Andrews, K. (2020). Tuning into the real effect of smartphone use on parenting: a multiverse analysis. *Journal of Child Psychology and Psychiatry*, *61*(8), 855-865.

Myruski, S., Gulyayeva, O., Birk, S., Pérez-Edgar, K., Buss, K. A., & Dennis-Tiwary, T. A. (2018). Digital disruption? Maternal mobile device use is related to infant social-emotional functioning. *Developmental Science*, *21*(4), e12610.

Newsham, G., Drouin, M., & McDaniel, B. T. (2020). Problematic phone use, depression, and technology interference among mothers. *Psychology of Popular Media Culture, 9*(2), 117-124.

Poulain, T., Ludwig, J., Hiemisch, A., Hilbert, A., & Kiess, W. (2019). Media use of mothers, media use of children, and parent–child interaction are related to behavioral difficulties and strengths of children. *International Journal of Environmental Research and Public Health*, *16*(23), 4651.

Radesky, J. S., Kistin, C., Eisenberg, S., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Parent perspectives on their mobile technology use: The excitement and exhaustion of parenting while connected. *Journal of Developmental & Behavioral Pediatrics*, *37*(9), 694-701.

Radesky, J. S., Kistin, C. J., Zuckerman, B., Nitzberg, K., Gross, J., Kaplan-Sanoff, M., ... & Silverstein, M. (2014). Patterns of mobile device use by caregivers and children during meals in fast food restaurants. *Pediatrics*, *133*(4), e843-e849.

Radesky, J., Leung, C., Appugliese, D., Miller, A. L., Lumeng, J. C., & Rosenblum, K. L. (2018). Maternal mental representations of the child and mobile phone use during parent-child mealtimes. *Journal of Developmental and Behavioral Pediatrics*, *39*(4), 310-317.

Radesky, J., Miller, A. L., Rosenblum, K. L., Appugliese, D., Kaciroti, N., & Lumeng, J. C. (2015). Maternal mobile device use during a structured parent–child interaction task. *Academic Pediatrics*, *15*(2), 238-244.

Reed, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2017). Learning on hold: Cell phones sidetrack parent-child interactions. *Developmental Psychology*, *53*(8), 1428.

Stockdale, L. A., Coyne, S. M., & Padilla-Walker, L. M. (2018). Parent and Child Technoference and socioemotional behavioral outcomes: A nationally representative study of 10-to 20-year-Old adolescents. *Computers in Human Behavior*, *88*, 219-226.

Stockdale, L. A., Porter, C. L., Coyne, S. M., Essig, L. W., Booth, M., Keenan-Kroff, S., & Schvaneveldt, E. (2020). Infants' response to a mobile phone modified still-face paradigm: Links to maternal behaviors and beliefs regarding technoference. *Infancy*, *25*(5), 571-592.

Sundqvist, A., Heimann, M., & Koch, F. S. (2020). Relationship between family technoference and behavior problems in children aged 4–5 years. *Cyberpsychology, Behavior, and Social Networking*, *23*(6), 371-376.

Vanden Abeele, M. M., Abels, M., & Hendrickson, A. T. (2020). Are parents less responsive to young children when they are on their phones? A systematic naturalistic observation study. *Cyberpsychology, Behavior, and Social Networking*, *23*(6), 363-370

Wang, X., Gao, L., Yang, J., Zhao, F., & Wang, P. (2020). Parental phubbing and adolescents' depressive symptoms: Self-esteem and perceived social support as moderators.

Journal of Youth and Adolescence, *49*(2), 427-437.

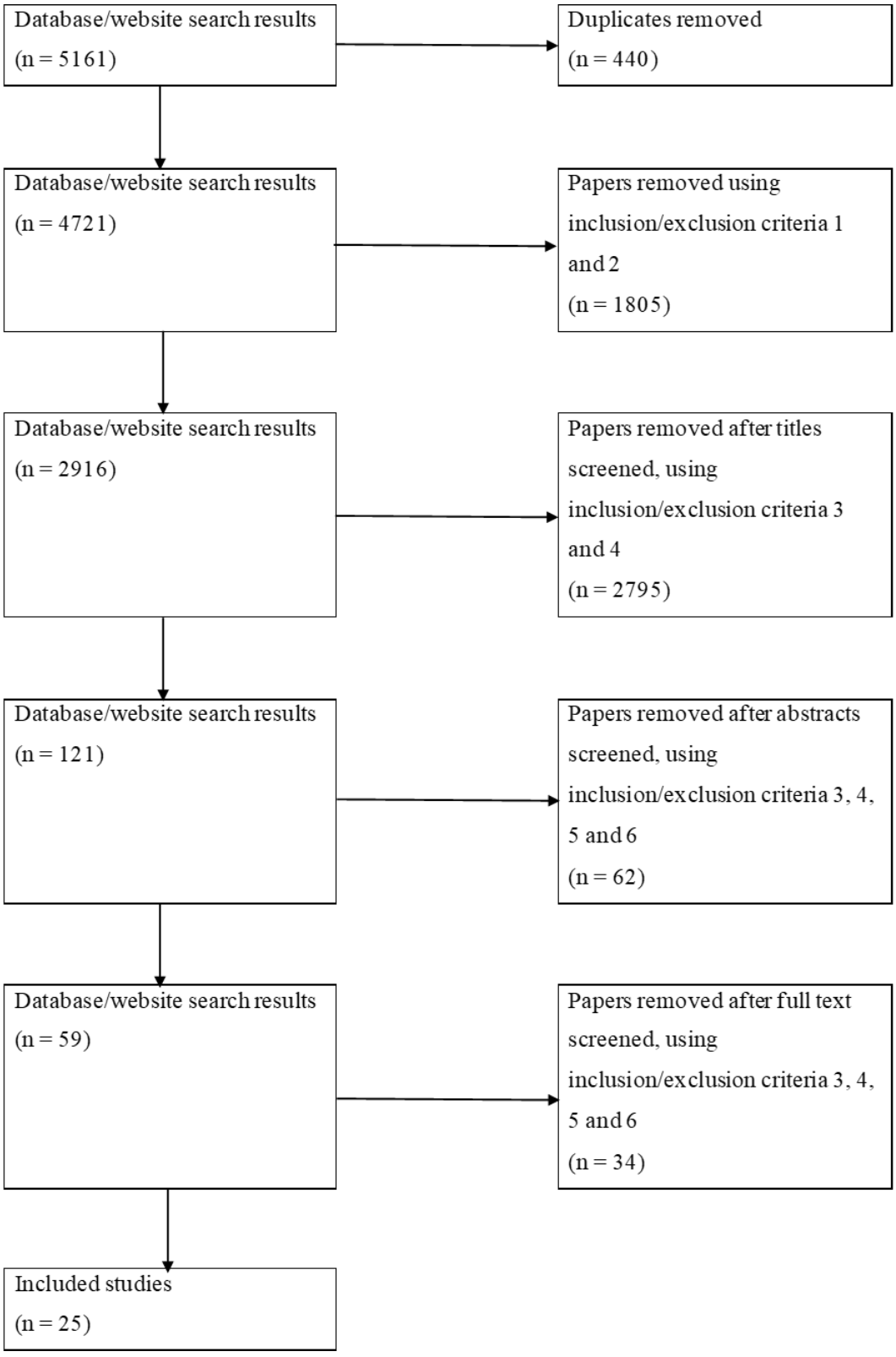
Wolfers, L. N., Kitzmann, S., Sauer, S., & Sommer, N. (2020). Phone use while parenting: An observational study to assess the association of maternal sensitivity and smartphone use in a playground setting. *Computers in Human Behavior*, *102*, 31-38.

Xie, X., Chen, W., Zhu, X., & He, D. (2019). Parents' phubbing increases Adolescents' Mobile phone addiction: Roles of parent-child attachment, deviant peers, and gender. *Children and Youth Services Review*, *105*, 104426.

Xie, X., & Xie, J. (2020). Parental phubbing accelerates depression in late childhood and adolescence: A two-path model. *Journal of Adolescence*, *78*, 43-52.

Figure 1.

A Flow Diagram of the Literature Search



Results

Weight of Evidence

Each study was critically appraised using Gough's (2007) Weight of Evidence (WoE). The WoE model examines the quality of each study across three criteria – methodological quality (WoE A), methodological relevance (WoE B), and topic relevance (WoE C). An average of the scores across these three criteria are then obtained to give an overall WoE (WoE D). The WoE for each study in this review is summarised in Table 4. For WoE A, an adapted version the Thompson et al. (2005) protocol was used to assess the methodological quality of correlational studies (Atlı, et al., 2019; Golen & Ventura, 2015b; Hong et al., 2019; Kushlev & Dunn, 2019; Liu et al., 2019; McDaniel & Radesky, 2018; Modecki et al., 2020; Myruski et al., 2018; Newsham et al., 2020; Poulain et al., 2019; Radesky et al., 2014; Radesky et al., 2018; Radesky et al., 2015; Reed et al., 2017; Stockdale et al., 2018; Stockdale et al., 2020; Sundqvist et al., 2020; Vanden Abeele et al., 2020; Wang et al., 2020; Wolfers et al., 2020; Xie et al., 2019; Xie & Xie, 2020). Qualitative research quality of the remaining studies (Johnson & Hertlein, 2019; Mangan et al., 2018; Radesky, Kistin, et al., 2016) was evaluated using the Letts et al. (2007) protocol. WoE B was assessed using Petticrew and Roberts (2003) typology of evidence framework. WOE C, the topic relevance of articles was assessed via a checklist.

Table 4

Weight of Evidence Overview

Studies	WoE A Methodological Quality	WoE B Methodological Relevance	WoE C Topic Relevance	WoE D Overall Weight of Evidence
Atlı et al. (2019)	Medium (2)	Medium (2)	Medium (2)	Medium (2)
Golen & Ventura (2015b)	Low (1)	Medium (2)	Medium (2)	Medium (1.66)
Hong et al. (2019)	High (3)	Medium (2)	Low (1)	Medium (2)
Johnson & Hertlein (2019)	Medium (2)	Low (1)	Low (1)	Low (1.33)
Kushlev & Dunn (2019)	High (3)	Medium (2)	Low (1)	Medium (2)
Liu et al. (2019)	High (3)	Medium (2)	Medium (2)	Medium (2.33)
Mangan et al. (2018)	Medium (2)	Low (1)	Low (1)	Low (1.33)
McDaniel & Radesky (2018)	Medium (2)	Medium (2)	High (3)	Medium (2.33)
Modecki et al. (2020)	Medium (2)	Medium (2)	Medium (2)	Medium (2)
Myruski et al. (2018)	Medium (2)	Medium (2)	Medium (2)	Medium (2)
Newsham et al. (2020)	Medium (2)	Medium (2)	Medium (2)	Medium (2)

Poulain et al. (2019)	Medium (2)	Medium (2)	High (3)	Medium (2.33)
Radesky, Kistin et al. (2016)	High (3)	Low (1)	Low (1)	Medium (1.66)
Radesky et al. (2014)	Low (1)	Medium (2)	Low (1)	Low (1.33)
Radesky et al. (2018)	Medium (2)	Medium (2)	Medium (2)	Medium (2)
Radesky et al. (2015)	Medium (2)	Medium (2)	Low (1)	Medium (1.66)
Reed et al. (2017)	Medium (2)	High (3)	Low (1)	Medium (2)
Stockdale et al. (2018)	High (3)	Medium (2)	Medium (2)	Medium (2.33)
Stockdale et al. (2020)	Low (1)	Medium (2)	High (3)	Medium (2)
Sundqvist et al. (2020)	Medium (2)	Medium (2)	High (3)	Medium (2.33)
Vanden Abeele et al., 2020	Low (1)	Medium (2)	Low (1)	Low (1.33)
Wang et al. (2020)	Medium (2)	Medium (2)	Low (1)	Medium (1.66)
Wolfers et al. (2020)	High (3)	Medium (2)	Medium (2)	Medium (2.33)
Xie et al. (2019)	Medium (2)	Medium (2)	Low (1)	Medium (1.33)
Xie & Xie (2020)	Medium (2)	Medium (2)	Low (1)	Medium (1.66)

Note. Low: Below 1.4; Medium: 1.5-2.4; High 2.5 or above

Participant Demographics

There is variation in the research to date regarding the populations selected for research. Among the studies included in this review, some chose to focus on parents of infants (Atlı, et al., 2019; Golen & Ventura, 2015b; Myruski et al., 2018; Reed et al., 2017; Stockdale et al., 2020), while others focused on parents of children (Kushlev & Dunn, 2019; McDaniel & Radesky, 2018; Poulain et al., 2019; Radesky et al, 2015; Radesky et al., 2018; Sundqvist et al., 2020), and others focused on both infants and children (Mangan et al., 2018;; Newsham et al., 2020; Radesky, Kistin, et al., 2016; Vanden Abeele et al., 2020). Six studies focused on parents of adolescents (Hong et al., 2019; Liu et al., 2019; Stockdale et al., 2018; Wang et al., 2020; Xie et al., 2019; Xie & Xie, 2020). Radesky et al. (2014) were not able to obtain accurate ages of the children involved in their study, however estimated the ages were between zero to 10 years of age. Likewise, Wolfers et al. (2020) did not obtain the ages of all children involved in the study, however from the post-study data they did obtain, it was found children's ages ranged from 7 to 36 months, with an average age of 20 months. Johnson and Hertlein (2019) and Modecki et al. (2020) did not specify the ages of children in their studies but stated that all children were under the age of 18.

Eight studies in this review focused on maternal relationships with children (Golen & Ventura, 2015b; Myruski et al., 2018; Newsham et al., 2020; Poulain et al., 2019; Radesky et al., 2015; Radesky et al., 2018; Reed et al., 2017; Wolfers et el., 2020), while 14 focused on both maternal and paternal relationships (Atlı et al., 2019; Hong et al., 2019; Johnson & Hertlein, 2019; Kushlev & Dunn, 2019; Liu et al., 2019; Mangan et al., 2018; McDaniel & Radesky, 2018; Modecki et al, 2020; Radesky et al., 2014; Radesky, Kistin, et al., 2016; Stockdale et al., 2018; Stockdale et al., 2020; Sundqvist et al., 2020; Vanden Abeele et al., 2020; Wang et al., 2020; Xie et al., 2019; Xie & Xie, 2020). Of studies which gathered information from both mother's and father's perspectives, only two examined the impact of parental gender on aspects of the parent-child relationship (Atlı et al., 2019; McDaniel & Radesky, 2018). McDaniel and Radesky (2018) noted differences between maternal and paternal reports. However, Atlı et al. (2019) found no such discrepancies.

Early Child Development

Two studies in this review measured outcomes for children in relation to their parents' smartphone use across a number of domains, including behavioural, social emotional, and developmental (Atlı et al., 2019; Reed et al., 2017). Atlı et al. (2019) examined infant's

adaptive behaviours, including motor skills, communication, and pre-academic abilities, in relation to their parents' smartphone use. In this study, Atlı et al. (2019) measured the amount of smartphone and mobile device use parents engaged in alongside their children, such as watching videos and animations. The study found that children who were exposed to higher levels of screen time and internet use from their parents' devices displayed lower adaptive behaviours. Reed et al. (2017) examined the impact of smartphone interruption on children's language learning. It was found that when a word teaching task was disrupted by the child's mother receiving a phone call, the child failed to learn the new word. Children who were not interrupted, however, were able to acquire new language.

Parental Mobile Device Use and Child Affective Problems

The impact of parental smartphone use on child affect was examined in four studies in this review (Stockdale et al., 2018; Stockdale et al., 2020; Wang et al., 2020; Xie & Xie, 2020). Stockdale et al. (2020) found that parental smartphone use had a negative impact on infants' affect, through the use of an adapted Still Face Paradigm (Tronick et al., 1978). Children's behaviour was observed in three sequential phases – a Free Play phase, in which infants and parents were allowed to interact as normal, a Still Face phase, in which parents were instructed to only interact with their mobile phone, and a Reunion phase, in which parents and children interacted normally once again. It was found that infants displayed greater levels of emotional distress and self-comforting behaviours during the Still Face phase when parents were engaging with mobile devices.

The impact of parental smartphone use on the emotional affect of adolescents in particular was examined in three studies in this review (Stockdale et al., 2018; Wang et al., 2020; Xie & Xie, 2020). Stockdale et al. (2018) examined adolescents' perceptions of parental smartphone use, and the impact this had on their relationships with their parents. It was found that while adolescents understood that occasional parental distraction due to smartphone devices was to be expected as part of living in a digital world, this interference still led to decreased perceptions of parental warmth, which further led to increased feelings of anxiety and depression, due to adolescents' perceived worthlessness. Wang and colleagues (2020) found significant correlations between parental phubbing and depressive symptoms. This relationship was mediated by adolescent self-esteem, with low self-esteem adolescents at greater risk of depressive symptoms and low affect than high self-esteem adolescents. Xie and Xie (2020) found similar effects, with parental smartphone use positively associated with

adolescent depressive symptoms. Furthermore, reduced parental warmth and increased parental rejection were identified as pathways leading to affective mood disorder symptoms.

It is noted by Stockdale et al. (2020) that confounding variables such as parental mental health may impact on a parents' responsiveness. Previous research has found that maternal depression may be associated with less sensitive and responsive parenting (e.g. (Field, 1995; Rosenblum et al., 2002; Weinberg et al., 2008). Although not assessed within their own study, Stockdale et al., (2020) suggest that the Still Face Paradigm design may be useful in not only exploring child affect, but also in understanding the patterns of interactions between children and their caregivers. This may then be used to give an insight into the behaviours of depressed mothers towards their children, compared with the behaviours of mothers with no reported depressive symptoms.

Parental Mobile Device Use and Child Behaviour Problems

Many studies in this review found associations between parental smartphone use and child behaviour problems, including symptoms of hyperactivity/inattention and conduct problems (Hong et al., 2019; Liu et al., 2019; McDaniel & Radesky, 2018; Poulain et al., 2019; Radesky et al., 2014; Stockdale et al., 2020; Sundqvist et al., 2020; Xie et al., 2019). Many studies theorised that children engaged in challenging behaviour more frequently when parents were using smartphones in order to obtain caregiver attention. McDaniel and Radesky (2018) found that child behaviour problems were significantly predicted by greater amounts parent-child interactions interrupted by technology such as smartphones and mobile devices. In the case of mother-child relationships, this was true for measures of both internalising and externalising behaviour problems, as measured by the Child Behaviour Checklist (Achenbach & Rescorla, 2000). However, when father-child relationships were analysed, mobile device use was predictive of externalising behaviours, but not internalising behaviours. Sundqvist et al. (2020) also examined the correlates between parental smartphone use and child behaviour problems, and found similar results, with higher smartphone use associated with higher internalising and externalising behaviour problems. Boys in particular were more likely to display externalising behaviours than girls.

Radesky et al. (2014) examined parent and child interactions during a meal in a fast-food restaurant. It was found that children of parents who frequently engaged with their smartphones or mobile devices were more likely to engage in disruptive or provocative behaviour. The authors posit that the child may have been feeling ignored or neglected and

were therefore are using their behaviour as a means of obtaining caregiver attention. However, parents then often engaged with their children in a harsh manner in response to their behaviour, often with a reprimand. In this circumstance, parental media use appears to be associated with more negative parent-child interactions.

In adolescents, Stockdale et al. (2018) found that parental smartphone use was associated with decreased levels of prosocial behaviours and civic engagement. Adolescents whose parents were more frequently distracted by their mobile devices were more likely to engage in cyberbullying, less likely to provide help to friends or family members in need, less likely to volunteer with charitable causes, and less likely to engage with local or political campaigns. Poulain et al. (2019) found similar effects among children, with more frequent parent–child interactions associated with fewer conduct problems, fewer peer-relationship problems, and more prosocial behaviour.

Many studies found that maladaptive parent smartphone behaviours were often modelled by children (Hong et al., 2019; Liu et al., 2019; Poulain et al., 2019; Xie et al., 2019). Hong et al. (2019) found that adolescents whose parents engaged in higher levels of problematic smartphone use were more likely to engage in problematic phone use themselves. Liu et al. (2019) also found the same effects, with higher instances of parental smartphone use normalising smartphone dependency among adolescents and increasing their smartphone use. Children who engaged in higher levels of screen time were more likely to exhibit conduct problems, and display symptoms of hyperactivity and inattention. Meanwhile, children who had greater opportunities to interact with parents exhibited more prosocial behaviour and had better relationships with peers.

Impact of Smartphones on the Parent-Child Relationship

Many studies identified smartphones as a source of conflict or tension within parent-child relationships (Johnson & Hertlein, 2019; Kushlev & Dunn, 2019; McDaniel & Radesky, 2018; Myruski et al, 2018; Radesky, Kistin, et al., 2016; Wolfers er al., 2020). Myruski et al. (2018) measured mothers' habitual device use, while also observing mother-child interactions over a number of conditions. It was found that frequent mobile device use over time may impair children's ability to reengage with mothers when parent-child interactions are disrupted by mobile devices. Disengagement also arose as a theme in Johnson and Hertlein's (2019) research. Parents reported often being unaware that they were inattentive and disengaged until they were alerted to it by their children.

Kushlev and Dunn (2019) found that parents who engaged in high levels of smartphone use felt less socially connected to their children. Parents identified smartphone use as interfering in their interactions with their children, preventing them for giving their children high quality attention. Higher phone use was also found to be negatively correlated with parents' sense of meaning and purpose in life. In a study by Newsham et al. (2020), mother's identified technology as interfering in their interactions with their children with many parents engaging with their smartphones and mobile devices when playing or completing chores with their children. High correlates were found between maternal depression and technology interference, particularly when interactions during playtime were interrupted. Radesky et al. (2018) examined not only parents' perceptions of their smartphone use, but also their perceptions of their children while using their smartphones. It was found that parents were more likely to use their phones if they perceived their children as difficult, and that these parents also displayed less sensitivity to caregiving. The authors suggest that higher levels of parental smartphone use may therefore be indicative of strained parent-child relationships. Similar effects in regard to sensitivity were found by Wolfers et al. (2020), who determined that mothers who engaged with their smartphones for longer periods of time were more likely to display lower levels of sensitivity to their children's needs.

One study in the review however (Modecki et al., 2020) did not find positive associations between parental smartphone use and negative parent-child relationships. In fact, Modecki and colleagues (2020) determined that, at low levels, more smartphone use was associated with increased parental warmth. The authors posit that this may be due to the beneficial aspects of smartphone use, which include easy, on-demand access to social support and information, and enabling parents to quickly complete work and digital errands, which may reduce stress and increase parent availability towards children.

Distracted Parenting

Distracted parenting emerged as a theme in four studies (Golen & Ventura, 2015b; Mangan et al., 2018; Radesky et al., 2015; Vanden Abeele et al., 2020). Mangan et al. (2018) found that over three quarters of parents engaged with a mobile device when supervising children in a playground. This is despite parents recognising the need to remain vigilant in the playground to ensure their children do not engage in risky behaviours and to remain aware of the environment. Vanden Abeele et al. (2020) also observed parents and children in playground settings, as well as in clinical waiting rooms. It was found that parents were five

times less likely to respond to their child's bids for attention when using a phone than not using one, and that when they did respond, they were slower to do so and showed less emotional affect towards the child. Radesky et al. (2015) found that mothers who engaged with their smartphones more frequently were less likely to interact with their child during a structured feeding task. They were also less likely to provide their child with encouragement to try new foods.

In a study by Golen and Ventura (2015b), mother's mobile use is examined during an infant bottle-feeding task. Almost one third of mothers were distracted by a mobile device during feedings. The implications of mothers becoming distracted during feeding were discussed in relation to its potential impact on infant health. Parents may be more likely to overfeed their children if they are distracted and do not notice cues that the child is satiated, with implications for early childhood obesity.

Parent Perspectives of Their Smartphone Use

Many parents identified their smartphone use as problematic (Johnson & Hertlein, 2019; McDaniel & Radesky, 2018; Radesky, Kistin, et al., 2016). Radesky, Kistin, et al. (2016) found that parents felt overloaded due to the amount of notifications, phone calls, text messages and other reminders they received through their mobile devices. With regard to child-rearing, parents reported difficulty in "multitasking", that is attending appropriately to both their children and their phones, and some parents recognised that they had to proactively switch off their phone or put in away when with their children, in order to interact appropriately with them. Some parents reported feeling addicted to certain applications and games, adding to the sensation of being overwhelmed. However, in the same study, benefits of mobile devices for parental psychological wellbeing were also identified. Applications and games were perceived as stress relieving. Mobile devices also enabled stay-at-home parents to feel a sense of connectedness to the outside world, and reduced boredom and stress. Johnson and Hertlein (2019) also found parents deliberately engaged in mobile device use as a "coping mechanism" (pg. 1429), a way of being distracted when they are feeling stressed from other aspects not family life.

Discussion

The focus of the research to date regarding the impact of parental smartphone use is highly varied. However, a number of key themes emerged in this review with regard to parental smartphone use, including the potential long-term implications for children's development, the association between parental device use and behaviour problems, disruptions to child and parent relationships, and parents' own satisfaction with their mobile media use. It is clear that the increased use of mobile devices in daily life has introduced a number of complex issues which require further investigation.

Many studies focused on maternal reports of their children's behaviours as opposed to gathering both parents' perspectives, and no studies in the review focused exclusively on paternal perspectives. This may be due to the fact that mothers are traditionally perceived to spend more time with their children, particularly during the period of early childhood (Rothbaum & Weisz, 1994), and therefore may have greater knowledge of their child's behaviour and attitudes. It is unclear from the current review whether gathering information from one parent alone is sufficient, as one study (McDaniel & Radesky, 2018) did find discrepancies between maternal and paternal device use and children's reported internalising and externalising behaviours, suggesting that the impact of device use may be dependent on the parent. However, another study, Atlı et al. (2019) did not find any such differences.

Reasons for potential differences in the impact of maternal and paternal smartphone use may be due to a number of variables. In previous studies of family media use, associations have been found between parent gender and child screen time (e.g. Duch et al., 2013; Jago et al., 2012). Lloyd et al. (2014) found that differences in maternal and paternal parenting practices, such as monitoring of screen use, were predictive of child media habits. Therefore, it may be possible that mothers and fathers have different practices when it comes to their own media use. Secondly, research into smartphones and gender have revealed specific differences in how males and females utilise mobile technologies such as smartphones, with females more likely to use technology for social purposes than males, while males are more likely to use technology to access and post information. Some studies included in the review (e.g. Modecki et al., 2020) attempted to examine how specific smartphone use variables, such as making calls, sending texts, social networking, and checking behaviours, impacted on time spend with family. For two variables, social networking and checking, there was found to be a negative association between time and

immersion of use and quality of attachment. However, Modecki et at. (2020) did not examine whether or not fathers or mothers were more likely to engage in these behaviours. While there is currently not enough research to draw conclusive arguments, it may be the case that how mothers and fathers engage with their devices differ, and that this engagement may further impact on the quality of the parent-child relationship.

Variations were also found in the literature regarding the ages of children, with the populations selected for study ranging from infancy to adolescence. Findings of research conducted to date seem to suggest that parental smartphone use can have a negative impact on child wellbeing and parent-child relationships, regardless of the child's age. However, there may be differences in the exact nature of the issues experienced by children depending on their age and stage of development.

Infancy is a critical period in a child's development, in which many important skills develop (e.g. Maggi et al., 2010; Montroy et al., 2016). These skills are vital in determining outcomes for children throughout their childhood and indeed throughout the lifespan, in areas including school readiness, academic achievement, adult educational attainment, self-worth, and coping skills, (McClelland et al., 2013; Mischel et al., 2011). A wealth of research shows that parents in particular play a key role in assisting children to build these skills (Heckman & Mosso, 2014; Jenkins & Handa, 2019; Rodriguez et al., 2009). Researchers have therefore argued for further research on the impact of technology use on children during this phase of development (e.g. Wartella et al., 2005). In this review, studies examining parental smartphone use around infants found that parental smartphone use may have implications for key areas of children's development, such as language acquisition and adaptive behaviour (Atlı et al., 2019; Radesky et al., 2015; Reed et al., 2017). Previous research into infant development and screen use has shown that greater amounts of infant screen time are associated with limited parent-child verbal interactions (Mendelsohn et al., 2008). It is likely that the same holds true when parental smartphone use is considered, with limited parent-child interactions negatively impacting on children's' language acquisition and development. However, more research in this area is required to determine if this is the case.

In childhood, studies focused more on potential behavioural problems emerging as a result of parental smartphone use (McDaniel & Radesky, 2018; Radesky et al., 2014), as well as on the impact device use has on the parent-child relationship (Kushlev & Dunn, 2019; McDaniel & Radesky, 2018; Myruski et al, 2018; Radesky et al., 2016; Stockdale at al.,

2018). Behaviour problems in children can be symptomatic of other issues, but manifest behaviourally due to the fact the child has possibly not developed sufficient self-regulatory skills to manage their behaviour, or sufficient language abilities to explain their thoughts and emotions and seek help. Radesky et al. (2014) found that children often engaged in increasingly disruptive behaviour, seemingly in a bid for parent attention. However, parents also identified in the review that they used phone use as a coping mechanism and as a tool to reduce stress (e.g. Johnson & Hertlein, 2019). It therefore may be the case that parental phone use increases as a result of child behaviour, often cited as a source of stress for parents (Baker et al., 2005; Neece et al., 2012). While associations have been found between parental technology use and child behaviour, more research is needed in determining what the direction of the associations may be.

Four studies in the review explored the impact parental smartphone use had on affective outcomes (Stockdale et al., 2018; Stockdale et al., 2020; Wang et al., 2020; Xie & Xie, 2020), and three of those explored adolescent experiences of parental phubbing. While adolescents are often perceived as more independent from their parents, it is clear from the review they are still impacted by their parents' smartphone use. While symptoms of psychological distress in children may manifest as behavioural problems, there is evidence in this review to suggest that adolescent responses to parental smartphone present as internalising symptoms such as low affect and depressive problems.

Parents often report difficultly paying attention to both their device and their child (Radesky, Kistin, et al., 2016). Distracted parenting has been shown to have many implications for child safety and wellbeing. Golen and Ventura (2015a) found that distracted mothers were potentially more likely to overfeed their infants. Rapid infant weight gain has been found to be associated with later obesity risk and poorer child health outcomes (Druet et al., 2012; Ekelund et al., 2007). Children have also been shown to engage in higher levels of risky behaviours when parents are distracted, and that distractions limit parents' ability to supervise their children appropriately (Boles, & Roberts, 2008). Palsson (2017) posits that distracted parenting as a result of smartphone use may be linked to an increase in child emergency room visits in the United States. Indeed, in an experimental study by Stupica (2016), children were asked to run around a baseball field. It was found children were able to run faster and were less likely to trip and fall when parents engaged with them and were supportive, than when parents disengaged or appeared distracted. However, this is still an ongoing area of research, and the implications are not yet fully understood. While it is

possible that parents who are less engaged and more distracted by mobile devices may have children that are less securely attached, no study to date has yet directly linked attachment style and parental smartphone use.

Previous research has found that parental behaviour is a significant predictor of child and adolescent behaviour (Borawski et al., 2003). From the articles included in this review, this holds true for smartphone use (Hong et al., 2019; Liu et al., 2019; Poulain et al., 2019; Xie et al., 2019). Rules around mobile device use are often enforced by parents, with a view of mediating their children's device use (Chang et al., 2019; Domoff et al., 2019; Piguet et al., 2017). However, this review demonstrates that by applying these rules to themselves and limiting their own smartphone use around their children, parents can shape their children's behaviour and develop healthier habits. Research has found that children expect parents to model good patterns of behaviour around smartphone use. For instance, children expect their parents to put away phones and mobile devices at the dinner table and to engage with family at mealtimes (Hiniker et al., 2016).

Previous literature has shown that many parents are concerned about their children's' device use (Radesky, Eisenberg, et al., 2016; Terras & Ramsay, 2016) and are aware of the potentially harmful effects that device overuse may have on their children. In this review, many studies captured parents' perspectives of their own smartphone use. There is evidence to show that parents are also often concerned about their own device behaviour. Some research recognises that parents make attempts to limit their smartphone use when around their children (Palen & Hughes, 2007). However, parents may overestimate their success in doing so. Mangan et al. (2018) found that during a 20-minute observation, the majority of parents interacted with their smartphone, with 58% of parents engaging with their device for up to five minutes. In interviews following the observation however, many parents identified that mobile device use in a playground was not appropriate, due to concerns about child safety. While some parents identified concerns however, others identified smartphones as tools for stress-relief and coping. Modecki et al. (2020) suggest that some smartphone use, provided it is not overused, may be beneficial for parents, reducing their stress and enabling them to be more available to their children.

Studies which focused on adolescents tended to involve parents using their phones to communicate with their children while they were away at college or university, and were therefore excluded from this review. These studies may have uncovered less negative

perspectives of parental smartphone use, as parents had previously identified smartphones as a useful tool in staying connected as a family when away from their children (Palen & Hughes, 2007; Weisskirch, 2011). However, some studies included in the review did identify some positive aspects of smartphone use. Smartphones were found to be sources of entertainment, relaxation, and support for parents (Golen & Ventura, 2015; Kushlev & Dunn, 2019; Mangan et al., 2018; Modecki et al., 2020). In fact, Modecki et al. (2020) found that small amounts of smartphone use could be beneficial in enabling parents to access parenting support, and thereby increasing parents' sense of social connectedness and self-efficacy.

Cultural Factors Impacting Smartphone Research

The current review paper includes articles from both Western (e.g. Golen & Ventura. 2015b; Kushlev & Dunn, 2019; Mangan et al., 2018; McDaniel & Radesky, 2018) and Asian cultures (e.g. Hong et al., 2019; Liu et al., 2019; Xie et al., 2019). Previous research has identified a number of cultural differences between Western and Asian countries, particularly in relation to the individualist and collectivist traditions that have emerged, with Asisn countries being seen as more collectivist and group-orientated (e.g. Kitayama et al., 1997; Oyserman et al., 2002; Yamaguchi, 1994). Within Asian families, Qiao and Liu (2020) suggest research exploring technology use may find it to be particularly disruptive, due to the cultural emphasis placed on family in Asian societies.

However, there is rationale to include both Western and Asian studies in this review. Primarily, phubbing appears to be recognised as a cross-cultural phenomenon, and is defined similarly in research from both Western and Asian cultures. For instance, Hong et al. (2019) borrow the description of phubbing provided by Roberts & David (2016), defining phubbing as "interrupting ongoing in-person conversations or ignoring other people who are present to interact with one's mobile phone" (p. 779). While Western studies tend to use the term "technoference" in place of "phubbing", the definition provided describes a similar phenomenon. For instance, McDaniel and Radesky (2018) define technoference as "everyday interruptions in interpersonal interactions or time spent together that occur due to digital and mobile technology devices" (p. 100). Both definitions are characterised by technology, particularly mobile device use, disrupting social interactions. This similar understanding of the phenomenon that exists gives justifications for the inclusion of both Asian and Western studies in the current review.

Recommendations for Future Research

As discussed, the age ranges throughout the research to date are varied. It stands to reason that research carried out among different populations will establish different patterns of results, as children undergo many developmental phases throughout their early lifespan and therefore may be impacted differently by parental device use at each stage. However, there is a lack of research within this review to perform a thorough review of these differences. Further investigation providing a comparison across age groups may shed more light on the varying impacts of parental mobile device use.

Currently, many of the studies examining parental smartphone use rely on self-report measures to determine problematic smartphone use. Research by Yuan et al. (2019) suggests self-report measures of device use may not be the most accurate, with most parents tending to underreport their smartphone use. There may be multiple reasons for this. Firstly, social desirability bias may be at play, with parents concerned they would appear neglectful if they were found to use their phones often around their children. Additionally, many smartphone users may use their phones habitually, and may not even realise how often they check their phone or scroll through applications. However, many modern smartphones are now able to track usage, even providing data on which particular applications the user spent the most time engaging with. This data, either used alone or alongside other observational or self-report measures, may be useful in gaining accurate and unbiased insights into patterns of smartphone usage among parents.

Research further exploring parents' motivations for engaging in smartphone use may also be beneficial in understanding what aspects of smartphone use are most harmful. Smartphones have moved away from the traditional communicative purposes of telephones, and have become pocket computers, allowing people to perform a multitude of non-social tasks, such as online banking, streaming videos and other media, and reading online articles. While multiple studies in the review attempted to capture data on how parents engaged with their smartphones when around children (e.g. Mangan et al., 2018; Modecki et al., 2020), these studies did not further analyse whether particular aspects of smartphone usage (e.g. social use versus non-social use) had greater negative impacts upon children.

Research to date of the impact of parental smartphone use on children has identified numerous negative outcomes for children's behaviour and development. Parents also perceive their own smartphone use as problematic (Johnson & Hertlein, 2019; McDaniel & Radesky, 2018; Radesky et al., 2016). Some studies have attempted to capture the feelings and

perceptions of adolescents in relation to parental smartphone use (e.g. Wang et al., 2020; Xie & Xie, 2020). For instance, Stockdale et al. (2018) found adolescents' perception of parental warmth decreased with higher levels of parental smartphone use. However, despite the fact that children often experience different development challenges than adolescents, and may have differing views on smartphone use and ownership in particular, there has been no study to date which explores children's perspectives of parental smartphone use. One study by Hiniker et al. (2016) did explore children's views of other parental media use, particularly parents use of social networking sites. It was found that children are frustrated when parents post pictures or information about them online without their permission. However, this research does not go further to explore the perceived impact other aspects of parental smartphone use, such as phubbing may be having on children's social and emotional wellbeing, and whether children are able to identify their parent's mobile device use as excessive or problematic in regard to this. Further research exploring this topic would be beneficial in fully understanding the impact of parental smartphone use on children.

Conclusion

This review of the current literature exploring parental smartphone use has identified a number of key findings. Parent smartphone use has been shown to be associated with child affective and behaviour problems, and may also have implications for the parent-child relationship. Many studies in this review suggest that parental smartphone use can lead to disrupted parent-child interactions, with parents often missing their children's bids for attention. This review has also identified a number of gaps within the current research base. Very few studies have explored adolescent perspectives of parental smartphone use and those that do tend only to provide superficial reports of these perspectives. Critically, no studies have examined the perspectives of younger children, particularly those in middle childhood. There are significant developmental changes that occur between middle childhood and adolescence, with adolescents becoming more independent and more responsible for regulating their own behaviour. Parenting approaches and family dynamics often adjust to reflect these changes, with adolescents granted more freedom and less parental supervision (Laursen & Collins, 2009). It is therefore reasonable to assume that adolescent perspectives and child perspectives of parent smartphone use may differ.

Many researchers have discussed the importance of entering the child's world, and exploring their perspectives in research (Grover, 2004; Komulainen, 2007; Phelan &

Kinsella, 2013). Much research exploring the views and experiences of children is conducted indirectly, through caregiver or teacher reports. This may be due to the increased ethical considerations when undertaking research with vulnerable populations such as children (Phelan & Kinsella, 2013). However, the value of allowing the child a voice within research cannot be overstated. As Grover (2004) states "there is a need then to offer children the opportunity to define themselves through collaboration in the research effort, rather than to be defined solely by adult interests, biases and agendas" (p. 83). This may be particularly true when exploring child perspectives of parent behaviour, as parents may be reluctant to report negative views or opinions their child may have expressed. There is a clear need to further explore the impact of parental smartphone use from a child's perspective and ensure the voice of the child is heard.

Empirical Paper

Technology has become an integral part of everyday life, with most households having access to multiple devices such as computers, smartphones and tablets. Smartphones, in particular, have become one of the most frequently used devices, due to their portability and functionality. While phones initially emerged as a means of communication, their purpose has now evolved beyond that, with smartphones now granting users access to a range of other activities and information, including news sites, emails, and music and video streaming platforms. Due to their ubiquity, it is therefore important that the impact these devices have on daily life are examined. The impact of these smartphones and mobile devices on children has been widely studied, with some research suggesting child screen time may be associated with adverse mental health and behaviour problems (Kim et al., 2017). However, the focus of much research to date has been on children's mobile device use, and the potential negative impacts this may have on children's health and wellbeing. While there are a wealth of studies exploring the impact of children's device use on children themselves (e.g. Domingues-Montanari, 2017; Sweetser et al., 2012; Zimmerman et al., 2007) there is a paucity of research examining the impact of parental and caregiver mobile device use, particularly in terms of their children's social and emotional wellbeing.

The ubiquitous nature of mobile devices both in and outside of the home has had implications for the ways in which families interact with each other. Research has shown that technology, and the rules and boundaries around how devices are used within the home, are often a source of family conflict, (Hiniker et al., 2016; Kildare & Middlemiss, 2017; McDaniel et al., 2018). In particular, mobile device use may have a pertinent impact on the parent-child relationship. This is particularly true if we consider parental device use, and its impact, within the framework of attachment theory. Attachment, as described Bowlby (1958) and Ainsworth (Ainsworth & Bell, 1970; Ainsworth, 1973; Ainsworth, 1991), is the process by which individuals develop social bonds with caregivers and others. Strong, secure attachment bonds, have been shown to be important for an individual's overall health and wellbeing (Bowly, 1999).

Childhood is an important time for developing secure attachment bonds, as research suggests children who fail to develop secure attachment bonds in early life will go on to experience greater mental health difficulties, poorer self-concept, and more relationship difficulties in adolescence and young adulthood than securely attached peers (Jacobsen &

Hofmann, 1997; McCarthy & Taylor, 1999; O'Connor et al., 2018). Children whose parents are unavailable or who are not sensitive to their needs may develop insecure attachment bonds (Ainsworth & Bowlby, 1991). Therefore, it is important to fully explore and understand the role of mobile technologies such as smartphones play in contributing to parent inattention and distraction, in order to understand the further impact this may have on child development.

The Impact of Parental Device Use on Children

There is a body of emerging research examining the impact of parental smartphone use on infants, children, and adolescents. This research explores how parental device use effects outcomes for children across a number of domains, including development, mental health, and behaviour, as well as exploring the further impact on the parent-child relationship and relationship quality.

Affective problems in infants (Stockdale et al., 2020) and adolescents (Stockdale et al., 2018; Wang et al., 2020; Xie & Xie, 2020) have been shown to be associated with parental smartphone use. Stockdale et al. (2020) used a modified Still Face Paradigm to examine infant behaviour and perceived affect when parents engaged in mobile device use. They found that infants displayed greater levels of emotional distress and self-comforting behaviours during the Still Face phase when parents were engaging with mobile devices. Of the research examining affective impact in adolescents, three studies have found positive correlations between parental phubbing and child depressive symptoms (Stockdale et al., 2018; Wang et al., 2020; Xie & Xie. 2020), with mediating variables of self-worth (Stockdale et al., 2018) and self-esteem (Wang et al., 2020) identified.

Associations have also been found between parental smartphone use and child behaviour problems. Parental smartphone use has been positively correlated with both internalising and externalising behaviours in children across a number of studies (McDaniel & Radesky, 2018; Poulain et al., 2019; Stockdale et al., 2018; Sundqvist et al., 2020). In particular, children who experience parental phubbing are more prone to exhibiting conduct problems and antisocial behaviour, such as bullying (Poulain et al., 2019; Stockdale at el., 2018). Problematic parental mobile phone use has also been associated with greater mobile phone use in adolescents, leading to an increased risk of smartphone addiction and associated detrimental outcomes (Liu et al., 2019; Xie et al., 2019). One theory proposed by researchers is that children engage in more frequent challenging behaviour in order to gain caregiver

attention. For instance, observational research by Radesky et al. (2014) has found that children of parents who frequently engaged with their smartphones or mobile devices while spending time with their children were more likely to engage in disruptive or provocative behaviour.

In relation to the parent-child relationship, Kildare and Middlemiss (2017) suggest that increased technology use is associated with higher levels of distracted parenting. Boles and Roberts (2008) have found that distracted parenting is associated with adverse consequences for children's physical health, as it has been linked to increased risky behaviours and injury among children. In particular, younger children are more likely to engage in risky behaviours (Boles & Roberts, 2008). A number of studies have examined parent distraction as a result of smartphone use (Golen & Ventura, 2015; Mangan et al., 2018; Radesky et al., 2015; Vanden Abeele et al., 2020). An observational study by Mangan et al. (2018), showed that over three quarters of parents engaged with a mobile device when supervising children in a playground, despite the potential for accidents to happen in this environment. Parents are also often distracted during other caregiving duties, including when feeding young children (Golen & Ventura, 2015; Radesky et al., 2015).

Distracted parenting in particular has implications for the development of attachment bonds between children and their caregivers. Indeed, disengagement during smartphone use was a theme identified by parents in research by Johnson and Hertlein (2019), with parents reporting they were less aware of their children's needs when using smartphones. Vanden Abeele et al. (2020) also report similar findings, with parents less likely and slower to respond to child bids for attention when using a smartphone. This study also found that parents who frequently engaged with their smartphones displayed less emotional affect towards their children. Similarly, Kushlev and Dunn (2019) found that parents who reported high levels of smartphone use also reported feeling less connected to their children and less perspective of their children's needs. Overall, parents tend to consider smartphones as a barrier in being responsive and sensitive towards their children (Radesky et al., 2018; Wolfers et al., 2020). However, some parents also acknowledged the benefits of smartphone use when with children. Some parents report smartphone use as helpful in providing them with social support and parenting information (Gibson & Hanson, 2013), which in turn may be beneficial in developing parental confidence and increasing sensitivity towards their children (Wolfers et al., 2020).

Parents' Perspectives of Technology

Currently, literature suggests many parents are aware of the potential impacts of technology use upon family functioning. Capturing parent perceptions of both their children's and their own device use gives insight into how parents perceive these impacts, and into strategies parents have developed to limit the negative influence of mobile devices in the home.

Parents' Perspectives of Children's Media Use

Research suggests the prevalence of technology has led to feelings of unease in many parents over the potential impact of technology use on their child, with many parents expressing concern that increased technology use may have detrimental impact on their children's development. Parents have reported fearing that their children will fail to develop appropriate social skills (Genc, 2014), will adopt a sedentary or inactive lifestyle (Solomon-Moore et al., 2017; Solomon-Moore et al., 2018), or will be exposed to inappropriate content online (Boyd & Hargittai, 2013). These concerns are by and large not new, as similar concerns in relation to children's screen use have been recorded in the literature for decades (e.g. Funk & Buchman, 1995; Meyrowitz, 1985; Osofsky, 1995). However, what has changed in recent years is the increased prevalence and portability of technology, and the increased ease with which children can access a range of functions through mobile devices. Genc (2014) found that many parents felt concerned that smartphones may pose health risks for their children or may impact upon their development. However, despite these concerns, parents also recognised the benefits of child smartphone use in relation to family functioning, recognising smartphones as a source of entertainment, and as a tool to reward children for positive behaviour.

Parental concerns in relation to child device use have led to many parents attempting to limit their children's mobile device use. According to Valkenburg et al. (1999), parents mediate their children's device use in three ways, either through active mediation, restrictive mediation, or through social co-viewing. Active mediation involves parents discussing media use and content with children in order to explore and frame children's understanding of what they have consumed, while restrictive mediation involves setting rules around what content children can consume and when. Social co-viewing meanwhile involves parents viewing media and using devices together. Overall, parental mediation has been shown to be

associated with better outcomes for children (e.g., Gentile et al. 2014; Rasmussen et al., 2016).

Parents' Perspectives of Their Own Media Use

Parents have not only expressed concern over their children's media use, but also can be similarly concerned about their own behaviour. Numerous studies examining parental smartphone use have found that parents often identified their smartphone use as problematic (Johnson & Hertlein, 2019; McDaniel & Radesky, 2018; Radesky, et al., 2016). Problematic smartphone use has been viewed in some research as a behavioural addiction (Billieux et al., 2015). While this concept has been contested (e.g. Panova & Carbonell, 2018), nevertheless smartphone addiction has become a widely researched phenomenon in recent years (e.g. Chang et al., 2019; Haug et al., 2015; Ko et al., 2005; Li et al., 2015). Previous research has found associations between smartphone addiction and a number of detrimental impacts, including depression, low self-esteem, self-regulatory problems, hyperactivity, and disruptive behaviours (Bianchi & Phillips, 2005; Bohnert & Gracia, 2020; Kim et al., 2009; Lee et al., 2014; Mohamed & Mostafa, 2020). While much of the research around smartphone addiction focuses on adolescents and college students, there is also evidence in the literature of the detrimental effects of smartphone overuse on adults, particularly in relation to phone snubbing or phubbing. A concern identified by parents is the amount of time and attention smartphones demand of parents, leaving them overwhelmed and reducing opportunities for them to engage with their children (Radesky, et al, 2016) and other family members (McDaniel et al., 2018).

Parents recognise the potential impact of their own smartphone use on their relationships with children (Kushlev & Dunn, 2019; Radesky, et al., 2016). Parents report decreased feelings of social connectedness and lower levels of attention quality during time spent with children when using smartphone use was found to be associated with lower feelings of connectedness to others and lower quality of attention when spending time with children (Kushlev & Dunn, 2019), and report feeling they struggle to "multitask" between responding to their children and their phone (Radesky et al., 2016).

Children's Perspectives of Technology

Research shows child smartphone use is often a source of concern for parents. However, less is known about children's own perceptions of smartphone use, and their awareness of the risks and benefits associated with digital technology.

Children's Perspectives of Their Own Media Use

There is a paucity of research exploring young children's perspectives of devices. However, research by Haddon and Vincent (2015) found that children often did not focus on the risks of mobile device use, such as inappropriate online content or cyberbullying. Instead, children were more likely to express concerns around the fragility and cost of the physical device itself, and irritation in relation to popup advertisements. Among adolescents, research has identified smartphone ownership as aspirational in early adolescents, with many teenagers viewing it as an important milestone (Moreno et al., 2019). However, many adolescents recognise their smartphone usage as problematic, acknowledging the addictive tendencies of device use. Adolescents report being unable to stop using or checking devices, losing track of time when using their device, and report that smartphones can act as a barrier to completing schoolwork or going to sleep (Toh et al., 2019).

Children's Perspectives of Parental Media Use

A key aspect when exploring children's attitudes towards parental media is determining which aspects of parental media use children find problematic. For instance, in a study by Hiniker et al. (2016) children identified issues in relation to their parents' social media use. In particular, children were often unhappy with parents posting pictures of them or posting personal information online with their consent. While this research suggests children may express some dissatisfaction with their parents' technology use, it does not explore how children perceive their parents use of devices such as smartphones, and in particular, does not explore how children view the phenomenon of parental phubbing. Among adolescents, there is some literature to suggest adolescents do feel negatively about their parents' smartphone use, (e.g. Wang et al., 2020; Xie & Xie, 2020). Indeed, a study by Stockdale et al. (2018) found that adolescents whose parents engaged in higher levels of smartphone use were less likely to perceive feelings of parental warmth from their caregivers. However, it is worth noting that this has been done as part of a larger study where exploring adolescent perceptions is not a key aim of the research, and there is therefore significant scope to explore these perspectives more thoroughly in future research. Less is known about the views of children in middle childhood, as there are currently no empirical research studies that have explored their perspectives of parental smartphone use. This is despite the fact that children in middle childhood may have different views on smartphone use and ownership than adolescents. Like younger children, children's use of technology in middle childhood is often

still heavily monitored by parents (Smahelova et al., 2017). However, children's interactions with technology at this age begin to change, with some children owning their first phone (Common Sense Media, 2017) or signing up to social media sites (Willoughby, 2019). The parent-child relationship also changes in adolescence, with teenagers becoming more heavily influenced by peer relationships and less reliant on parent attention (Laursen & Collins, 2009). It is therefore important to explore the unique perspective of those in middle childhood, to gain insight into the experiences and perceptions of this age group.

Research Questions

The current research aims to explore the perceived impact of parental smartphone use on children. This has been identified as a significant gap in the current literature. To date, there are currently no studies which explore children's perceptions of their parent's smartphone use. A secondary aim of the research is to explore parent experiences of using smartphones while caring for their children. Thus, this research aims to answer two main questions, which are:

1. How do children perceive parental smartphone use?
2. What are parents' experiences of using smartphones when caring for children?

In order to answer the two research questions generated in the review, two studies were designed. The first study aimed to uncover children's perceptions of parental smartphone use, while the second study aimed to gather parent reports of child perspectives, and also their own experiences of smartphone use while caring for their children. Limitations imposed by the ongoing COVID-19 pandemic (i.e. schools in Ireland were closed from March to September 2020), meant that the timeline for data collection in Study 1 in particular was delayed. It is worth noting that data in both Study 1 and Study 2 were therefore collecting concurrently, in the period October to December 2020.

Study 1

Method

Study Design. The methodology chosen for this research was a Story Completion Task (Kitzinger & Powell, 1995). Story Completion is a projective methodology, whereby participants' responses to a story stem are presumed to be representative of their attitudes and opinions towards a particular topic. Story Completion methodology was selected for the current study for two main reasons. Firstly, children may not have felt comfortable disclosing information about their families if asked directly about parental smartphone use. By enabling children to write about a hypothetical situation, it removes any potential worries or concerns children may have about providing admissible or acceptable accounts of parental smartphone use. Secondly, previous research has identified that parents can be concerned about their own device use. Asking children directly about their parents' device use may also be concerning for parents who feel they may use their smartphone excessively. Parents who feel this way may be worried their children will report on them and therefore may decide not to allow their children to participate in the research, leading to a biased sample group. Ultimately, Story Completion methodology enables children to give their views in a way that does not require them to reflect directly on their own experience, and removes concerns both parents and children may have in providing perspectives on this topic.

Ethical Considerations. Ethical approval was obtained from Mary Immaculate Research Ethics Committee (MIREC) prior to commencing the research study (see Appendix H). The Psychological Society of Ireland's Code of Ethics (PSI; 2019) was also adhered to throughout the research process. As children are considered a vulnerable group in psychological research, a number of considerations were made in the current study to ensure this population were protected, and also that their perspectives were represented accurately in

the research. When working with children, as in the current study, a common first step involves obtaining informed consent from guardians and schools (Cree et al., 2002). Firstly, consent was sought from schools to access the target research group and to distribute information about the research to parents. Then parents were asked to provide informed consent to permit their children to participate in the study. Parents were informed that their child's participation was voluntary, and that all information collected would be anonymised and could not be used to identify their child, their family, or their school.

Participants. Participants in this study were 25 third, fourth and fifth class pupils (13 girls and 12 boys), aged between eight and 12 years of age. The small sample size is reflective of the difficulty of recruitment and data collection during the ongoing COVID-19 pandemic.

Participants were recruited from two primary schools in Ireland. Both schools which took part in this research were co-educational, with both male and female pupils. One school which participated was a member of the Delivering Equality of Opportunity in Schools (DEIS) programme, which aims to provide educational support to children from disadvantaged communities.

Of the 25 participants, seven completed Condition 1, seven completed Condition 2, and 11 completed Condition 3. For ease of reading, Condition 1 will be hereon referred to as the Social Device Interruption group, Condition 2 will be referred to as the Non-social Device Interruption group, and Condition 3 will be referred to as the Social Physical Interruption group. Data was collected in the children's' normal classrooms. Due to COVID-19 restrictions, it was not possible for the researcher to directly collect data within schools, and therefore data was collected by the children's' teachers. Teachers were asked to randomly assign children to one of the three conditions.

Sampling. The sampling approach adopted in the current study was a purposive sampling strategy (Patton, 2002), where children in third, fourth and fifth class were sought in order to give insight into the research question. An upper age limit of 12 years was applied to differentiate between children and adolescents and to focus the lens of the research more directly on child perspectives. A lower age limit of eight years was implemented as it was felt children under eight years of age may have found it difficult to participate in the research without significant support from adults, which in turn may have influenced the content of their responses.

Recruitment of Participants. Participants were recruited through primary schools within the Republic of Ireland. Principals of schools were contacted through publicly available email addresses to ascertain whether or not they would be willing for pupils in their school to take part in the research. Principals were fully informed of the purpose of the study and what pupil participation would entail, and were provided with copies of the parent and child information sheets and consent forms. Principals were made aware that participation in the study was completely voluntary, and were encouraged to ask questions at any time. If principals agreed to allow pupils in their schools to participate in the research study, then they were asked to distribute consent forms and information sheets to parents of third, fourth and fifth class pupils. Once consent was received back in the school, a suitable time and data for data collection was arranged.

Due to COVID-19 restrictions and school closures, the timeline for participant recruitment and data collection was extremely limited (i.e. both recruitment and data collection took place over a span of four months). This had an adverse impact on the number of participants recruited for this study.

Materials. Three short story stems were constructed for the purpose of the study (see Appendix E). All three story variations focused on a parent-child interaction (i.e. a mother and son playing a board game) that is disrupted. In the first condition, the Social Device Interruption group, the parent-child interaction is disrupted by social device use (i.e. the parent receives a phone call). In the second condition, the Non-social Device Interruption group, the interaction between parent and child is interrupted by a non-social device use (i.e. the parent continuously scrolling through their phone). In the final condition, the Social Physical Interruption group, the parent-child interaction is disrupted by a social interaction, not related to device use (i.e. another person physically interrupting the parent-child interaction).

The story stem provided in each scenario consisted of a small paragraph of between 72 and 104 words. The length and detail of the story stem in each case was constructed to provide children with enough detail to understand the situation and what was happening, and to engage them in the character and scenario. The independent reading level of the children was also considered, to ensure all children partaking in the research could read and understand the story stem without assistance. The overall aim of the story stems was to

encourage children to continue writing the story along the same theme as outlined in the story stem, without being overly directive and thereby influencing participant responses.

Data Collection Procedure. Data collection took place in schools in October to December 2020, in the children's normal classrooms. Due to COVID-19 restrictions, the researcher was not permitted to enter the classrooms. Therefore, data was collected by the children's teachers, following instructions given by the researcher. Teachers were asked to randomly assign children to one of the three story conditions, and were asked to try and ensure an even distribution of males and females in all three conditions, within the limits of the normal classroom demographics.

Before data collection, parents of participants were asked to read an information sheet (see Appendix I) and sign a consent form (see Appendix J) allowing their child to partake in the research. Children were provided with child-friendly information sheet (see Appendix K) and consent form (see Appendix L), which they were also asked to read and sign. During data collection, children were reminded that their participation was voluntary, and were asked to verbally assent to take part in the research. Children were given one of three story variations to complete. Children were required to read the story stem and respond to it, creating a short story based on how they felt the main character in the story would react in the given scenario. They were informed that they could ask for help at any time with reading or spelling, and that spare paper was available if needed. Children were also made aware that no help would be given in relation to the content of their stories.

Data Analysis. Themes were extracted from the raw data using the six-phase mode of thematic analysis outlined by Braun and Clarke (2006; see Table 5). Thematic analysis is a commonly used approach in qualitative research; however, there is debate within the psychological community about the nature of thematic analysis. While some psychologists assert thematic analysis is an analytic method in its own right, others claim that thematic analysis is instead meta-analytic, and its approach of identifying themes actually underpins most qualitative analytic approaches (Gibson & Brown, 2009; Willig, 2013). It is also worth noting that there is no singular approach to thematic analysis, but rather a thematic analysis is a term given to a number of approaches (e.g. Boyatzis, 1998; Braun & Clarke, 2006, Joffe & Yardley, 2004). However, all of these approaches work towards the same goal – identifying meaningful themes within data, whether they do so inductively or deductively (Fereday &

Muir-Cochrane, 2006). A deductive approach, informed by attachment theory (Ainsworth, 1991; Bowlby, 1958), was used in the current research study.

Table 5

The Six Phases of Thematic Analysis (Braun & Clarke, 2006)

Phase	Phase Title	Phase Description
Phase 1	Familiarising Yourself with the Data	Reading and rereading the data, and making notes
Phase 2	Generating Initial Codes	Developing descriptive and interpretive codes based on the content of the data
Phase 3	Searching for Themes	Categorising coded information and grouping it together to form themes
Phase 4	Reviewing Potential Themes	
Phase 5	Defining and Naming Themes	
Phase 6	Producing the Report	Produce a report evidencing how the research questions have been answered through the analysis of the data

Results of Study 1

A thematic analysis approach applied to the data elicited a number of key concepts. Two main themes were extracted from the data, and these are outlined and discussed below.

Themes. Two main themes were identified in this research exploring children's perspectives of parental smartphone use and disrupted parent-child interactions.

Children's Emotional Response to Distracted Parenting. A key theme that was identified in the data was the child's emotional response to the disrupted reaction. Negative emotional response for the purpose of this study does not reflect any one emotion, but instead encapsulates any identifiable emotional response which is commonly considered maladaptive or harmful. Children identified negative emotional responses with similar frequencies across all three conditions.

For instance, in the Social Device Interruption group, where the parent-child interaction was interrupted by social device use (i.e. a phone call), many of the children described the main character, Sam, as being "annoyed" or "irritated". For one child, this annoyance manifested in a retaliation against the parent's device use: "[Sam] should go to his room. He goes to his room and then comes down with his phone. When his mother [plays the game], his phone will ring and he will go on his phone for hours." In this response, the child describes the main character copying the action of his parent, by also deliberately receiving a phone call when his parent wants to play with him.

Sadness and hurt were other emotions identified by children in all three groups, with no identifiable differences reported in children's perceptions across conditions. In the Social Device Interruption group, a child writes "I think Sam was super sad. He was probably happy when he was playing the boardgame", while in the Social Physical Interruption group a child writes "I think Sam feels a little bit sad." In the Non-social Device Interruption group, in which the parent-child interaction was disrupted due to parent scrolling behaviour, many children felt the main character would be upset that his parent was not attending to him or the game. According to one child: "I think Sam felt sad because Mam wasn't paying attention to him and the boardgame." Another child in the Non-social Device Interruption group wrote "I think Sam feels unwanted and sad because he wanted her to play. I would be sad too because she was just not really listening." In this instance, the child directly relates the experiences and feelings of the main character to their own emotions, identifying with the situation and how it has made the character feel. Instances of retaliatory behaviour were also described by children in relation to this feeling of sadness, as one child responding in the Non-social Device Interruption group two writes: "[Sam] storms out and cries himself to sleep. He eats all his Mam's food and ignores her." For other children, there was a sense of disappointment as a result of the disrupted interaction. One child in the Non-social Device Interruption group writes: "I think Sam feels let down, because his Mom is on her phone," while another child in the same group suggested "he feels hurt and disappointed."

Anger was also identified as a negative emotional response in the Social Device Interruption group, and in the Social Physical Interruption group. In the Social Physical Interruption group, one child writes "Sam was so mad he shouted 'Mam, are you playing or what?' … he was so furious." Another child in the same group writes "Sam is angry. Sam [is] now crying and Mam [comes] over and grounds him for a week. Then Sam stomps up the stairs roaring crying." In in the Social Device Interruption group, a child initially felt the

main character would be sad as a result of the disrupted interaction, but then described this sadness turning to anger when the parent did not reengage with the child after an extended time, writing "Sam will probably get angry and throw a tantrum." The children in this research directly attributed the child's behaviour problems and emotional outbursts to the disrupted parent-child interaction.

Negotiations Around Parent-Child Interactions. Within this theme, two distinctions can be made around the negotiation that is taking place. In some cases, for instance, children describe how the main character should negotiate with the parent in an attempt to re-establish the interaction. In other cases, however, children suggest the main character engages in a form of self-negotiation, justifying or explaining the disrupted interaction to themselves.

Many children who identified negative emotional reactions suggested that the main character should tell his parent how he feels. In the Social Physical Interruption group, for instance, one child, who suggested the disrupted interaction might make the main character feel unwanted, writes: "I think he should tell his mam how he feels, then he will feel a little bit better." Another child in the same group writes: "I think Sam can tell his Mam how he feels... He can ask if [his mother and aunt] want to watch a movie or play the boardgame with him." This aspect of confiding in parents is important in ensuring the child is heard by the parent and that the parent is given insight into how the interaction has impacted upon the child.

Other children also suggested that the main character should ask the parent to continue playing with him, or to play another activity. One child in the Social Device Interruption group suggests: "I think he should ask his Mam 'can you play again?'" while a child in the Non-social Device Interruption group writes "He should ask his Mam to come off her phone and play the board game with him."

Children in all three groups also suggested that the main character should wait until the parent was no longer busy. For instance, in the Social Device Interruption group a child writes: "it might be important, so he should wait." A child in the Social Physical Interruption group elaborates: "He should wait for her to stop talking to her sister. When she stops talking, [he should] ask her to play again, and [they] can have fun."

In the Non-social Device Interruption group, two children felt the main character should physically take the phone from the parent. According to one child, "Sam took Mam's phone and told her she'll get her phone back if she will play the rest of the board game. So

they carried on playing." Another child writes: "One hour passed and still Mam is on her phone, reading the news... Then [Sam] had enough and took her phone and turned it off." This type of response was not seen in the Social Device Interruption group, in which the parent was using the smartphone to socialise.

Summary of Findings. Two themes were identified from the data. Firstly, children expressed a variety of negative emotions in response to disrupted parent-child interactions. This suggests children notice and are negatively impacted on by interrupted interactions with their parents. The second theme suggests children will attempt to negotiate with parents and with themselves in response to disrupted interactions, by prompting parents to reengage in the interaction or by acknowledging to themselves the need to wait for the parent to become ready to reengage. Within the two themes identified, it is notable that children across all three conditions responded similarly to disruptions in the parent-child interaction. The findings suggest that the source of the disruption to the parent-child interaction may not be as impactful as the fact that the interaction was disrupted in the first place.

Study 2

Method

Study Design. The second study consisted of an online parent questionnaire. The questionnaire consists of both open and closed ended questions, which parents were required with answer. Demographic information, such as parent gender, age, level of education, and the ages of children, were also collected.

Ethical Considerations. MIREC approval was granted prior to beginning the research study (see Appendix H), and the PSI Code of Ethics (2019) was adhered to at all times throughout the research process. Participants were provided with information about the study (see Appendix M) and were required to indicate that they had read and understood the information provided prior to completing the online questionnaire. Participants were made aware that their participation was voluntary and that they could end the survey at any time by clicking out of it.

Participants. Participants consisted of 95 parents who responded to the online questionnaire. Demographic information was analysed using SPSS (IBM Corp., 2020). Parent gender and age is outlined in Table 6. Parents responding to the survey were aged between 30 and 55 years of age ($M = 41.13$, $SD = 5.91$), while their children were aged between zero to 12 years of age ($M = 8.25$, $SD = 3.19$). All parents indicated that their country of residence was Ireland.

Table 6

Gender and Educational Level of Parents

Factor	n	%
Gender		
Male	6	5.3
Female	88	77.9
Prefer not to say	1	.9
Highest completed education level		
Some secondary school	3	2.7
Secondary school	19	16.8
Bachelors degree	30	26.5
Masters degree	31	27.4
Professional or doctorate degree	11	9.7
Did not answer	1	.9

Sampling Approach. A purposive sampling approach was used to recruit parents for the current study. Parents were invited to participate if they had a child aged 12 years or younger. As in Study 1, the upper age limit of 12 years was applied to focus on children as opposed to adolescents. No lower age limit was applied as, due to the exploratory nature of the research, it was useful to gather the perspectives of parents caring for children throughout childhood. It was also felt that, should significant differences emerge between the experiences reported by parents of younger children and those reported by parents of older children, this information could be parsed and further explored during data analysis.

Recruitment. Participants were recruited through online parenting forums, Twitter, and through Facebook parenting groups. A brief recruitment notice was posted on these sites, giving parents an overview of the research topic and inviting them to take part if they were interested. A link to the survey was also provided, and parents were asked to click on the link for more information and to take part in the research.

Materials. The following materials were employed in the current study, including a demographic questionnaire, the Distraction in Social Relations and Use of Parent Technology

(DISRUPT) scale (McDaniel, 2016; McDaniel, 2020), and open-ended questions (see Appendix F).

Demographic Questionnaire. A demographic questionnaire, containing multiple-choice questions, was given to participants to complete (see Appendix F). Parents were asked to report their age, gender, highest level of education completed, how many children they have, and the ages of their children.

DISRPUT Scale. The DISRUPT (McDaniel, 2016; McDaniel, 2020) scale is a self-report measure consisting of four items, designed to measure parents' own perceptions of their smartphone use during time spent with their child. The four items included in the DISRUPT are "During time I spend with my child I find myself thinking about what I could be doing on or messages/notifications I might receive on my phone or mobile device," "During time I spend with my child I find it difficult to stay away from checking my phone or mobile device," "During time I spend with my child I feel like I use my phone or other mobile device too much," and "During time I spend with my child there are times that I could play with or interact with my child, but I am on my phone or mobile device instead." Parents are asked to rate their agreement with each item using a six-point Likert scale, where one is strongly disagree and six is strongly agree. Parents scores across all four items are averaged to produce an overall score, with higher scores indicative of more problematic mobile phone use. According to McDaniel (2016), the measure has shown good reliability ($\alpha = .87$) and has shown good convergent validity when correlated with other measures of technology interference. An adapted version of this scale has also been used in research by Gramm et al. (2019), investigating the relationship between parent device distraction at mealtimes and child eating behaviour. The Cronbach's alpha for the current study indicates a high level of reliability ($\alpha = .89$).

Experience of Smartphone Use Questionnaire. The questionnaire also included three open-ended questions exploring parents' experiences of smartphone use in further detail. Qualitative surveys are commonly used in social research (Braun et al., 2020), and are useful in enabling researchers to explore the perceptions, understanding and experiences of particular populations (Braun & Clarke, 2013).

The first question asked "Is there a specific incident you can think of where your own device use interrupted an interaction with your child? For example, did you miss something your child said or did? Did you have trouble carrying on a conversation with your child?"

The focus of this question was to gain qualitative insight on parents' experiences of disrupted interactions with their children which occurred as a direct result of their smartphone use. The second question, "Has your child ever commented on or complained about your mobile device use? If so, has this changed in any way as your child has gotten older?", was designed to explore parent reports of child perspectives. It was acknowledged in designing the survey questions that it was important to explore not only how parents might feel about their own smartphone use, but also to gain insight into how smartphone use impacted children. The final qualitative question asked "In light of COVID-19, many parents have found they are spending significantly more time with their children. How do you feel your smartphone usage has impacted on your interactions with your child during these times specifically? For instance has your smartphone usage around your child increased/decreased during this time?" It was deemed important to determine how much parents felt their behaviour was impacted upon by the ongoing COVID-19 pandemic, in order to determine if the results of this study could be applied to pre- or post-pandemic family functioning.

Data Analysis. The data were analysed using both qualitative and quantitative means. Data from the DISRUPT questionnaire was analysed using descriptive analyses in SPSS (IBM Corp., 2013), while parents' open-ended responses were analysed using the thematic analysis approach (Braun & Clarke, 2006) outlined in Table 5.

Results of Study 2

DISRUPT. Parent responses to the DISRUPT (McDaniel, 2016; McDaniel, 2020) were analysed using descriptive statistical analyses using SPSS (IBM Corp., 2020). The results for each item are presented in Table 7.

The majority of parents across all four items of the DISRUPT indicated they agreed with the statements to some extent. In particular, 68.1% of parents agreed with the statement "During time I spend with my child, I feel like I use my phone too much," suggesting many parents view their phone use as excessive. 62.4% of parents agreed with the statement "During time I spend with my child, there are times that I could play with or interact with my child, but I am on my phone instead," suggesting parents may identify their smartphone acts as a barrier in interacting with initiating interactions with their children.

Table 7

Results for Each Item of the DISRUPT Scale (McDaniel, 2016; McDaniel, 2020)

Items on the DISRUPT	Percentage of Parents who Agree or Disagree with Items on the DISRUPT					
	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
During time I spend with my child, I find myself thinking about what I could be doing on my phone.	4.5	23.9	11.4	37.5	14.8	8
During time I spend with my child, I find it difficult to stay away from checking my phone.	4.5	25	15.9	28.4	19.3	6.8
During time I spend with my child, I feel like I use my phone too much.	3.4	15.9	12.5	29.5	26.1	12.5
During time I spend with my child, there are times that I could play with or interact with my child, but I am on my phone instead.	9.1	4.5	23.9	44.3	4.5	13.6

Themes. Several themes were identified in the parent responses. Parents identified a number of issues in relation to their own smartphone use, as well as their children's response to this. Ultimately, three central themes were extracted from the data, which are family functioning, external pressures on family functioning, and personal behaviour. The themes that were identified were consistent across parents of children from all age ranges. These themes are discussed below.

Family Functioning. Parent data collected as part of the research process give insight into how families function in relation to smartphone use. Many parents described the daily struggle between paying attention to their child and paying attention to their phone. When asked if they could recall specific incidences in which they missed out on something their child said or did as a result of their smartphone use, many parents acknowledged that this frequently happened:

> "All the time... I'm constantly half in conversations with her while trying to answer emails and often miss things she has said." – Mother of a ten-year-old child.

> "I miss the end of a sentence and I have to ask them to say it again. Sometimes they'll say 'Mammy, I already told you.'" - Mother of a seven-year-old child.

> "Yes, there have been instances when my daughter has said something to me and, at the same time, I receive a notification on my phone. I tend to check the notification and ask my daughter to wait." – Mother of a nine-year-old child.

The disruptions smartphones cause can be a source of family conflict. Some parents, when asked if their children ever complained about their smartphone use, found this was an issue their children had commented on:

> "He says I am 'always' on my phone." – Mother of an eight-year-old child.

> "My little girl got upset with me one day and walked over and knocked the phone from my hand. I realised then that I give my phone too much attention when spending time with her." – Mother of a one-year-old child.

> "They hate if I check my phone while we are watching a movie together or if we are out walking." – Mother of a nine-year-old child.

> "If I'm reading an article and am not paying him enough attention, my child will grab my phone. Then I know it's time to put the phone away." – Mother of a two-year-old child.

> "If we are engaged in an activity where my interest levels are low, I might pick up my phone, much to their annoyance." – Mother of an 11-year-old child.

Many of the experiences parents describe can be compared to the experiences that children themselves have described in Study 1. For instance, one mother reports that her child became upset, and took the phone from her hand. In Study 1, one child suggested that the character in the story would take the phone away from his parent and turn it off, as a result of becoming frustrated with the disruption in their interaction. Parents too recognise the negative emotional responses their children can have in relation to their smartphone use, referencing their "annoyance" or describing how their children became "upset." While children identified negative emotions across all three story conditions, whether a device was present or not, the parent data does suggest that smartphones can often be a disruptive agent, and can contribute to family conflict.

For some parents, their children have commented on their parent's phone use in comparison to their own, highlighting the "unfairness" in the fact that their behaviour is restricted while their parent's behaviour is not:

> "She has occasionally complained that I do not have to follow the same screen time restrictions that she does. I can access my phone whenever I want, while she only has specific times when she is allowed on a screen. She tends to argue that this is not fair." – Mother of a 12-year-old child.

> "If I check my phone during a movie or family activity, they comment on why I can, when they're not allowed to." – Mother of a ten-year-old child.

Ultimately, parents identified a number of ways in which parental smartphone use can lead to conflict within the family home, and can impact upon the wellbeing of family members.

External Pressures on Family Functioning. Parents also acknowledged in the research that external pressures often led to an increase in smartphone usage, which in turn has an impact on family functioning. In particular, parents pointed to work as being a source

of pressure. Many parents have found themselves working from home during the COVID-19 pandemic, while their children have also been at home due to school closures. Balancing the need to respond to work calls and emails, while caring for children, was something many parents identified as difficult:

> "I am aware that I use my phone too much in my child's company and I do this partly because I am preoccupied by work, from which it often feels very difficult to escape." – Father of an 11-year-old child.

> "[My phone use has] increased as I am working from home so therefore I feel the need to be permanently 'on' and available to work to the detriment of being available to the kids." – Mother of a nine-year-old child.

> "I hate my phone! I hate the way I'm always on call for work or family and friends. I feel bad if I don't answer calls or reply immediately. It's a lot of pressure to be so contactable whether it be via email, phone, WhatsApp, messenger etc." – Mother of an eight-year-old child.

> "I feel bad that I have to answer messages or emails from work." – Mother of a six-year-old child.

> "I'm often distracted by work calls and emails particularly since COVID-19 I feel like I'm always on my phone." – Mother of a 7-year-old child.

The struggle many parents feel in balancing work and family life is clearly evident in the above extracts. One parent identified feelings of guilt in relation to her phone use, while another said she hated her phone. It is clear from these parents' accounts that they feel under pressure from external demands, particularly work obligations, and are unhappy with how these encroach upon family life. In this way, the problematic nature of the smartphone is less focused on how it distracts parents from their children, but instead focuses on the smartphone as being emblematic of the external pressures of work. Parents in this study felt obligated to respond to work calls and emails, even while caring for children and many acknowledged this pressure was especially pronounced when working from home as a result of the COVID-19 pandemic.

Personal Behaviour. Many parents described the habitual nature of their smartphone use. Because their phones are readily accessible, many parents felt they had to check it constantly, or found it hard to avoid checking. Additionally, many parents in this study found

it difficult to avoid checking their phones when they know there were notifications or messages that needed a response:

> "I have gotten so used to having my phone, I don't always realise how much it gets used. It's become automatic to go and look at it." - Mother of a one-year-old child.

> "I am pulled towards my phone while my son is watching TV. Generally, I don't use the phone at mealtimes or if I am playing with him... But that takes effort." - Mother of an eight-year-old child.

> "People contact you via messages and people expect an immediate reply. They know our phones are on us all the time. It's very hard to give an excuse as to why you've not replied." - Mother of a six-year-old child.

> "I generally do not use my phone when play or interacting with my children but if a message pops up I do find myself checking… I find now that I am working from home, checking my phone has become more common." - Mother of a ten-year-old child.

> "I know I check my phone too much out of habit when I would have received a notification noise anyway, so I don't know why I'm checking it." - Mother of a 12-year-old child.

The above extracts can be related to the quantitative data gathered from the DISRUPT scale (McDaniel, 2016; McDaniel, 2020). The majority of parents who responded to this scale agreed that they were often thinking about their phone, or about messages and notifications they might have received, while spending time with their children. Likewise, the qualitative data indicates that parents often feel the need to check in with their phones, and to respond regularly to messages and emails.

Parents describe ways in they try to limit their smartphone usage, or attend more to their children. Many parents described particular rules or strategies they have implemented in the home to this end:

> "We have no technology times, e.g. meal times are phone free, same with homework." - Mother of an 11-year-old child.

> "I have told family members to call after 9pm when children are in bed." - Mother of a seven-year-old child.

> "I am trying to leave my phone in another room so we can have uninterrupted time together. We are spending more time together especially now with the short evenings when he can't get out to play." - Mother of an 11-year-old child.

> "I try to have my phone on silent so it does not interrupt my day & will only check in when my children are in bed." - Mother of a ten-year-old child.

This data indicates that many parents are willing to take a proactive approach to managing their phone use when they view it as problematic. For instance, parents identify particular "phone free" times, such as mealtimes. One parent quoted above suggested that spending time with her child was a driving factor in regulating and restricting her phone use.

Discussion

The current research study aimed to explore child and caregiver perspectives of parental smartphone use. While anecdotal evidence from parents suggested that parents felt their children often complained about their media and device use, little empirical research to date has explored this issue. Furthermore, the feelings of children in relation to this issue have not yet been explored in the literature. In the current study, two separate methodologies were employed to explore children and parent experiences. Child experiences and perspectives of parental smartphone use and disrupted parent-child interactions were explored using a short story methodology, with three story conditions. Across all three conditions, children identified negative emotions, such as sadness or irritation, in relation to the disrupted interactions. Parent data was collected using an online questionnaire, which consisted of a demographic questionnaire, the DISRUPT (McDaniel, 2016; McDaniel, 2020), and qualitative questions on their experiences of using their smartphones in the presence of their children.

Children's Perspectives of Parental Smartphone Use

Child Reports. Previous research found that young infants display increased negative affect when their parents' attention is directed towards a mobile device (e.g. Myruski et al., 2018; Stockdale et al., 2020), and observational research suggests children are more likely to engage in disruptive and attention-seeking behaviours when parents are engaged with devices (Radesky et al., 2014). The findings from the current study seem to reflect what has been reported in these observational studies, with many children identifying negative emotions as a result of disrupted parent-child interactions. Within the current study, these negative responses were not specific to the device interruption conditions, suggesting that children tend to view any disruption to the parent-child interaction as negative. The emotions identified by children ranged from disappointment, hurt, and annoyance, to anger. Indeed, many of the children themselves also discussed behavioural problems that might arise as a result of disrupted parent-child interactions, including shouting and throwing "tantrums".

The reasons for these behaviour problems as reported by children appear to be two-fold. Firstly, children in the current study suggested that the child might engage in behaviour problems in order gain parents' attention and reorient them to the parent-child reaction. This is consistent with Radesky et al. (2014), who theorised that obtaining parent attention was a core motivator behind many of the behavioural problems they observed. Secondly, children

seemed to suggest that the behaviour can be retaliatory. For instance, one child suggested the character should eat all his mother's food as a consequence of being ignored.

Many children also brought up that interactions with parents often have to be negotiated. For instance, children described asking the parent to put away the mobile phone, or asking them to engage with an activity with the child. Some children felt that the parent's mobile phone should be taken away from them in order to force the parent to give attention to the child. Other children recognised that the parent was busy, and acknowledged that they may need to wait to receive parent attention.

A significant finding of this study is that, across all three story conditions, children did not appear to differentiate between interruptions to interactions with their parents as a result of smartphone use or as a result of interruptions caused by other sources (i.e. a visitor calling to the house). Some disruptions are understandable and unavoidable as a part of daily life, and this was acknowledged by several children in their responses (e.g. "it might be important", "he knew he needed to wait"). However, this did not prevent children from perceiving the disruptions as negative. The findings bring an awareness to the perceived negative impact of disrupted interactions in general, and potentially suggest a need for parents and caregivers to be cognisant of all sources of disruption to interactions with their children, and how these disruptions are managed to lessen their effect.

Parent Reports. These negative emotions and negotiations in relation to interactions were also evident in the data gathered from parents in Study 2. Parents described how their children often noticed and complained about their smartphone use, leading to conflict within the family. Parents of young children in particular described situations in which their children would knock the phone out of their hands or take it away. Indeed, research suggests that children notice when their parents are distracted by mobile devices, and will compete with the device for parents' attention (Oduor et al., 2016; Radesky et al., 2014; Radesky, Kistin et al., 2016). Radesky et al. (2014) suggest this is particularly true of younger children, who rely on their parents more as sources of entertainment and security. Older children, meanwhile, appear more resourceful at entertaining themselves, and therefore appear able to tolerate greater amounts of parental smartphone absorption. Research by McDaniel and Radesky (2017) suggests that parents also perceive child behaviour as worse on days when they rate their own engagement with smartphones as more problematic. However, while parents may notice their children's negative perceptions of their smartphone use, the current study

suggests that children potentially perceive any disruption to an interaction with their parent as negative.

Parent Experiences of Smartphone Use

Three key themes were identified as part of the parent data. Firstly, parents acknowledged the conflicting role their smartphone use played in daily family life. A number of parents touched on the fact that they felt they were splitting their attention between their child and their phone throughout the day. The demand devices place on our time and attention has been explored in the literature. Radesky, Kistin et al. (2016), for instance, found many parents reported difficulty in switching their attention between the demands presented by the mobile device in the form of texts, phone calls, and notifications, and the demands presented by everyday family occurrences. The cognitive load caused by the constant demands on parents led to many reporting feeling overloaded and exhausted. Parents in this study, and in previous research (Blackwell et al., 2016; Radesky, Kistin et al., 2016) have reported feeling more satisfied and more attentive to their child's needs when their phones are switched off or are put away during time spent as a family.

Many parents claimed that they would like to engage less with their smartphone while caring for children. However, it was also acknowledged that this is sometimes difficult for a variety of reasons, including the demands of work, and the need to remain connected to friends and family outside of the home. An aspect of phone use identified by parents in the current research was the pressure to be always available, both to their employers and to friends and family. The current study suggests that while some parents may have felt the need to respond to work calls and emails at home, this pressure has been significantly exacerbated by the recent COVID-19 pandemic, as many more parents are working from home while also caring for children. Previous research (Rakow & Navarro, 1993) exploring how working mothers balanced childcare and their jobs also identified similar concerns. Mothers reported struggling to balance both their family lives and work lives, and found phones often increased the pressure to manage both lives simultaneously.

Parents in the current study also identified issues in relation to managing their own smartphone use. Parents acknowledged feeling "pulled" to their phone, even when they knew they should be attending to their child. This phenomenon of parents feeling drawn to their device is a topic which has arisen in numerous studies to date. Many parents have reported that they feel an emotional connection to their smartphone, or that their phones can act as a

source of stress relief (Johnson & Hertlein, 2019; Radesky, Kistin et al., 2016). The reason for this may possibly be attributed to the near all-encompassing role smartphones play in daily life, including allowing people to connect with others, access social media, respond to emails, participate in work, listen to music, and watch videos, along with numerous other functions (Sharaievska & Stodolska, 2017). In the current research study, many parents mentioned using their smartphone while watching television with their children. It stands to reason that a television programme or movie that is interesting and engaging to a child is not similarly interesting to an adult, and therefore the device becomes the true source of entertainment for the parent. Many parents have reported using their smartphones as a way of escaping the monotony of some day-to-day parenting tasks (Golen & Ventura, 2015; Radesky, Kistin et al., 2016; Radesky et al., 2018).

The integral role smartphones play in daily life means that smartphone use is often habitual (Oulasvirta et al., 2012), and can even develop into an addiction in some individuals (Carbonell et al., 2013). Many applications and games on mobile phones are designed to be absorbing and to prompt users to spend more time on their devices (Eyal, 2014). While parents admitted to feeling habitually drawn to their phones, they also acknowledged a number of strategies they employed to reduce phone usage, such as leaving the phone in another room, or leaving the phone on silent mode so as not to be distracted by notifications.

Comparisons of Parent and Child Experiences

It must be acknowledged that the parents and children included in this research study are not parent-child dyads. Because of this, their experiences cannot be said to be fully aligned with one another. For instance, parents who participated in the tended to be highly educated, which has implications for wider factors such as socioeconomic status (Hauser, 1994) and parenting styles (Bradley & Corwyn, 2002; Gracia, 2015; Trifan et al., 2014). However, no attempt was made to collect data from children whose parents had a high level of educational attainment. Despite these issues, there is still value in comparing findings from parent and child data.

Children identified a number of emotional responses in relation to disrupted parental interactions, including anger, sadness, and annoyance. Parents too perceived their children often reacted negatively to their smartphone use. Many parents in the current study reported instances in which their children complained about their phone use, or asked them to put their phone way. Likewise, many children in the current mentioned that they thought the main

character in the story should ask their parent to put their phone away, or request that the parent "focus on the game, and not go on her phone." Many children advocated telling the parent when they felt upset by an interruption to the parent-child interaction. Parents too acknowledged difficulties in setting boundaries for themselves and their children. Many parents recalled times when their children asked them to put away their phone, or complained about their phone use, which caused parents to implement strategies to change their behaviour.

Disrupted Interactions

While the focus of the research was on the impact of smartphones on parent-child interactions, it must be acknowledged that children perceived all disrupted parent-child interactions as negative, whether a smartphone was present or not. More specifically, some of the children's responses seemed to suggest that the children were particularly upset at the parent's lack of availability, as opposed to the fact that the interaction was disrupted. Some of the children in the current study commented that the unavailability of the parent in the story made the main character feel "useless" or "unwanted", and suggested that the main character felt left out when the parent diverted her attention elsewhere. It therefore is important to consider the potential impact of disrupted interactions in general. Indeed, we know from research to date exploring the parent-child relationship that parent-child interactions are key predictors of healthy child development across a number of domains, including the social and cognitive growth of children (Landry et al., 2001; Landry et al., 2006). Children form their understanding of social interactions and social relationships through this early bond, which has significant implications for future relationships throughout their lives (Bretherton & Munholland, 1999). A key aspect of this relationship in the responsiveness and availability of parents. Responsive and sensitive parents display good awareness and interpretation of a child's needs, and respond to these needs in an appropriate and timely manner. Responsive parenting has been seen as a critical element in determining the security of child attachment bonds (Ainsworth et al.,1978; Ainsworth, 1979).

Disrupted interactions may have consequences beyond children's emotional and social needs. A number of studies have found that inadequate supervision of children is associated with higher levels of risk-taking and dangerous behaviours in children (Palsson, 2014; Petrass et al., 2009). These behaviours may occur in a bid to obtain parent's attention, but may also occur because parents are too distracted to warn their children of the potential

danger (Boles & Roberts, 2008). It has been suggested that increased parent distraction as a result of mobile phone absorption may be a cause of increased childhood injuries (Hyman et al., 2010; Palsson, 2014).

The Smartphone as a Disruptive Agent. There are a number of daily occurences which may cause parent-child interactions to be disrupted, but that is not to downplay the particular role smartphones can play in this regard. While children in the current study appeared to have a negative perspective of disrupted interactions in general, as opposed to of smartphone disruptions in general, some research does suggest that parental smartphone use is a common disruptive agent in parent child interactions. In the current study, the majority of parents agreed that they often thought about what they could be doing on their phone while spending time with their child, and many acknowledging missing out on opportunities to play or interact with their child as a result of smartphone use. Previous research also provides evidence for this. For instance, research conducted by Vanden Abeele et al. (2020) observed 53 parent-child dyads in playground and clinic settings. It was found that 23 parents used their mobile phone at least once during the observation period, which consisted of between 12 to 25 10-second intervals. Vanden Abeele et al. (2020) found parents were less likely to respond to their children's interactions when using a mobile device, and those who did respond were less likely to do so in a timely, affective manner.

Smartphone use has clear implications for the parent-relationship. In the current study, parents reporting feeling less able to attend to their children as a result of their smartphonse use. Indeed, previous research has found that parental smartphone use is associated with lower feelings of parental connectedness to children (Kushlev & Dunn, 2018). Research with adolescents too found that they too percieved their parent's phone use as detrimental to the parent-child. For instance, Stockdale et al. (2018) found that adolescents perceived less parental warmth.

There may be a number of reasons why parental smartphone use leads to perceived lower quality parent-child interactions. In the current study, some parents felt their device use took up more of their time than they intended or wished. Indeed, time spent on smartphones detracts from potential opportunities to spend time with children (e.g., Radesky et al., 2014; Radesky et al., 2015). Secondly, the cognitive strain of multitasking caused by dividing attention between the smartphone and the child may lead to deficits in correctly interpreting and responding to children's needs (Radesky et al., 2016). Thirdly, as evidenced in the

current study, parents are under pressure to respond to demands from employers, friends and families. Phone use associated with these demands may cause parents to become stressed, which in turn leads to more terse and strained interactions with family members, including children.

Limitations of the Current Research Study

Within the parent data, a number of limitations emerged during the recruitment process. The number of males who responded to the survey was extremely limited, and is clearly not reflective of the number of fathers and male caregivers within the general population. Likewise, the educational level of parents who responded was quite high, with most parents having attended third level education. Research has shown that educational level may lead to differences in parenting styles and parenting behaviour (Bradley & Corwyn, 2002; Gracia, 2015; Trifan et al., 2014). It is therefore important to consider the potential impact of these limitations on the parent data collected, and how this may limit the generalisability of results. One reason that more mothers than fathers responded to the survey may be due to the traditional view of mothers as the primary caretakers for children. The last 30 years have seen an ongoing social change in the role of fathers in the family, with many fathers taking a more active role in coparenting (Pleck & Pleck, 1997; McBride et al., 2002). However, more recent research suggests that the burden of childcare still disproportionately falls to mothers (Raley et al., 2012), with mothers on average spending more than twice the amount of time as fathers engaging in unpaid work in the home, including childcare (Yavorsky et al., 2015).

A key limitation of the study was that the research was conducted during the COVID-19 outbreak. This pandemic impacted all aspects of the study, from data collection to the results obtained. For instance, school closures and the need to reduce social contacts as much as possible meant that recruiting participants, particularly children, was uniquely challenging in the circumstances. As a result, the number of participants that could be recruited to take part in the research was adversely affected.

Directions for Future Research

Longitudinal research may also be useful in establishing causal associations between parental smartphone use and outcomes for children. There is a myriad of confounding factors that may be impacting upon associations between parental smartphone use and child outcomes, including socio-economic factors (such as parental education and family income;

McDaniel & Radesky, 2018; Wartella et al., 2013), depression, and anxiety (Elhai et al., 2017; Newsham et al., 2020). While some studies attempted to control for confounding variables (e.g. McDaniel & Radesky, 2018), there is still the potential that some confounding may still exist. Longitudinal studies may give clearer insight into the factors at play when examining the impact of technology use on family functioning. A key argument for longitudinal research is that it explores not only the factors impacting upon the experiences and behaviours of people in the present moment, but also can expose the wider ecological systems at play that may impact upon the phenomenon being explored. With regard to the current study, it is not currently known how wider family dynamics impact on children and parent perspectives and experiences.

As mentioned, it was not possible to make direct comparisons between parent and child experiences in the current study. Future research therefore may consider studying parent-child dyads, in order to explore this area further. Parent-child dyads would be beneficial in exploring ways in which parent and child perspectives of the same events are similar, and in which ways they differ, and may provide insight into other contextual factors that influence the parent-child relationship.

Implications for Policy and Practice

The current study is largely exploratory, and therefore only tentative suggestions can be made at this point about the implications of the study on future policy and practice both within and beyond the field of educational psychology. However, the current study provides a path forward in recognising the potential need for families to establish boundaries, not only around children's screen time, but also parent's usage of smartphones and mobile devices. While parents are often given information on how to control and limit their children's media use, less is understood of limiting their own behaviours. Spending time with children may not only be beneficial for children's health and happiness, but also for parents (Bamishigbin Jr et al., 2020). Likewise, mobile device use can also be beneficial for parents and families, acting as sources of entertainment, information and stress-relief (Johnson & Hertlein, 2019). It therefore may be useful to provide guidelines outlining appropriate use of smartphones, as opposed to simply recommending parents and families restrict or reduce their smartphone usage.

Many parents in the current study also acknowledged how external pressures, such as work obligations, played a role in their smartphone use while at home. Parents reported

feeling torn between attending to their children and responding to work demands, such as emails and phone calls. The current study provide evidence that government policies and guidelines may be beneficial in reducing the lack of agency some parents feel they have over their device use while at home. Indeed, since data was collected for the current study, the Irish government has already taken steps to address this. In April 2021, a new amendment to section 15 of the *Organisation of Working Time Act 1997* came into effect in Ireland, granting workers the Right to Disconnect from work. The aims of the amendment are to provide workers and employers with clear guidelines when responding to work-related calls and emails outside of working hours, and to set an expectation that employees are not obligated to engage in work-related practice outside of normal working hours except in the case of expressly agreed parameters. Due to the recency of the legislation, it is currently unclear if the current code of practice is sufficient to reduce the stress working parents are under in managing home and work demands. However, the rationale behind the introduction of such policies is supported by the data collected in the current study, which suggests parents may require additional legislative supports in managing work demands and the expectations of employers.

Understanding the impact of parental smartphone use on children more fully may be useful in informing parent education and may empower parents to become better and more effective caregivers. Ultimately, technology is an integral part of modern living. Therefore, it is helpful to learn how to utilise technology in ways that are beneficial and conducive to positive relationships. Indeed, parents who effectively manage their device use may be able to model these skills for their children (Macy et al., 2014; Oduor et al., 2016; Radesky et al., 2016), and in turn may support children's development of key regulatory skills. Research and intervention work in this area would be valuable in the creation of guidelines and recommendations, to assist parents in developing healthy patterns of device use when spending time with family.

Conclusion

The current study was the first of its kind to explore primary school-aged children's experiences of parental smartphone use. Children identified negative emotions in relation to their parents' smartphone use but also in relation to disrupted parent-child interactions in general. Parents too found that their smartphone use disruptive when spending time with their children, and commented on the difficulties in managing their smartphone usage alongside

the pressures of daily life. Ultimately, what this study highlights is that parental smartphone use cannot be considered in isolation. Instead, it is important to consider all aspects of family functioning and the interactions that occur between family members when exploring child wellbeing.

Critical Review

Within this chapter, I will reflect upon the research process as a whole, as well as specific aspects of the process, including the ontology and epistemology that underpinned the research design, the theoretical framework that helped to give psychological meaning to the study, as well as the data collection methodology and sampling procedures undertaken as part of this research. Furthermore, within this chapter I will outline the ethical considerations that were taken into account as part of this research study, while also exploring the potential implications of this research on policy and practice within the field of educational psychology and also within wider societal contexts. Finally, an impact statement detailing what I feel to be the most critical impacts of this research is included.

Reflections on the Research Process

As a whole, undertaking this piece of research was something I found to be hugely rewarding, and was also a major learning experience. Understanding how families function and interact with each other is often a key factor in assessing, formulating, and ultimately addressing, a problem issue. Throughout my professional practice as a Trainee Educational Psychologist, the importance of the parent-child relationship has become incredibly apparent to me. The research process was extremely valuable to me in illustrating the central role this relationship plays in child wellbeing, while giving me an opportunity to explore factors that may be impacting on this relationship. I feel that while the impact of this research on policy and practice, which is discussed elsewhere in this paper, is extremely valuable to consider, I have also found that this research has impacted me in relation to my personal practice. For instance, throughout my professional placement experiences to date, I have found that I increasingly reflect on the parent-child relationship. While I was aware previously of the value of "one good adult" within a child's life, and the potential negative outcomes for children when they do not have access to this figure, I was less inclined to consider the potential ways in which I could support children and families in strengthening and restoring relationships. Throughout this research process, I have begun to see how truly valuable the parent-child relationship is, and how important in is that both parties in the relationship are consistently available to each other, to establish reciprocity and to develop securely attached bonds.

I also found my skills are a researcher greatly developed throughout this research process. Many techniques and processes utilised throughout this research process were

unfamiliar to me at the outset. For instance, I had not previously utilised short story methodology in previous research processes, and therefore was required to familiarise myself with this methodology when designing story stems. Likewise, I had no previous experience of thematically analysing data. I found that Braun's six-phase guide was extremely useful in guiding me through this process, and in helping me familiarise myself with the content and meaning of the data. I also feel the research process overall helped hone my skills as a critical researcher, as I was required to systematically review dozens of research articles, analysing the strengths and limitations in their research and thinking critically about how their findings fit with my own research question.

While the research process was enjoyable, it would be remiss of me to say that it was without challenges. In particular, it would be impossible to reflect upon the research process as a whole without acknowledging the unique circumstances in which this research took place. The entirety of data collection took place throughout 2020 and early 2021, in the midst of a global pandemic. This meant that this research project was impacted on by an unprecedented set of challenges. For instance, school closures and the suspension of other children's camps and groups meant the loss of normal recruitment channels for child participants. This therefore had an impact on the scope of the research project, as it was extremely difficult to access large numbers of participants in a timely and cost-effective manner. The sample size of child participants in the study was reduced from the initial target size I had hoped to achieve. The literature regarding what constitutes a sufficient sample size in qualitative research can vary widely, with some studies reporting an adequate sample of between five and 50 cases (Baker & Edwards, 2012; Guest et al., 2006). However, a generally agreed principle is that the data collected should provide sufficient insight into the topic of interest so that the research questions can be answered (Morse & Richards, 2002). Within the current study, it may have been beneficial to collect more child perspectives; however, it was not possible to do within the context of the pandemic and the research timeline. However, despite the small sample size I feel the data collected is incredibly rich and meaningful.

Likewise, it was important to consider the impact of the COVID-19 pandemic when analysing results. The way in which technology is used in the home has undoubtedly changed since the onset of the pandemic. For instance, many parents are now working from home, while children have also spent significant time being educated at home. It has therefore become extremely difficult for many parents to avoid using their smartphones in the presence

of their children, as they may need to respond to work calls and emails. This potentially may have caused some parents to report greater amounts of disruptive smartphone use than they would have had the study been undertaken pre or post pandemic. Some parents also highlighted the benefits of technology in allowing them to physically distance from friends and family members, particularly those who are elderly or vulnerable, while still remaining socially connected. While this is a clear advantage of family technology use, it is important to consider if parents would have chosen to reflect on this aspect of their device use if COVID-19 restrictions in relation to travel and social contacts were not in place at the time they were responding to the questionnaire. It is impossible to discern how the global pandemic and the resulting changes to daily life impacted upon the data collected in this study.

With regard to the findings of this research, I found that my opinions of parental smartphone use changed as a result of the current research, and particularly as a result of the findings of Study 1, which suggested that children were likely to view any disruptions to parent-child interactions as negative, regardless of the cause. Smartphones are a common household object that often demand our attention (McDaniel, 2019), and many parents in the current study were extremely conscious of the time spent on their phone. However, from a child perspective, while children did express dissatisfaction when their time with parents was interrupted by a smartphone, this dissatisfaction did not seem to differ in tone or intensity when considering other sources of disruption. As a result, my thinking in relation to parent-child interactions broadened, from simply considering the role of smartphones, to more widely considering all sources of disruption. While smartphones may be a common source of interruptions, there is more discussion and research needed into how parents manage interactions and negotiate interruptions in general

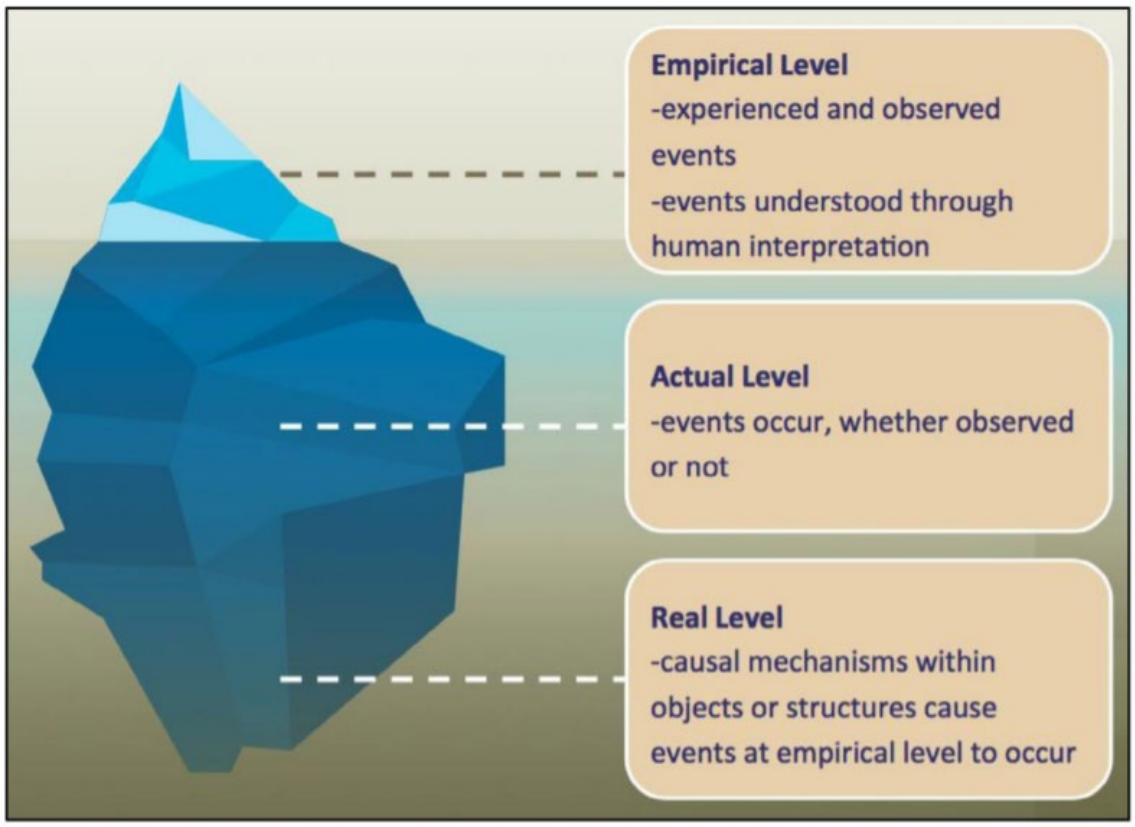
Ontological and Epistemological Approach

A key consideration in all psychological research is the ontological and epistemological position of the researcher. The ontology and the epistemology are what guide the research process, from the theoretical perspective used to provide psychological context, to the methodology and methods of data collection. For the current research, which is interested in exploring the perceptions of children and caregivers in relation to parental smartphone use, a critical realist position (Bhaskar, 1975, 1989), was adopted. Critical realists attest that there is an objective reality (Zachariadis et al., 2010). However, our understanding of this reality is mediated by a range of socio-cultural factors, which cause us

to view reality through a subjective lens. In this way, critical realism asserts it is not possible to view reality in actuality, but instead we must simply observe interpretations of that reality though subjective self-reported experiences of individuals (Guba, 1990, as cited in Robson, 2011). In this way, critical realism espouses that there are levels to our understanding and perception of reality. These levels are represented metaphorically as an iceberg in Figure 2.

Figure 2

A Metaphorical Representation of Critical Realism as an Iceberg.



Note. Image taken from Fletcher (2016).

Critical realism is a useful paradigm within the context of the current research, as it accepts that real social phenomena can be understood or accessed through social science methodologies (Danermark et al., 2002). Indeed, critical realism espouses the formation of theories "which can be more or less truth like" (Danermark et al., 2002, p. 10) and can further our understanding of the social events and activities through their application and analysis. (Archer et al., 1998). Within the current study, attachment theory (Ainsworth, 1991; Bowlby, 1958) is used to further understand the social elements at play when considering parental smartphone use and the impact this has on parent-child relationships.

Critical realism was considered an appropriate paradigm to adopt in relation to the current research project in particular, as it acknowledges that individual experiences are a result of social processes (Cromby & Nightingale, 1999) - a major strength of the epistemology. When examining the current research topic, a vital element of the study is determining how both parent and child beliefs about their interactions impact upon their shared experiences or these interactions. This is an important consideration when exploring the human experience (Steedman, 2000).

An alternative approach in this research would be a relativist or social constructionist epistemology which is often seen as oppositional to the realist paradigm (Levers, 2013). Relativist ontology espouses that reality is a subjective experience, which exists in the thoughts and perceptions of individuals (Denzin & Lincoln, 2005). In other words, reality is in its essence what an individual experiences it to be (Guba & Lincoln, 2005), meaning that there are as many realities as there are people. In this way, each person's perception of reality is highly subjective, as no two people can view reality in precisely the same way (Stajduhar et al., 2001). However, due to the exploratory nature of the current study, it was deemed more appropriate to accept parent and child reports of their experiences as relatively truthful accounts, instead of examining how their perceptions might be socially constructed through their interactions with others, as in social constructionism (Kelly, 2017) It was determined that a critical realist lens was thereby more appropriate for the research question and the phenomenon being explored in the current research.

Research Framework

Attachment Theory

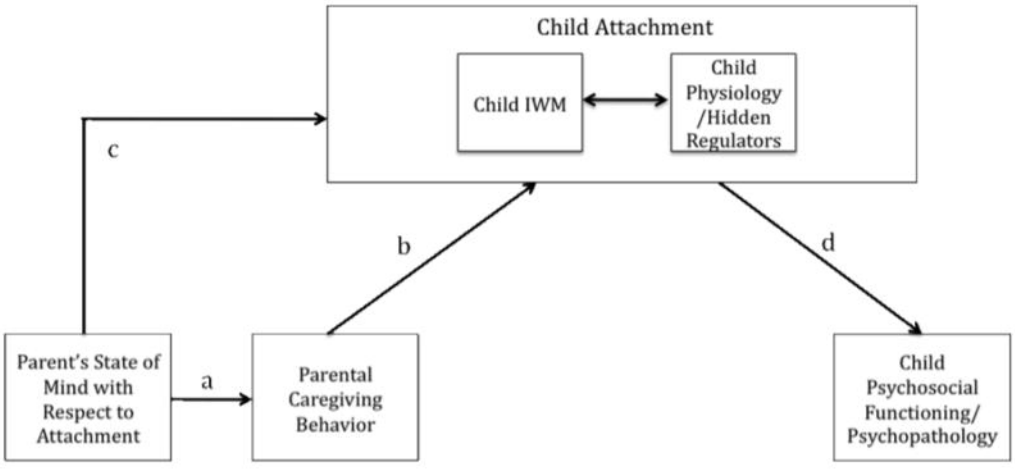
The research framework is the theoretical perspective that underpins the research. Within the current study, attachment theory (Ainsworth, 1991; Bowlby, 1958) was adopted as the theoretical framework. A core principle of attachment theory is that human beings seek proximity towards significant others in their lives. These significant others become attachment figures, who provide individuals with a sense of safety and security (Sroufe & Waters, 1977). However, these attachment bonds can be threatened and made less secure when the attachment figure is unavailable or unresponsive (Bowlby, 1982). Therefore, the quality of the attachment relationship and the perceived security of the relationship is highly contingent on the caregiving provided by the attachment figure (Weinfield et al., 2008). The

establishment of attachment bonds and their impact upon interpersonal behaviour are further illustrated in Figure 3.

Attachment theory is a long-established theory underlying much of the research in psychological literature exploring the nature of parent-child relationships (e.g. Bradford et al., 2017; Coleman, 2003; Enlow et al., 2014). Initially, much of the focus of attachment bonds focused on early childhood development (e.g. Ainsworth et al., 1978; Bornstein et al., 1985). However, later research demonstrates the importance of attachment bonds in later childhood, and even in adulthood (e.g. Ainsworth, 1989; Kerns, 2008). Indeed, Bowlby (1987, as cited in Ainsworth, 1990) argued that in middle childhood, the behavioural systems underpinning attachment begin to shift from a proximity-focused model to an availability-focused model. According to Kerns, "compared with an infant, a child is content with longer separations and increased distance from the attachment figure, as long as the child knows it is possible to make contact with the figure … and to reunite with the figure if needed" (p. 367). Children also develop cognitive models of themselves and their attachment figures (Mayseless, 2005, Kerns et al., 2005), and begin to develop an understanding of the role and nature of attachment bonds. This is salient to the current research study, in which children specifically are asked to comment on a parent who is unresponsive and unavailable as a result of smartphone use. It is worth noting that some of the studies included in the literature review also used attachment theory as a conceptual model for their research (e.g. Golen & Ventura, 2015; Wolfers et al., 2020).

Figure 3

A Simple Model of Attachment Processes



Note. IWM stands for Internal Working Model. Figure taken from Cassidy et al. (2013).

Alternative Theoretical Perspectives

There are a number of theoretical models that may have also been considered as conceptual frameworks for the current research study. The potential benefits of these theories as well as their limitations are discussed below.

Social Learning Theory. Three studies included in the literature review (Hong et al., 2019; Liu et al., 2019; Xie et al., 2019) noted the role of social learning theory (Bandura, 1977) in parental smartphone use and child development. According to this theory, children learn and are informed by the actions of those around them, generally parents and caregivers. Indeed, the role of social learning theory is important to consider when determining how parental smartphone use impacts on children. Research has shown that children and adolescents whose parents engaged in higher levels of smartphone use were also more likely to engage in high level of smartphone use themselves (Hong et al., 2019; Liu et al., 2019; Xie et al., 2019). This is an issue as elevated smartphone use can often lead to problematic patterns of device use and smartphone addiction (Chang et al., 2019; Haug et al., 2015), which is associated with a number of adverse outcomes (Bianchi & Phillips, 2005; Bohnert & Gracia, 2020; Kim et al., 2009; Lee et al., 2014). However, this theory potentially is more useful when determining long-term outcomes of parental smartphone use on children, instead on the in-the-moment feelings and perspectives of children and parents.

The Domestication Model. The domestication model (Haddon, 2011) is a model which examines the role of technologies in everyday life, a core area also examined by the current research study. Domestication theory emerged from anthropological (Douglas & Isherwood, 1980) and consumption (McCracken, 1990) research, with a focus on examining the symbolic meaning of material technologies on our lives. According to Haddon (2011) the domestication model attempts to consider why people chose to use certain technologies, and also attempts to conceptualise "what the technologies and services mean to people, how they experience ICTs, and the roles that these technologies can come to play in their lives" (p. 312). To do this the domestication model advocates a qualitative approach, asking people to explain their actions and reasons in relation to technology use through the use of interview schedules. However, Haddon (2011) points out that other variables such as wider values and aspirations, socioeconomic factors, and interpersonal relationships must also be taken into account. This model may have been helpful in the current study in providing a framework for determining the role of smartphone use within families. Indeed, the wide-ranging applications

of smartphones and the positive and negative impacts this can have on family life are an important consideration, and exploring family functioning in greater detail may be beneficial in enhancing our understanding of the role of smartphones in everyday life. However, it was ultimately determined that the parent-child relationship and the impact of disruptions to this relationship was a key focus of the current study, as opposed to simply the place of smartphones within the family context.

The Sociotechnological Model. One of the most comprehensive models relevant to the research topic is the sociotechnological model (Lanigan, 2009). The focus of this model is to conceptualise the effect of technologies on family life, including how families communicate with each other, spend time together, and maintain boundaries. The model recognises the complexities of technology within family life, considering both the positive and negative roles technology plays in family functioning. However, it was felt the scope of this model was potentially too broad for the current research study, which attempted to look more specifically at disrupted parent-child interactions.

Grounded Theory. An alternative approach to establishing a theoretical framework for this research was to explore using a Grounded Theory approach (Glaser, 1978; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Grounded Theory potentially would have had many merits for this research, due to the fact that this topic area subsumes many of the psychological theories discussed above. As the nature of the current research study is largely exploratory, a new theoretical model which encapsulates not only the impact of technology, but also the specific perspective of the parent-child relationship may have been appropriate. However, it was felt throughout the research project that attachment theory was sufficiently reflective of the data and themes that emerged during the literature review process, as well as throughout analysis of the data that was gathered as part of the current research project.

Research Design, Data Collection and Sampling

Research Design

In order to explore child and parent perspectives of parental smartphone use, two research studies were designed. Study 1 focused on child perspectives, while Study 2 explored the perspectives and experiences of adults. Both studies were qualitative in nature, with some basic descriptive statistical elements provided using the DISRUPT scale in Study 2 (McDaniel, 2016; McDaniel, 2020). Qualitative research is a common methodological approach employed in psychological research (Rennie et al., 2002). According to Rennie et

al. (2002), qualitative research is “more subjective than quantitative research; more exploratory than confirmatory; more descriptive than explanatory; more interpretive than positivist” (p. 179). Due to the lack of empirical evidence currently in relation to children’s perceptions of parental smartphone use, as well as limited accounts of caregiver experiences, the nature of the current study was deemed to be exploratory, which supports the rationale behind adopting a qualitative approach (Bryman, 2012). Some critiques of qualitative research have been noted. For instance, some researchers point to limited generalisability or transferability of findings as a criticism of the approach (Guba & Lincoln, 1989). This is due to the fact that it is not possible to determine from qualitative data if the phenomena found are statistically significant. However, other researchers argue that statistical significance is not a true measure generalisability, and that generalisation is instead "an act of reasoning that involves drawing broad conclusions from particular instances – that is, making an inference about the unobserved based on the observed” (Polit & Beck, 2010; p. 1451). Payne and Williams (2005) claim that to “generalize is to claim that what is the case in one place or time, will be so elsewhere or in another time” (p. 296). Within the current study, there is nothing to suggest that the data collected would not be representative of the perspectives and experiences of many children and their parents in the Irish context. A further criticism of qualitative research is that it is often seen as time-consuming and labour intensive, due to the fact there is often a need to transcribe data, listen to long audio tracks, and review findings multiple times to explore new topics or ideas as they emerge (Braun & Clarke, 2013). However, the use of online questionnaires limited the burden on the researcher to transcribe data, and did not prove to be a significant drawback in the current study.

It is worth noting the design of the current study was significantly impacted by the ongoing COVID-19 pandemic and the resulting restrictions. Initially, it was envisaged that data would be collected in Study 1 between March to June, 2020, with data for Study 2 collected between September to December 2020. This would have potentially allowed for the questions in Study 2 to be amended based on the results of Study 1, to be more reflective of children’s responses and to probe parents’ views in relation to these responses. However, this was not possible within the current study, as schools and clubs where child participants might be accessed were closed from March to September 2020, meaning data collected was delayed until October 2020.

Methodology

Story Completion Methodology. A story completion methodology (Kitzinger & Powell, 1995) was chosen to elicit children's responses. This methodology was not utilised in any of the studies identified in the literature review, suggesting it is quite novel for studies on this topic. Story completion has been described as a projective technique, in which respondents are asked to respond to somewhat ambiguous stimulus information, in order to produce a response that is reflective of their real values and attitudes. However, while story completion may have initially been developed as a projective methodology (see Rabin & Zlotogorski, 1981), its uses have expanded beyond this and story completion is now viewed as a legitimate and useful qualitative methodology (Clarke et al., 2019). Braun and Clarke (2013) suggest that story completion is particularly suited to studies examining understanding and perceptions, as in the current study. Indeed, a key use of story completion, as posited by Hannah Frith in Braun et al. (2019)'s discussion of the methodology as a data collection tool, is that "it allows people to say things they wouldn't say face to face, and they wouldn't say about themselves" (p. 3). One of the major benefits of story completion is it imbues participants with a sense of freedom. As participants are not in theory writing about themselves or about any real person, it enables them to discuss whatever they like, without fear of real-life pushback or consequences. This indirect manner of gathering data is often useful in reducing the impact of social desirability bias on participant responses (Fisher, 1993). Indeed, Kitzinger and Powell (1993) summarise the core concept behind projective methodologies such as story completion, saying "people ascribe their own motivations, feelings and behaviours to other persons in the stimulus material, externalising their own anxieties, concerns and actions through fantasy responses" (p. 348).

How a story stem is designed is vital to the success of story completion as a data collection tool, and was an important consideration in the current research. Braun and Clarke (2013) provide a six-step guide for writing story stems. Firstly, it is important to determine how much information participants are presented with in the story stem. Story stems in literature can vary hugely in their length from as little as a sentence or two (e.g. Tischner, 2019; Whitty, 2005) to a long paragraph (e.g. Beres et al., 2019; Livingston & Testa, 2000; Moore et al., 1997). Ultimately, the length of the story stem and the information provided must be sufficient so that the story has meaning for the participants. In the current study, the age of the participants meant that a longer story stem might be required to provide them with enough information to ensure they answered in a way that was meaningful to the research question. The second step in Braun and Clarke's (2013) guide is to ensure the scenario and

the characters within the scenario are relatable to the target participant group. In the current situation, this meant providing children with a scenario that was familiar to them, or that they could easily envisage (i.e. playing a game with a parent). The third step involves ensuring the scenario is broad enough so that a range of potential participant responses can be collected, to allow for a richer data set. The fourth step involves ensuring that the story stem is sufficiently ambiguous, to allow participants to respond and make assumptions across a range of different elements of the story. The fifth step of designing a story stem involves considering how much direction to give participants in writing their stories. If it is important that participants respond in a particular way, then participants may need to be directed to include certain information in their story. For instance, the current research focused on the in-the-moment response of the child to the disrupted interaction. Therefore, children responding to the story stem were specifically asked to write what happens next in the story. The final step of Braun and Clarke's (2013) guide is to consider how important it is for participants to empathise with the character or characters in the story. If it is important that participants should consider a particular character's point of view over another character, then the story stem should make it clear which character should be the focus of participants' attention. For instance, in the current study, children were guided to consider the perspective of "Sam", the child in the story, by explicitly asking them to consider how Sam feels.

Story completion methodology was a particularly useful method of data collection within the current study for a number of reasons. Firstly, in their guide, Braun and Clarke (2013) identify the flexibility and adaptability of the methodology when designing story stems for populations of various ages and ability as a major strength. Story completion was particularly useful in the current study in enabling children to engage and respond meaningfully to the topic of interest, using language and situations that were familiar and relatable to them. Another key strength of the methodology as it was used in the current study is that it captured the voice of the child in the research. Many studies of child experiences rely on parental reports. The current study gave children an opportunity to write about their own thoughts and viewpoints, without these being filtered through an adult lens.

It is worth noting that the story stems designed for the current study (see Appendix G) focused on a disrupted parent-child interaction. Children were therefore asked to respond to the disruption, as opposed to responding to the lack of parent availability as a result of the disruption. Further research in this area may use story stems designed to focus more specifically on parent availability, particularly in light of the results of Study 1. Within this

study however, although not specifically asked, many of the children's responses did reflect that they noticed and had negative perceptions of the parent's lack of responsivity. For instance, one child commented "I think Sam feels unwanted and sad… because she was just not really listening," while another wrote "I think Sam feels left out." Revision of the story stems utilised in the current research might be useful in exploring this phenomena further, and gaining additional insight into children's perceptions of parent availability and responsiveness.

Online Parent Questionnaire. Parent responses were collected using a questionnaire. This questionnaire consisted of a quantitative measure of parental distraction as a result of device use, the Distraction in Social Relations and Use of Parent Technology (DISRUPT; McDaniel, 2016; McDaniel, 2020), as well as open-ended questions which offered parents the opportunity to describe their experiences of device use when caring for children qualitatively. The advantages and disadvantages of these measures and how they were applied in the current study are discussed below.

Distraction in Social Relations and Use of Parent Technology. The DISRUPT (McDaniel, 2016; McDaniel, 2020) is a self-report measure consisting of four items, with caregivers asked to report on their problematic mobile phone use when caring for children. Participants are asked to rate their responses to each item using a six-point Likert scale, where one indicates strongly disagree and six indicates strongly agree. The responses across all four items are then averaged to give an overall score, with a higher score being indicative of increased problematic smartphone use by parents and caregivers. McDaniel (2020) found that the measure showed very good reliability when tested across two studies (see Table 8). The Cronbach's alpha for the current study also indicates a high level of internal reliability ($\alpha = .89$).

Table 8

Reliability of the DISRUPT (McDaniel, 2020)

	Study 1	Study 2
Mothers (Cronbach's alpha)	.88	.91
Fathers (Cronbach's alpha)	.90	.83

The use of the DISRUPT in the current study was extremely valuable in quantifying parent perspectives of their smartphone use. The data obtained from the DISRUPT was useful in contextualising the qualitative parent responses, and giving insight into the number of parents who agreed that their smartphone use was problematic, as opposed to merely focusing on descriptions of problematic events.

Qualitative Survey. There are a number of key strengths of qualitative surveys, which were useful within the context of the current research. Firstly, qualitative surveys allow respondents to answer questions using their own language and terminology (Braun et al., 2020), a key strength of qualitative research (Polkinghorne, 2005). The current study gathered the perspectives of parents of their own smartphone use within their own homes. Being able to describe their experiences using their own words and in a way that was meaningful to them was vital in assessing the true impact of smartphone use on parents and families, and was a strength of the current study. Qualitative surveys are also quick and inexpensive to administer (Braun & Clarke, 2013) and the online nature of the survey eliminated the need for face-to-face contact with participants, a key concern at the time of data collection, when the COVID-19 pandemic reduced opportunities for face-to-face contact.

However, while qualitative surveys are useful data collection tools, they also have their limitations. For instance, surveys are inflexible. All participants are asked all questions in the same manner, and there is no scope within surveys to probe particular responses further or request more detail as in interactive data collection methods such as interviews (Frith & Gleeson, 2008). Within the current study, it may have been useful to probe parent experiences in greater detail. For instance, while some parents reported that their smartphone use interrupted an interaction with their child, some information around the context of these interactions (e.g. what the interaction was about, how long the interaction was disrupted) was not always given. An alternative methodology, such as an interview, may provide the researcher with greater opportunities to probe participant responses and gather more contextual information. The advantages and disadvantages of particular types of data collection methods are further illustrated in Figure 4.

Figure 4

The Pros and Cons of Different Qualitative Survey Methods

	Pros	Cons
Hard copy	Data can be collected in a structured way (e.g. student participants complete surveys during a teaching session), which can increase sample size	*Potentially* limited anonymity
	Easiest for participants to do drawing tasks	Data entry required
	If using postal distribution, can send reminders to increase participation	Costs associated with postal distribution (e.g. to post 60 surveys in the UK, and include SAEs for returning the survey, would cost around £90 based on 2012 prices; further costs associated with sending reminders)
		Excludes participants with limited literacy skills
Email	Hand-writing or electronic completion options	Potentially limited anonymity
	Good for geographically dispersed participants	Participants need computer access and skills
	Potential for follow-up data collection (depending on research design)	Risks excluding marginalised groups (those not online or with limited literacy skills)
	Can send reminders to increase participation	Data collation required
		If electronic completion, difficult for anything other than textual responses
Online	Quick and easy distribution	Needs computer access and skills
	Highest level of anonymity	Risks excluding marginalised groups
	Good for geographically dispersed participants	Follow-up data collection and sending reminders less possible
	Great for using with (colour) images and audio and video clips	Difficult for anything other than textual responses
	Potentially very quick data collection	Data output formats may be restrictive, especially if working with large samples
	No need for data entry or collation	
	Potential to start data coding in the programme	

Note. Image taken from Braun and Clarke (2013).

Sampling

The purposive sampling approach utilised in the current research is considered useful within qualitative research, as it particularly enables the researcher to access individuals who are knowledgeable about or have experience of the topic of interest (Cresswell & Plano Clark, 2011). This sampling approach therefore maximises the efficiency of the data collection process, by purposively recruiting participants who are likely to provide meaningful responses to the research question (Morse & Niehaus, 2009). Within the current study, there are a number of reasons why a purposive sampling approach was selected.

Firstly, the current research was looking specifically at the perceptions and experiences of two distinct populations – primary school children in third, fourth and fifth class, and parents with a child under the age of 12. Purposive sampling enabled the researcher to access participants who would be able to report on experiences relevant and meaningful to the research question. Purposive sampling can also be useful in ensuring participants are recruitment and data is collected within a set timeframe. This was extremely useful in the current research study, as there was limited time available for data collection and ensuring participants were recruited within a time sensitive manner was critical.

Data Analysis

Qualitative data was analysed using thematic analysis (Braun & Clarke, 2006). A key determination when selecting a thematic analytic approach for the current study was to consider the ontological and epistemological position of the research, and the methodology employed in the research process. The current research is framed within a critical realist paradigm which is not said to be associated with any particular method of data collection and analysis (Fletcher, 2016). A key strength of thematic analysis is its flexibility (Braun & Clarke, 2006). As already mentioned, thematic analysis is an extremely adaptable approach, that can be used with a various epistemological positions and methodologies. Additionally, theoretical perspectives can be applied to thematic analysis flexibly (Braun & Clarke, 2006; Clarke & Braun, 2013; Willig, 2013), due to the inductive or deductive approaches to analysing data. Deductive approaches are "top-down" and theory-driven. In this way, the researcher brings with them a pre-formed series of concepts which they then attempt to map on to the data collected in the research process. Inductive research, meanwhile, uses a "bottom-up", data driven approach, in which a social phenomenon is observed, data is collected in relation to that phenomenon, and a theoretical approach is used to understand findings within a social context. The current study applied the theory of attachment (Ainsworth, 1991; Bowlby, 1958) to frame the data collected within a psychological context and to make sense of the findings. Thematic analysis was useful in supporting this theoretical-led understanding of the data, as it enabled the researcher to identify themes within this attachment-informed lens.

A potential criticism of thematic analysis is the fact that thematic analysis does not, by design, require intercoder reliability when searching for codes and themes. While interrater reliability checks are sometimes performed, particularly in deductive coding

processes, the interpretation of a single researcher is generally considered sufficient when determining themes. Terry et al. (2017) argue, however, that this is not a true weakness of thematic analysis. Instead, theme development is explicitly acknowledged in the analytic process as a subjective process that is open to the interpretation of the researcher. Interrater reliability with regard to thematic analysis only serves to show that two researchers have been trained to code data in the same way (Braun & Clarke, 2013). Instead, the quality of the themes developed is determined by level of consideration the researcher gives to the development of potential themes, and to the revision of these themes (Braun & Clarke, 2006).

An alternative method of data analysis that was considered during the research process was content analysis (Neuendorf, 2002). Like thematic analysis, content analysis involves coding discrete pieces of data. However, content analysis generally uses these codes to then explore how often certain ideas occur within a piece of text or transcript, and does not lead to the formation of themes. As a vital aspect of the current research project was to explore patterns of information identified across themes, in order to gain insight into social phenomena in relation to smartphone use. Thematic analysis was therefore a more appropriate method of data analysis within the current study.

Ethical Considerations

All psychological researchers have an obligation to ensure that the practices employed during research are ethical, and that the rights, dignity, and safety of participants are protected. In Ireland, the Psychological Society of Ireland (PSI; 2019) has produced a Code of Professional Ethics by which all psychological researchers in the state are expected to abide. This current study was also approved by the Mary Immaculate Research Ethics Committee (MIREC), to ensure potential ethical issues were identified and addressed in the design of the research study (see Appendix H).

Ethical considerations are particularly important when working with vulnerable populations, which include children and young people. Within the current study, care was taken to consider the perspectives of parents and to minimise the potential for distress among families. It was acknowledged that some parents may feel uncomfortable with their children commenting directly on their own smartphone use. However, the methodology employed was useful in assuaging these concerns, as it was made clear to parents through the information sheet that children would only be asked to comment on a hypothetical scenario, and would not be asked to disclose any information about their own parents' smartphone use.

Additionally, a child-friendly information sheet was also sent to parents, so that children were also fully informed of the research process. Children were then asked to assent to participating in the research, and were made aware that they could decline to participate without consequences. A further ethical strength of the research was to ensure all data collected was anonymised, and that no information that could identify parents, children, or schools was reported as part of the research process.

In recent years, there has been a move away from viewing children as merely objects of interest, to actively including their voice in the research process (Harcourt & Einarsdóttir, 2011; Mayall, 2000). This involves a move away from parent report measures of child wellbeing to methodologies which capture the child's own voice (Nilsson et al., 2015). The current research study attempted to uphold a child-centred approach by utilising a methodology that was likely to be engaging and appealing to children, and that offered them an opportunity to give their perspectives on a social issue which impacts them. Throughout the research process, children were not asked directly to report their experiences of their parents' smartphone use. Instead, they responded to hypothetical scenarios created by the researcher, thereby transposing their own views and experiences onto a fictional character, and reducing the potential for them to become upset when completing the story. This child-centred approach can be seen as an ethical strength of the research, allowing children to give their own perspectives in a way that was unlikely to cause them distress or discomfort.

When applying to MIREC for ethical approval, every effort was made to consider possible ethical dilemmas that might arise during the research process and to put safeguards in place to ensure the wellbeing of participants in the research project was adequately protected. However, despite these precautions, an unforeseen ethical dilemma arose due to the coronavirus pandemic. As a result of this pandemic, I was forced to consider my own physical presence in classrooms and schools as a potential health and safety concern. There were also restrictions on travel for nonessential purposes, with the public asked to restrict their movements significantly for long periods. As a result, it was not possible for me to be in classrooms during the data collection process, and instead teachers were provided with detailed instructions and were asked to collect data in my stead. This was seen as a necessary precautionary step to reduce the potential of physical harm and illness to the researcher and to the participants.

Policy, Practice and Future Directions

As mentioned in the discussion of the Empirical Paper, this research is exploratory in nature. Therefore, further research may be required before significant policy and practice initiatives can be undertaken. However, the current study does provide a direction for these future studies, and for the development of policy in relation to this issue. The current study does also have implications for practicing educational psychologists. Potential implications of this research are discussed below.

Implications for Policy

Child screen time and sedentary screen-based behaviours are associated with a number of adverse outcomes (Allen & Vella, 2015). Numerous bodies, therefore, both in Ireland and internationally, have introduced guidelines to parents on managing or limiting their child's screen time. The World Health Organisation (WHO; 2019), for instance, issued guidance on the recommended amounts of physical activity and sedentary behaviours children under five years of age should engage in. As part of these guidelines, the WHO recommend that infants aged one year or younger should not engage in any screen time, while screen time for children aged two years and older should be limited to a maximum of one hour per day. Likewise, in Ireland, the Health Service Executive (HSE; 2018) offer advice on their website, recommending parents limit their children's screen time and put appropriate boundaries in place. However, while these organisations have published advice in relation to children's screen time and device use, information for parents on managing their own device use is currently extremely limited. No advice is given to parents in relation to managing their own device use behaviour. The current study suggests that there is a need for more guidance in this area to ensure parents are given adequate direction and support in managing all aspects of technology use in the home. Specifically, parents may need more guidance in managing boundaries around their own device use, ensuring there are times throughout the day where they are consistently and reliably available to their children.

This current study also highlights a potential need for more government led policies and initiatives to support family functioning in general. The parent-child relationship is critical in child development, and in ensuring positive outcomes throughout childhood and beyond. Despite this, economic, educational, and diverging leisure interests may cause parents and children to spend significant time apart. The Government of Ireland has recognised the valuable role parents play in supporting children's development, particularly

in early childhood, by introducing the *First 5* strategy in 2019. This is a 10 year, across-government strategy aimed at promoting child wellbeing and development in the early years. The strategy aims to do this by providing information and guidance to parents to "promote healthy behaviours, facilitate positive play-based early learning and create the conditions to form and maintain strong parent-child relationships" (p. 10). The results generated from the current study, may be useful in informing such government guidelines and recommendations in future. Future government initiatives may focus more specifically developing guidelines for families to encourage them to spend more time together, and to help parents acknowledge the special role they play in their child's development.

As previously discussed, the Right to Disconnect policy, which was recently introduced, affords parents legal protections to disconnect from work and to ensure parents do not feel obligated to respond to work calls and emails outside of set working hours. The pressures of balancing work and home was a key concern identified by parents in the current study. The value and usefulness of such legislation for parents is strengthened by the findings of the current research, which suggests parents do need support in disconnecting from work when at home.

Implications for Practice

The results of this study also have implications for the applied practice of educational psychologists. Within educational psychology, and indeed the field of psychology in general, there has been a move away from "pathologizing" social, emotional, and behavioural difficulties in children. The traditional approach when considering these issues was to rely on the medical models of disability and mental health. These models are often rooted in a biological understanding of problem issues and disorders, suggesting they may have a physical cause. However, current thinking in educational psychology moves beyond these "within-child" factors to consider the wider ecological systems that may be contributing to the problem issue, in line with Bronfenbrenner's (1977) ecological systems theory. The family system, in particular, has been long understood to be one of the most impactful systems with regard to child development (Silber, 1989), and therefore it is important that this system is taken into consideration when assessing a problem issue and devising a formulation. The current study examines disruptions to the parent-child relationship in particular, a central relationship within this system.

This research highlights the potential need for educational psychologists, when working with families, to consider the parent-child relationship and the barriers to developing securely attached, reciprocal relationships. Educational psychologists have a role to play in providing non-judgemental support, and in helping to strengthen and restore parent-child bonds. These bonds may have come under threat from influences that are external to the family system, such as the demands of work, but also can involve internal behaviours that can be detrimental. Device use, in particular, may act as a barrier to parent-child interactions, and educational psychologists have a role to play in educating parents and families, and in supporting them to develop new, healthier habits as a family. Parent training and workshops are a key element of the work of educational and child psychologists in Ireland, as they provide opportunities for psychologists to disseminate their own psychological theory and knowledge to others in order to support them and to effect change (e.g. McGilloway et al., 2012). Providing parents with knowledge about how to manage their smartphone use effectively and reduce harmful impacts on family functioning may be a useful application of the findings of the current study within psychological practice. Additionally, this research suggests a need to support parents in managing all disruptions to interactions with their children, and to limit unnecessary or extraneous interruptions as much as is possible within the day-to-day functioning of family life. Although disruptions to parent-child interactions are inevitable and are often understandable, they may still cause children to be negatively impacted. The educational psychologist may therefore play a role in supporting parents in learning how to manage these disruptions, and to minimise any potential negative impact as much as is possible.

Future Directions

To the author's knowledge, this research study is the first in both Irish and international literature to explore child perceptions of parental smartphone use, and is the first study to explore parental smartphone use in the Irish context. As a result, there are numerous avenues for future research, building on the findings of this current study.

It is also worth noting that this research utilised an exciting and engaging methodology to elicit child perspectives. Story completion tasks present an interesting method to psychological researchers when exploring child experiences. Within the current study, a comparative model was used to explore children's reactions to a series of different events. Future research may consider expanding this model to include a larger sample of

participants, but also to include a larger number of story stem scenarios for children to respond to. For instance, the current study focused on the interaction between a mother and her child across three disrupted interaction conditions. Future research, however, may utilise story stems to compare and contrast child reactions to maternal versus paternal smartphone use, or even parental smartphone use versus the smartphone usage of grandparents, siblings, or other individuals in a child's life.

The present study, as with other research exploring parental smartphone use, suggests that smartphones may cause disruptions to parent-child interactions. It is theorised that this in turn impacts upon relationship quality, parent responsiveness, and children's perceptions of parental warmth (e.g. Kushlev & Dunn, 2019; Stockdale et al., 2018), which are often associated with secure attachment (Ainsworth, 1973). However, as McDaniel (2019) alludes, current studies do not prove causality between disrupted interactions due to parental smartphone use and lower levels of secure attachment. Longitudinal research therefore may be beneficial in exploring this further.

Conclusions

This critical review of the research process has given me an opportunity to reflect upon my experiences of this research project as a whole. The process is characterised by a series of choices and informed decisions that I was required to make as a researcher. The ontological and epistemological paradigms adopted at the outset were useful in selecting an appropriate methodology and in guiding the research process. While this research was not without its challenges, it was ultimately a rewarding and valuable piece of work to undertake.

Impact Statement

The current study aimed to explore child and parent perspectives and experiences of parental smartphone use. Despite the wealth of research exploring child screen time, and the negative impacts of overexposure to device use on all age groups, little research to date has looked specifically at parental smartphone use. Considering the prominent role these devices play in daily life, further investigation of this issue in the current research study was warranted. The current study adds to the existing empirical literature on parental smartphone use, while also contributing new information in two key areas. Specifically, this research is, at this current time, the only study which specifically aims to capture the voice of the primary school-aged child.

Additionally, this research contributes substantially to the understanding of parental smartphone use within an Irish context. This is an important area of research, as a wealth of research shows how important the parent-child relationship and parent responsivity is to child development (e.g. Shrofe, 2005). Parental smartphone use among Irish adults is increasing (Gibney & McCarthy, 2020), and this has implications for parent-child interactions. As in international literature (e.g. Johnson & Hertlein, 2019; Kushlev & Dunn, 2019; Radesky, Kistin et al., 2016), parents in Ireland feel their smartphone use has implications for family functioning. Irish parents report smartphone use often leads to disrupted child interactions, while children report negative emotions in relation to parent smartphone use.

The research also impacts on the applied work of educational and child psychologists. Considering the parent-child relationship and the impact of disruptions of this relationship is important when supporting children and their families. For educational psychologists, there is a significant role to play in educating parents and supporting them to develop responsive, sensitive parenting practices. Additionally, this research highlights the potential need for government initiatives to educate parents and to support them in developing high quality interactions with their children.

It is acknowledged that this research is largely exploratory in nature. It is therefore hoped that a further impact of this research would be to encourage further exploration of this topic in future empirical studies.

References

Achenbach, T.M, & Rescorla, L.A. (2000). *Manual for the ASEBA preschool forms and profiles*. University of Vermont, Department of Psychiatry.

Ainsworth, M. D. S., & Bell, S. M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development*, *41*(1), 49-67. https://doi.org/10.2307/1127388

Ainsworth, M. D. S. (1973). The development of infant-mother attachment. In B. Cardwell & H. Ricciuti (Eds.), *Review of child development research* (Vol. 3, pp. 1-94). University of Chicago Press.

Ainsworth, M. S. (1989). Attachments beyond infancy. *American Psychologist, 44*(4), 709–716. https://doi.org/10.1037/0003-066X.44.4.709

Ainsworth, M. D. S. (1990). Epilogue: Some considerations regarding theory and assessment relevant to attachments beyond infancy. In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years* (pp. 463–488). University of Chicago Press.

Ainsworth, M. D. S. (1991). Attachments and other affectional bonds across the life cycle. In C. M. Parkes, J. Stevenson-Hinde, & P. Marris (Eds.), *Attachment across the life cycle* (pp. 33-51). Routledge.

Ainsworth, M. D. S., & Bowlby, J. (1991). An ethological approach to personality development. *American Psychologist*, *46*, 333-341. https://doi.org/10.1037/0003-066x.46.4.333

Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation*. Psychology Press.

Al-Daihani, S. M. (2018). Smartphone use by students for information seeking. *Global Knowledge, Memory and Communication*, *67*(4/5), 194-208. https://doi.org/10.1108/gkmc-01-2018-0008

Allen, M. S., & Vella, S. A. (2015). Screen-based sedentary behaviour and psychosocial well-being in childhood: Cross-sectional and longitudinal associations. *Mental Health and Physical Activity*, *9*, 41-47. https://doi.org/10.1016/j.mhpa.2015.10.002

Antonucci, T. C., Ajrouch, K. J., & Manalel, J. A. (2017). Social relations and technology: Continuity, context, and change. *Innovation in Aging*, *1*(3), igx029. https://doi.org/10.1093/geroni/igx029

Arbona, C., & Power, T. G. (2003). Parental attachment, self-esteem, and antisocial behaviors among African American, European American, and Mexican American adolescents. *Journal of Counseling Psychology*, *50*(1), 40-51. https://doi.org/10.1037/0022-0167.50.1.40

Archer, M., Bhaskar, R., Collier, A., Lawson, T., & Norrie, A. (1998). General introduction. In M. Archer, R. Bhaskar, A. Collier, T. Lawson, & A. Norrie (Eds.), *Critical realism: Essential readings* (pp. ix–xxiv). Routledge.

Atlı, S., Gunuc, S., Kuss, D., & Baran, G. (2019). Impact of parents' technology use on 18-to 24-month-old infants' adaptive behaviors. *Adaptive Behavior*, *27*(3), 197-219. https://doi.org/10.1177/1059712319845340

Baishya, K., & Samalia, H. V. (2019). Factors influencing smartphone adoption: A study in the Indian bottom of the pyramid context. *Global Business Review*, *21*(6), 1-19. https://doi.org/10.1177/0972150919856961

Baker, B. L., Blacher, J., & Olsson, M. B. (2005). Preschool children with and without developmental delay: behaviour problems, parents' optimism and well-being. *Journal of Intellectual Disability Research*, *49*(8), 575-590. https://doi.org/10.1111/j.1365-2788.2005.00691.x

Baker, S. E., & Edwards, R. (2012). How many qualitative interviews is enough? *National Centre for Research Methods*. Retrieved from http://eprints.ncrm.ac.uk/2273/

Baker, S., Sanders, M. R., & Morawska, A. (2017). Who uses online parenting support? A cross-sectional survey exploring Australian parents' internet use for parenting. *Journal of Child and Family Studies*, *26*(3), 916-927. https://doi.org/10.1007/s10826-016-0608-1

Bamishigbin Jr, O. N., Wilson, D. K., Abshire, D., Mejias-Lancheros, C., & Dunkel Schetter, C. (2020). Father involvement in infant parenting in an ethnically diverse community sample: Predicting paternal depressive symptoms. *Frontiers in Psychiatry*, *11*, 578688. https://doi.org/10.3389/fpsyt.2020.578688

Bandura, A. (1977). *Social learning theory*. Prentice Hall.

Bavelier, D., Green, C. S., & Dye, M. W. (2010). Children, wired: For better and for worse. *Neuron*, *67*(5), 692-701. https://doi.org/10.1016/j.neuron.2010.08.035

Beatty, C., & Egan, S. M. (2020). Screen time in early childhood: A review of prevalence, evidence, and guidelines. *An Leanbh Óg*, *13*(1), 17-31.

Beck, M. J., & Hensher, D. A. (2020). Insights into the impact of COVID-19 on household travel and activities in Australia–The early days of easing restrictions. *Transport Policy*, *96*, 76-93. https://doi.org/10.1016/j.tranpol.2020.07.001

Beck, M. J., Hensher, D. A., & Wei, E. (2020). Slowly coming out of COVID-19 restrictions in Australia: Implications for working from home and commuting trips by car and public transport. *Journal of Transport Geography*, *88*, 102846. https://doi.org/:10.1016/j.jtrangeo.2020.102846

Bianchi, A., & Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *CyberPsychology & Behavior*, *8*(1), 39-51. https://doi.org/10.1089/cpb.2005.8.39

Billieux, J., Maurage, P., Lopez-Fernandez, O., Kuss, D. J., & Griffiths, M. D. (2015). Can disordered mobile phone use be considered a behavioral addiction? An update on current evidence and a comprehensive model for future research. *Current Addiction Reports*, *2*(2), 156-162. https://doi.org/10.1007/s40429-015-0054-y

Birkeland, M. S., Melkevik, O., Holsen, I., & Wold, B. (2012). Trajectories of global self-esteem development during adolescence. *Journal of Adolescence*, *35*(1), 43-54. https://doi.org/10.1016/j.adolescence.2011.06.006

Blackwell, L., Gardiner, E., & Schoenebeck, S. (2016). Managing expectations: Technology tensions among parents and teens. In *Proceedings of the 19th ACM conference on Computer-Supported Cooperative Work & Social Computing* (pp. 1390–1401). ACM.

Bohnert, M., & Gracia, P. (2020). Emerging digital generations? Impacts of child digital use on mental and socioemotional well-being across two cohorts in Ireland, 2007–2018. *Child Indicators Research*, 1-31. https://doi.org/10.1007/s12187-020-09767-z

Boles, R. E., & Roberts, M. C. (2008). Supervising children during parental distractions. *Journal of Pediatric Psychology*, *33*(8), 833-841. https://doi.org/10.1093/jpepsy/jsn021

Boneva, B., Kraut, R., & Frohlich, D. (2001). Using e-mail for personal relationships: The difference gender makes. *American Behavioral Scientist*, *45*(3), 530-549. https://doi.org/10.1177/00027640121957204

Borawski, E. A., Levers-Landis, C.E., Lovegreen, L.D., & Trapl, E.S. (2003). Parental monitoring, negotiated unsupervised time, and parental trust: The role of perceived parenting practices in adolescent health risk behaviors. *Journal of Adolescent Health*, *33*(2), 60-70. https://doi.org/10.1016/s1054-139x(03)00100-9

Bornstein, M. H. (1985). How infant and mother jointly contribute to developing cognitive competence in the child. *Proceedings of the National Academy of Sciences*, *82*(21), 7470-7473.

Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psycho-Analysis*, *39*, 350-373.

Bowlby, J. (1982). *Attachment and loss: Vol. 1. Attachment* (2nd ed.). Basic Books.

Bowlby, J. (2005). *A secure base: Clinical applications of attachment theory*. Routledge.

Boyatzis, R. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage.

Boyd, D., & Hargittai, E. (2013). Connected and concerned: Variation in parents' online safety concerns. *Policy & Internet*, *5*(3), 245-269. https://doi.org/10.1002/1944-2866.POI332

Bradford, A. B., Burningham, K. L., Sandberg, J. G., & Johnson, L. N. (2017). The association between the parent–child relationship and symptoms of anxiety and depression: The roles of attachment and perceived spouse attachment behaviors. *Journal of Marital and Family Therapy*, *43*(2), 291-307. https://doi.org/10.1111/jmft.12190

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, *53*(1), 371-399. https://doi.org/10.1146/annurev.psych.53.100901.135233

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.

Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2020). The online survey as a qualitative research tool. *International Journal of Social Research Methodology*, 1-14. https://doi.org/10.1080/13645579.2020.1805550

Braun, V., Clarke, V., Hayfield, N., Frith, H., Malson, H., Moller, N., & Shah-Beckley, I. (2019). Qualitative story completion: Possibilities and potential pitfalls. *Qualitative Research in Psychology*, *16*(1), 136-155. https://doi.org/10.1080/14780887.2018.1536395

Bryman, A. (2012). *Social research methods*. (4th ed.) Oxford University Press.

Cain, N., & Gradisar, M. (2010). Electronic media use and sleep in school-aged children and adolescents: A review. *Sleep Medicine*, *11*(8), 735-742. https://doi.org/10.1016/j.sleep.2010.02.006

Carbonell, X., Oberst, U., & Beranuy, M. (2013). The cell phone in the twenty-first century: A risk for addiction or a necessary tool? In P. M. Miller (Ed.), *Principles of addiction: Comprehensive addictive behaviors and disorders* (Vol. 1, pp. 901–909). Academic Press.

Cassidy, J., Jones, J. D., & Shaver, P. R. (2013). Contributions of attachment theory and research: A framework for future research, translation, and policy. *Development and Psychopathology*, *25*(4 0 2), 1415-1434. https://doi.org/10.1017/S0954579413000692

Chang, F. C., Chiu, C. H., Chen, P. H., Chiang, J. T., Miao, N. F., Chuang, H. Y., & Liu, S. (2019). Children's use of mobile devices, smartphone addiction and parental mediation in Taiwan. *Computers in Human Behavior*, *93*, 25-32. https://doi.org/10.1016/j.chb.2018.11.048

Chesley, N. (2005). Blurring boundaries? Linking technology use, spillover, individual distress, and family satisfaction. *Journal of Marriage and Family*, *67*(5), 1237-1248. https://doi.org/10.1111/j.1741-3737.2005.00213.x

Cho, Y. M., Lim, H. J., Jang, H., Kim, K., Choi, J. W., Shin, C., Lee, S.K., Kwon, J.H., & Kim, N. (2017). A follow-up study of the association between mobile phone use and symptoms of ill health. *Environmental Health and Toxicology*, *32*, e2017001. https://doi.org/10.5620/eht.e2017001

Chotpitayasunondh, V., & Douglas, K. M. (2016). How "phubbing" becomes the norm: The antecedents and consequences of snubbing via smartphone. *Computers in Human Behavior*, *63*, 9-18. https://doi.org/10.1016/j.chb.2016.05.018

Chu, M. K., Song, H. G., Kim, C., & Lee, B. C. (2011). Clinical features of headache associated with mobile phone use: a cross-sectional study in university students. *BMC Neurology*, *11*(1), 115. https://doi.org/10.1186/1471-2377-11-115

Clark, L. S. (2009). Digital media and the generation gap: Qualitative research on US teens and their parents. *Information, Communication & Society*, *12*(3), 388-407. https://doi.org/10.1080/13691180902823845

Clarke, V., Braun, V., Frith, H., & Moller, N. (2019). Editorial introduction to the special issue: Using story completion methods in qualitative research. *Qualitative Research in Psychology*, *16*(1), 1-20. https://doi.org/10.1080/14780887.2018.1536378

Coleman, P. K. (2003). Perceptions of parent-child attachment, social self-efficacy, and peer relationships in middle childhood. *Infant and Child Development: An International Journal of Research and Practice*, *12*(4), 351-368. https://doi.org/10.1002/icd.316

Colley, A., & Todd, Z. (2002). Gender-linked differences in the style and content of e-mails to friends. *Journal of Language and Social Psychology*, *21*(4), 380-392. https://doi.org/10.1177/026192702237955

Colley, A., Todd, Z., Bland, M., Holmes, M., Khanom, N., & Pike, H. (2004). Style and content in e-mails and letters to male and female friends. *Journal of Language and Social Psychology*, *23*(3), 369-378. https://doi.org/10.1177/0261927X04266812

Common Sense Media. (2017). *The common sense census: Media use by kids age zero to eight.* Retrieved from

https://www.commonsensemedia.org/sites/default/files/uploads/research/csm_zerotoeight_fullreport_release_2.pdf

Cotton, S.R., Anderson, W.A., & Tufekci, Z. (2009). Old wine in a new technology, or a different type of digital divide? *New Media & Society, 11*(7), 1163–1186. https://doi.org/10.1177/1461444809342056

Cree, V. E., Kay, H., & Tisdall, K. (2002). Research with children: sharing the dilemmas. *Child & Family Social Work*, *7*(1), 47-56. https://doi.org/10.1046/j.1365-2206.2002.00223.x

Cresswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed method research* (2nd ed.). Sage.

Cromby, J. & Nightingale, D. (1999). What's wrong with social constructionism? In D.J.Nightingale and J.Cromby (Eds.), *Social constructionist psychology: A critical analysis of theory and practice* (pp. 1 -13). Open University Press.

Danermark, B., Ekström, M., Jakobsen, L., & Karlsson, J. C. (2002*). Explaining society: An introduction to critical realism in the social sciences*. Routledge.

Devitt, K., & Roker, D. (2009). The role of mobile phones in family communication. *Children & Society*, *23*(3), 189-202. https://doi.org/10.1111/j.1099-0860.2008.00166.x

Domingues-Montanari, S. (2017). Clinical and psychological effects of excessive screen time on children. *Journal of Paediatrics and Child Health*, *53*(4), 333-338. https://doi.org/10.1111/jpc.13462

Domoff, S. E., Radesky, J. S., Harrison, K., Riley, H., Lumeng, J. C., & Miller, A. L. (2019). A naturalistic study of child and family screen media and mobile device use. *Journal of Child and Family Studies*, *28*(2), 401-410. https://doi.org/10.1007/s10826-018-1275-1

Douglas, M., & Isherwood, B. (1980). *The world of goods: Towards an anthropology of consumption*. Penguin.

Druet, C., Stettler, N., Sharp, S., Simmons, R. K., Cooper, C., Davey Smith, G., ... & Ong, K. K. (2012). Prediction of childhood obesity by infancy weight gain: an individual-level

meta-analysis. *Paediatric and Perinatal Epidemiology*, *26*(1), 19-26. https://doi.org/10.1111/j.1365-3016.2011.01213.x

Duch, H., Fisher, E. M., Ensari, I., & Harrington, A. (2013). Screen time use in children under 3 years old: a systematic review of correlates. *International Journal of Behavioral Nutrition and Physical Activity*, *10*(1), 102. https://doi.org/10.1186/1479-5868-10-102

Ekelund, U., Ong, K. K., Linné, Y., Neovius, M., Brage, S., Dunger, D. B., Wareham, J., & Rössner, S. (2007). Association of weight gain in infancy and early childhood with metabolic risk in young adults. *The Journal of Clinical Endocrinology & Metabolism*, *92*(1), 98-103. https://doi.org/10.1210/jc.2006-1071

Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders*, *207*, 251-259. https://doi.org/10.1016/j.jad.2016.08.030

Ellis, D. A., Davidson, B. I., Shaw, H., & Geyer, K. (2019). Do smartphone usage scales predict behavior? *International Journal of Human-Computer Studies*, *130*, 86-92. https://doi.org/10.1016/j.ijhcs.2019.05.004

Enez Darcin, A., Kose, S., Noyan, C. O., Nurmedov, S., Yılmaz, O., & Dilbaz, N. (2016). Smartphone addiction and its relationship with social anxiety and loneliness. *Behaviour & Information Technology*, *35*(7), 520-525. https://doi.org/10.1080/0144929x.2016.1158319

Enlow, M. B., Egeland, B., Carlson, E., Blood, E., & Wright, R. J. (2014). Mother–infant attachment and the intergenerational transmission of posttraumatic stress disorder. *Development and Psychopathology*, *26*(1), 41-65. https://doi.org/10.1017/S0954579413000515

Exelmans, L., & Van den Bulck, J. (2016). Bedtime mobile phone use and sleep in adults. *Social Science & Medicine*, *148*, 93-101. https://doi.org/10.1016/j.socscimed.2015.11.037

Eyal, N. (2014). *Hooked: How to build habit-forming products*. Penguin Random House.

Farrant, B. M., & Zubrick, S. R. (2012). Early vocabulary development: The importance of joint attention and parent-child book reading. *First Language*, *32*(3), 343-364. https://doi.org/10.1177/0142723711422626

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, *5*(1), 80-92. https://doi.org/10.1177/160940690600500107

Field, T. (1995). Infants of depressed mothers. *Infant Behavior and Development*, *18*(1), 1–13. https://doi.org/10.1016/0163-6383(95)90003-9

Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, *20*(2), 303-315. https://doi.org/10.1086/209351

Fletcher, A. J. (2017). Applying critical realism in qualitative research: methodology meets method. *International Journal of Social Research Methodology*, *20*(2), 181-194. https://doi.org/10.1080/13645579.2016.1144401

Fox, A. B., Bukatko, D., Hallahan, M., & Crawford, M. (2007). The medium makes a difference: Gender similarities and differences in instant messaging. *Journal of Language and Social Psychology*, *26*(4), 389-397. https://doi.org/10.1177/0261927X07306982

Frith, H., & Gleeson, K. (2008). Dressing the body: The role of clothing in sustaining body pride and managing body distress. *Qualitative Research in Psychology*, *5*(4), 249-264. https://doi.org/10.1080/14780880701752950

Funk, J. B., & Buchman, D. D. (1995). Video game controversies. *Pediatric Annals*, *24*(2), 91-94. https://doi.org/10.3928/0090-4481-19950201-08

Garber, J., Robinson, N. S., & Valentiner, D. (1997). The relation between parenting and adolescent depression: Self-worth as a mediator. *Journal of Adolescent Research*, *12*(1), 12-33. https://doi.org/10.1177/0743554897121003

García-Montes, J. M., Caballero-Munoz, D., & Pérez-Álvarez, M. (2006). Changes in the self resulting from the use of mobile phones. *Media, Culture & Society*, *28*(1), 67-82. https://doi.org/10.1177/0163443706059287

Genc, Z. (2014). Parents' perceptions about the mobile technology use of preschool aged children. *Procedia-Social and Behavioral Sciences*, *146*, 55-60. https://doi.org/10.1016/j.sbspro.2014.08.086

Gentile, D. A., Reimer, R. A., Nathanson, A. I., Walsh, D. A., & Eisenmann, J. C. (2014). Protective effects of parental monitoring of children's media use: A prospective study. *JAMA Pediatrics*, *168*(5), 479-484. https://doi.org/10.1001/jamapediatrics.2014.146

George, M. J., Jensen, M. R., Russell, M. A., Gassman-Pines, A., Copeland, W. E., Hoyle, R. H., & Odgers, C. L. (2020). Young adolescents' digital technology use, perceived impairments, and well-being in a representative sample. *The Journal of Pediatrics, 217*, 180-187. https://doi.org/10.1016/j.jpeds.2019.12.002

Gibney, S., & McCarthy, T. (2020). *Research brief: Profile of smartphone ownership and use in Ireland*. Research and Development and Health Analytics Division, Department of Health. Retrieved from https://assets.gov.ie/81401/e6c10ac5-e6b4-438e-b31d-30cd2b241f7c.pdf

Gibson, L., & Hanson, V. L. (2013, April). Digital motherhood: How does technology help new mothers? In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 313-322). https://doi.org/10.1145/2470654.2470700

Glaser, B. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory.* Sociology Press.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Routledge.

Goh, S. N., Teh, L. H., Tay, W. R., Anantharaman, S., van Dam, R. M., Tan, C. S., ... & Müller-Riemenschneider, F. (2016). Sociodemographic, home environment and parental influences on total and device-specific screen viewing in children aged 2 years and below: an observational study. *BMJ Open*, *6*(1), e009113. https://doi.org/10.1136/bmjopen-2015-009113

Golen, R. B., & Ventura, A. K. (2015a). Mindless feeding: Is maternal distraction during bottle-feeding associated with overfeeding? *Appetite*, *91*, 385-392. https://doi.org/10.1016/j.appet.2015.04.078

Golen, R., & Ventura, A. K. (2015b). What are mothers doing while bottle-feeding their infants? Exploring the prevalence of maternal distraction during bottle-feeding interactions. *Early Human Development*, *91*(12), 787-791. https://doi.org/10.1016/j.earlhumdev.2015.09.006

González-Rivera, J. A., & Hernández-Gato, I. (2019). Conflicts in Romantic Relationships over Facebook Use: Validation and Psychometric Study. *Behavioral Sciences*, *9*(2), 18. https://doi.org/10.3390/bs9020018

Gough, D. (2007). Weight of evidence: a framework for the appraisal of the quality and relevance of evidence. *Research Papers in Education*, *22*(2), 213-228. https://doi.org/10.1080/02671520701296189

Government of Ireland. (2019). *A Government Strategy For Babies & Young Children and their Families 2019-2028*. Government Publications. Retrieved from https://assets.gov.ie/26691/98d3322cc8b64637976cf23f33f084f6.pdf

Gracia, P. (2015). Parent–child leisure activities and cultural capital in the United Kingdom: The gendered effects of education and social class. *Social Science Research*, *52*, 290-302. https://doi.org/10.1016/j.ssresearch.2015.02.005

Gramm, M. M., Vollmer, R. L., Harpel, T. S., McDaniel, B., & Schumacher, J. (2020). Relationship between parent distraction with technology at mealtimes and child eating behavior: A pilot study. *Journal of Technology in Behavioral Science*, *5*(1), 15-19. https://doi.org/10.1007/s41347-019-00109-7

Green, C. S., & Bavelier, D. (2007). Action-video-game experience alters the spatial resolution of vision. *Psychological Science*, *18*(1), 88-94. https://doi.org/10.1111/j.1467-9280.2007.01853.x

Greenfield, P. M. (2009). Technology and informal education: What is taught, what is learned. *Science*, *323*(5910), 69-71. https://doi.org/10.1126/science.1167190

Gross, E. (2004). Adolescent internet use: what we expect, what teens report? *Applied Developmental Psychology, 25*, 633–649. https://doi.org/10.1016/j.appdev.2004.09.005

Grover, S. (2004). Why won't they listen to us? On giving power and voice to children participating in social research. *Childhood*, *11*(1), 81-93. https://doi.org/10.1177/0907568204040186

Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Sage.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59-82. https://doi.org/10.1177/1525822X05279903

Haddon, L. (2011). Domestication analysis, objects of study, and the centrality of technologies in everyday life. *Canadian Journal of Communication*, *36*(2), 311-323.

Haddon, L., & Vincent, J. (2014). *UK children's experience of smartphones and tablets: Perspectives from children, parents and teachers*. Retrieved from http://eprints.lse.ac.uk/62125/1/UK%20Childern%20mobile%20experience_author.pdf

Harcourt, D., & Einarsdóttir, J. (2011). Introducing children's perspectives and participation in research. *European Early Childhood Education Research Journal*, *19*(3), 301-307. https://doi.org/10.1080/1350293X.2011.597962

Hargittai, E., & Hinnant, A. (2008). Digital inequality: Differences in young adults' use of the Internet. *Communication Research*, *35*(5), 602-621. https://doi.org/10.1177/0093650208321782

Haslam, D. M., Tee, A., & Baker, S. (2017). The use of social media as a mechanism of social support in parents. *Journal of Child and Family Studies*, *26*(7), 2026-2037. https://doi.org/10.1007/s10826-017-0716-6

Haug, S., Castro, R. P., Kwon, M., Filler, A., Kowatsch, T., & Schaub, M. P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behavioral Addictions*, *4*(4), 299-307. https://doi.org/10.1556/2006.4.2015.037

Hauser, R. M. (1994). Measuring socioeconomic status in studies of child development. *Child Development*, *65*(6), 1541-1545. https://doi.org/10.2307/1131279

Health Service Executive. (2018). *Screen time and young children*. Retrieved from: https://www2.hse.ie/wellbeing/child-health/screen-time-and-young-children.html

Heckman, J. J., & Mosso, S. (2014). The economics of human development and social mobility. *Annual Review of Economics*, *6*(1), 689-733. https://doi.org/10.1146/annurev-economics-080213-040753

Hiniker, A., Schoenebeck, S. Y., & Kientz, J. A. (2016, February). Not at the dinner table: Parents' and children's perspectives on family technology rules. In *Proceedings of the 19th ACM conference on computer-supported cooperative work & social computing* (pp. 1376-1389). https://doi.org/10.1145/2818048.2819940

Hong, W., Liu, R. D., Ding, Y., Oei, T. P., Zhen, R., & Jiang, S. (2019). Parents' phubbing and problematic mobile phone use: The roles of the parent–child relationship and children's self-esteem. *Cyberpsychology, Behavior, and Social Networking*, *22*(12), 779-786. https://doi.org/10.1089/cyber.2019.0179

Hosokawa, R., & Katsura, T. (2018). Association between mobile technology use and child adjustment in early elementary school age. *PloS One*, *13*(7), e0199959. https://doi.org/10.1371/journal.pone.0208844

Hwang, Y., Choi, I., Yum, J. Y., & Jeong, S. H. (2017). Parental mediation regarding children's smartphone use: Role of protection motivation and parenting style. *Cyberpsychology, Behavior, and Social Networking*, *20*(6), 362-368. https://doi.org/10.1089/cyber.2016.0555

Hwang, Y., & Jeong, S. H. (2015). Predictors of parental mediation regarding children's smartphone use. *Cyberpsychology, Behavior, and Social Networking*, *18*(12), 737-743. https://doi.org/10.1089/cyber.2015.0286

Hyman, I. E., Boss, S. M., Wise, B. M., McKenzie, K. E., & Caggiano, J. M. (2010). Did you see the unicycling clown? Inattentional blindness while walking and talking on a cell-phone. *Applied Cognitive Psychology*, *24*(5), 597e607. http://doi.org/10.1002/acp.1638.

Hysing, M., Pallesen, S., Stormark, K. M., Jakobsen, R., Lundervold, A. J., & Sivertsen, B. (2015). Sleep and use of electronic devices in adolescence: results from a large population-based study. *British Medical Journal*, *5*(1), e006748. https://doi.org/10.1136/bmjopen-2014-006748

IBM Corp. (2020). *IBM SPSS Statistics for Windows*, Version 27.0. IBM Corp.

Jacobsen, T., & Hofmann, V. (1997). Children's attachment representations: Longitudinal relations to school behavior and academic competency in middle childhood and adolescence. *Developmental Psychology, 33*(4), 703–710. https://doi.org/10.1037/0012-1649.33.4.703

Jago, R., Stamatakis, E., Gama, A., Carvalhal, I. M., Nogueira, H., Rosado, V., & Padez, C. (2012). Parent and child screen-viewing time and home media environment. *American Journal of Preventive Medicine*, *43*(2), 150-158. https://doi.org/10.1016/j.amepre.2012.04.012

Jang, J., & Dworkin, J. (2014). Does social network site use matter for mothers? Implications for bonding and bridging capital. *Computers in Human Behavior*, *35*, 489–495. https://doi.org/10.1016/j.chb.2014.02.049

Jenkins, J. M., & Handa, S. (2019). Parenting skills and early childhood development: production function estimates from longitudinal data. *Review of Economics of the Household*, *17*(1), 121-147. https://doi.org/10.1007/s11150-017-9376-y

Joffe, H., & Yardley, L. (2004). Content and thematic analysis. In D.F. Marks and L. Yardley (Eds.), *Research Methods for Clinical and Health Psychology* (pp. 56-68). Sage.

Johnson, D. J., & Hertlein, K. M. (2019). Parents' perceptions of smartphone use and parenting practices. *The Qualitative Report*, *24*(6), 1423-1441.

Judd, T. (2014). Making sense of multitasking: The role of Facebook. *Computers & Education*, *70*, 194-202. https://doi.org/10.1016/j.compedu.2013.08.013

Karpinski, A. C., Kirschner, P. A., Ozer, I., Mellott, J. A., & Ochwo, P. (2013). An exploration of social networking site use, multitasking, and academic performance among United States and European university students. *Computers in Human Behavior*, *29*(3), 1182-1192. https://doi.org/10.1016/j.chb.2012.10.011

Kernis, M. H., Brown, A. C., & Brody, G. H. (2000). Fragile self-esteem in children and its associations with perceived patterns of parent-child communication. *Journal of Personality*, *68*(2), 225-252. https://doi.org/10.1111/1467-6494.00096

Kerns, K.A. (2008). Attachment in middle childhood. In J. Cassidy & P.R. Shaver (Eds.), *Handbook of attachment* (2nd ed., pp. 366-382). Guildford Press.

Kerns, K. A., Schlegelmilch, A., Morgan, T. A., & Abraham, M. M. (2005). Assessing attachment in middle childhood. In K. A. Kerns & R. A. Richardson (Eds.), *Attachment in middle childhood* (pp. 46–70). Guilford Press.

Kildare, C. A., & Middlemiss, W. (2017). Impact of parents mobile device use on parent-child interaction: A literature review. *Computers in Human Behavior*, *75*, 579-593. https://doi.org/10.1016/j.chb.2017.06.003

Kılıç, A. O., Sari, E., Yucel, H., Oğuz, M. M., Polat, E., Acoglu, E. A., & Senel, S. (2019). Exposure to and use of mobile devices in children aged 1–60 months. *European Journal of Pediatrics*, *178*(2), 221-227. https://doi.org/10.1007/s00431-018-3284-x

Kim, S. J., Cho, S. M., & Lim, K. Y. (2017). The effects of high exposure to smartphone from ages 3 to 5 years on children's behaviors. *European Psychiatry*, *41*, S214. https://doi.org/10.1016/j.eurpsy.2017.01.2188

Kim, J., LaRose, R., & Peng, W. (2009). Loneliness as the cause and the effect of problematic Internet use: The relationship between Internet use and psychological well-being. *CyberPsychology & Behavior*, *12*(4), 451-455. https://doi.org/10.1089/cpb.2008.0327

King, D. L., Delfabbro, P. H., Zwaans, T., & Kaptsis, D. (2014). Sleep interference effects of pathological electronic media use during adolescence. *International Journal of Mental Health and Addiction*, *12*(1), 21-35. https://doi.org/10.1007/s11469-013-9461-2

Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective process in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, *72*, 1245–1267. https://doi.org/10.1037/0022-3514.72.6.1245

Kitzinger, C., & Powell, D. (1995). Engendering infidelity: Essentialist and social constructionist readings of a story completion task. *Feminism & Psychology*, *5*(3), 345-372. https://doi.org/10.1177/0959353595053004

Ko, C. H., Yen, C. F., Yen, C. N., Yen, J. Y., Chen, C. C., & Chen, S. H. (2005). Screening for Internet addiction: an empirical study on cut-off points for the Chen Internet Addiction Scale. *The Kaohsiung Journal of Medical Sciences*, *21*(12), 545-551. https://doi.org/10.1016/s1607-551x(09)70206-2

Komulainen, S. (2007). The ambiguity of the child's 'voice' in social research. *Childhood*, *14*(1), 11-28. https://doi.org/10.1177/0907568207068561

Kulakci-Altintas, H. (2020). Technological device use among 0–3 year old children and attitudes and behaviors of their parents towards technological devices. *Journal of Child and Family Studies*, *29*(1), 55-61. https://doi.org/10.1007/s10826-019-01457-x

Kushlev, K., & Dunn, E. W. (2019). Smartphones distract parents from cultivating feelings of connection when spending time with their children. *Journal of Social and Personal Relationships*, *36*(6), 1619-1639. https://doi.org/10.1177/0265407518769387

Laible, D. J., Carlo, G., & Roesch, S. C. (2004). Pathways to self-esteem in late adolescence: The role of parent and peer attachment, empathy, and social behaviours. *Journal of Adolescence*, *27*(6), 703-716. https://doi.org/10.1016/j.adolescence.2004.05.005

Landry, S. H., Smith, K. E., Swank, P. R., Assel, M. A., & Vellet, S. (2001). Does early responsive parenting have a special importance for children's development or is consistency across early childhood necessary?. *Developmental Psychology*, *37*(3), 387- 403. https://doi.org/10.1037//0012-1649.37.3.387

Landry, S. H., Smith, K. E., & Swank, P. R. (2006). Responsive parenting: Establishing early foundations for social, communication, and independent problem-solving skills. *Developmental Psychology*, *42*(4), 627–642. https://doi.org/10.1037/0012-1649.42.4.627

Lanigan, J. D. (2009). A sociotechnological model for family research and intervention: How information and communication technologies affect family life. *Marriage & Family Review, 45*(6-8), 587–609. https://doi.org/10.1080/01494920903224194

Lanigan, J. D., Bold, M., & Chenoweth, L. (2009). Computers in the family context: Perceived impact on family time and relationships. *Family Science Review*, *14*(1), 16-32.

Lauricella, A. R., Wartella, E., & Rideout, V. J. (2015). Young children's screen time: The complex role of parent and child factors. *Journal of Applied Developmental Psychology*, *36*, 11-17. https://doi.org/10.1016/j.appdev.2014.12.001

Laursen, B., & Collins, W. A. (2009). Parent-child relationships during adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology: Contextual*

influences on adolescent development (p. 3–42). John Wiley & Sons, Inc. https://doi.org/10.1002/9780470479193.adlpsy002002

Lee, S. J., & Chae, Y. G. (2007). Children's Internet use in a family context: Influence on family relationships and parental mediation. *Cyberpsychology & Behavior*, *10*(5), 640-644. https://doi.org/ 10.1089/cpb.2007.9975

Lee, Y. K., Chang, C. T., Lin, Y., & Cheng, Z. H. (2014). The dark side of smartphone usage: Psychological traits, compulsive behavior and technostress. *Computers in Human Behavior*, *31*, 373-383. https://doi.org/10.1016/j.chb.2013.10.047

Lee, C., & Lee, S. J. (2017). Prevalence and predictors of smartphone addiction proneness among Korean adolescents. *Children and Youth Services Review*, *77*(C), 10-17. https://doi.org/10.1016/j.childyouth.2017.04.002

Lemola, S., Perkinson-Gloor, N., Brand, S., Dewald-Kaufmann, J. F., & Grob, A. (2015). Adolescents' electronic media use at night, sleep disturbance, and depressive symptoms in the smartphone age. *Journal of Youth and Adolescence*, *44*(2), 405-418. https://doi.org/10.1007/s10964-014-0176-x

Lenhart, A. & Madden, M. (2007). *Social networking websites and teens*. Pew Internet and American Life Project. Retrieved from http://www.pewinternet.org/media//Files/Reports/2007/PIP_SNS_Data_Memo_Jan_2007.pdf

Letts, L., Wilkins, S., Law, M., Stewart, D., Bosch, J., & Westmorland, M. (2007). *Guidelines for critical review form: Qualitative studies* (Version 2.0). McMaster University.

Levers, M. J. D. (2013). Philosophical paradigms, grounded theory, and perspectives on emergence. *Sage Open*, *3*(4), 2158244013517243. https://doi.org/10.1177/2158244013517243

Li, W., O'Brien, J. E., Snyder, S. M., & Howard, M. O. (2015). Characteristics of internet addiction/pathological internet use in US university students: a qualitative-method investigation. *PloS One*, *10*(2), e0117372. https://doi.org/10.1371/journal.pone.0117372

Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American Behavioral Scientist*, *48*(5), 624-645. https://doi.org/10.1177/0002764204271505

Ling, R., Bertel, T. F., & Sundsøy, P. R. (2012). The socio-demographics of texting: An analysis of traffic data. *New Media & Society*, *14*(2), 281-298. https://doi.org/10.1177/1461444811412711

Liu, R. D., Wang, J., Gu, D., Ding, Y., Oei, T. P., Hong, W., Zhen, R., & Li, Y. M. (2019). The effect of parental phubbing on teenager's mobile phone dependency behaviors: The mediation role of subjective norm and dependency intention. *Psychology Research and Behavior Management, 12*, 1059-1069. https://doi.org/10.2147/PRBM.S224133

Livingstone, S., & Franklin, K. (2018). Families with young children and 'screen time'. *Journal of Health Visiting*, *6*(9), 434-439. https://doi.org/10.12968/johv.2018.6.9.434

Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: Children, young people and the digital divide. *New Media & Society*, *9*(4), 671-696. https://doi.org/10.1177/1461444807080335

Lloyd, A. B., Lubans, D. R., Plotnikoff, R. C., Collins, C. E., & Morgan, P. J. (2014). Maternal and paternal parenting practices and their influence on children's adiposity, screen-time, diet and physical activity. *Appetite*, *79*, 149-157. https://doi.org/10.1016/j.appet.2014.04.010

Macy, M. L., Carter, P. M., Bingham, C. R., Cunningham, R. M., & Freed, G. L. (2014). Potential distractions and unsafe driving behaviors among drivers of 1-to 12-year-old children. *Academic Pediatrics*, *14*(3), 279-286. https://doi.org/10.1016/j.acap.2014.02.010

Maggi, S., Irwin, L. J., Siddiqi, A., & Hertzman, C. (2010). The social determinants of early child development: an overview. *Journal of Paediatrics and Child Health*, *46*(11), 627-635. https://doi.org/10.1111/j.1440-1754.2010.01817.x

Mangan, E., Leavy, J.E., & Jancey, J. (2018). Mobile device use when caring for children 0-5 years: A naturalistic playground study. *Health Promotion Journal*, *29*(3), 337-343. https://doi.org/10.1002/hpja.38

Mascheroni, G., & Ólafsson, K. (2016). The mobile Internet: Access, use, opportunities and divides among European children. *New Media & Society*, *18*(8), 1657-1679. https://doi.org/10.1177/1461444814567986

Masselink, M., Van Roekel, E., & Oldehinkel, A. J. (2018). Self-esteem in early adolescence as predictor of depressive symptoms in late adolescence and early adulthood: the mediating role of motivational and social factors. *Journal of Youth and Adolescence*, *47*(5), 932-946. https://doi.org/10.1007/s10964-017-0727-z

Mattingly, M. J., & Blanchi, S. M. (2003). Gender differences in the quantity and quality of free time: The US experience. *Social Forces*, *81*(3), 999-1030. https://doi.org/10.1353/sof.2003.0036

Mayall, B. (2000). Conversations with children: working with generational issues. In P. Christensen and A. James (Eds.), *Research with children: Perspectives and practices* (pp. 120-135). Routledge.

Mayseless, O. (2005). Ontogeny of attachment in middle childhood: Conceptualization of normative changes. In K. A. Kerns & R. A. Richardson (Eds.), *Attachment in middle childhood* (pp. 1–23). Guilford Press.

McBride, B. A., Schoppe, S. J., & Rane, T. R. (2002). Child characteristics, parenting stress, and parental involvement: Fathers versus mothers. *Journal of Marriage and Family*, *64*(4), 998-1011. https://doi.org/10.1111/j.1741-3737.2002.00998.x

McCarthy, G., & Taylor, A. (1999). Avoidant/ambivalent attachment style as a mediator between abusive childhood experiences and adult relationship difficulties. *Journal of Child Psychology and Psychiatry*, *40*(3), 465-477. https://doi.org/10.1111/1469-7610.00463

McClelland, M. M., Acock, A. C., Piccinin, A., Rhea, S. A., & Stallings, M. C. (2013). Relations between preschool attention span-persistence and age 25 educational outcomes. *Early Childhood Research Quarterly*, *28*(2), 314 –324. https://doi.org/10.1016/j.ecresq.2012.07.008

McCracken, G. D. (1990). *Culture and consumption: New approaches to the symbolic character of consumer goods and activities* (Vol. 1). Indiana University Press.

McDaniel, B.T. (2016). *Understanding stability and change in daily coparenting: Predictors and outcomes in families with young children* [Unpublished doctoral dissertation]. Pennsylvania State University.

McDaniel, B. T. (2019). Parent distraction with phones, reasons for use, and impacts on parenting and child outcomes: A review of the emerging research. *Human Behavior and Emerging Technologies*, *1*(2), 72-80. https://doi.org/10.1002/hbe2.139

McDaniel, B. T. (2020). *The DISRUPT: A measure of parent distraction with phones and mobile devices and associations with depression, stress, and parenting quality*. Manuscript under review.

McDaniel, B. T., & Coyne, S. M. (2016). Technology interference in the parenting of young children: Implications for mothers' perceptions of coparenting. *The Social Science Journal*, *53*(4), 435-443. https://doi.org/10.1016/j.soscij.2016.04.010

McDaniel, B. T., Galovan, A. M., Cravens, J. D., & Drouin, M. (2018). "Technoference" and implications for mothers' and fathers' couple and coparenting relationship quality. *Computers in Human Behavior*, *80*, 303-313. https://doi.org/10.1016/j.chb.2017.11.019

McDaniel, B. T., & Radesky, J. S. (2018). Technoference: Parent distraction with technology and associations with child behavior problems. *Child Development*, *89*(1), 100-109. https://doi.org/10.1111/cdev.12822

McGilloway, S., Mhaille, G. N., Bywater, T., Furlong, M., Leckey, Y., Kelly, P., Comiskey, C., & Donnelly, M. (2012). A parenting intervention for childhood behavioral problems: a randomized controlled trial in disadvantaged community-based settings. *Journal of Consulting and Clinical Psychology*, *80*(1), 116–127. https://doi.org/10.1037/a0026304

Mendelsohn, A. L., Berkule, S. B., Tomopoulos, S., Tamis-LeMonda, C. S., Huberman, H. S., Alvir, J., & Dreyer, B. P. (2008). Infant television and video exposure associated with limited parent-child verbal interactions in low socioeconomic status households.

Archives of Pediatrics & Adolescent Medicine, *162*(5), 411-417. https://doi.org/10.1001/archpedi.162.5.411

Meyrowitz, J. (1985). *No sense of place: The impact of electronic media on social behavior.* Oxford University Press.

Mischel, W., Ayduk, O., Berman, M. G., Casey, B. J., Gotlib, I. H., Jonides, J., Kross, E., Teslovich, T., Wilson, N.L., Zayas, V., & Shoda, Y. (2011). "Willpower" over the life span: decomposing self-regulation. *Social Cognitive and Affective Neuroscience*, *6*(2), 252-256. https://doi.org/10.1093/scan/nsq081

Misra, S., Cheng, L., Genevie, J., & Yuan, M. (2016). The iPhone effect: The quality of in-person social interactions in the presence of mobile devices. *Environment and Behavior*, *48*(2), 275-298. https://doi.org/10.1177/0013916514539755

Modecki, K. L., Low-Choy, S., Uink, B. N., Vernon, L., Correia, H., & Andrews, K. (2020). Tuning into the real effect of smartphone use on parenting: a multiverse analysis. *Journal of Child Psychology and Psychiatry*, *61*(8), 855-865. https://doi.org/10.1111/jcpp.13282

Mohamed, S. M., & Mostafa, M. H. (2020). Impact of smartphone addiction on depression and self-esteem among nursing students. *Nursing Open*, *7*(5), 1346-1353. https://doi.org/10.1002/nop2.506

Montroy, J. J., Bowles, R. P., Skibbe, L. E., McClelland, M. M., & Morrison, F. J. (2016). The development of self-regulation across early childhood. *Developmental Psychology*, *52*(11), 1744–1762. https://doi.org/10.1037/dev0000159

Moreno, M. A., Kerr, B. R., Jenkins, M., Lam, E., & Malik, F. S. (2019). Perspectives on smartphone ownership and use by early adolescents. *Journal of Adolescent Health*, *64*(4), 437-442. https://doi.org/10.1016/j.jadohealth.2018.08.017

Morse, J. M., & Niehaus, L. (2009). *Mixed method design: Principles and procedures.* Left Coast Press.

Morse, J. M., & Richards, L. (2002). *Readme first for a user's guide to qualitative methods*. Sage.

Myruski, S., Gulyayeva, O., Birk, S., Pérez-Edgar, K., Buss, K. A., & Dennis-Tiwary, T. A. (2018). Digital disruption? Maternal mobile device use is related to infant

social-emotional functioning. *Developmental Science*, *21*(4), e12610. https://doi.org/10.1111/desc.12610

Neece, C. L., Green, S. A., & Baker, B. L. (2012). Parenting stress and child behavior problems: A transactional relationship across time. *American Journal on Intellectual and Developmental Disabilities*, *117*(1), 48-66. https://doi.org/10.1352/1944-7558-117.1.48

Neuendorf, K. (2002). *The content analysis guidebook*. Sage.

Newsham, G., Drouin, M., & McDaniel, B. T. (2020). Problematic phone use, depression, and technology interference among mothers. *Psychology of Popular Media Culture*, *9*(2), 117-124. https://doi.org/10.1037/ppm0000220

Nic Dhonncha, E., & Murphy, M. (2020). Learning new ways of teaching and assessment: The impact of COVID-19 on undergraduate dermatology education. *Clinical and Experimental Dermatology*. Advance Online Publication. https://doi.org/10.1111/ced.14364

Nilsson, S., Björkman, B., Almqvist, A. L., Almqvist, L., Björk-Willén, P., Donohue, D., Enskär, K., Granlund, M., Huus, K., & Hvit, S. (2015). Children's voices–differentiating a child perspective from a child's perspective. *Developmental Neurorehabilitation*, *18*(3), 162-168. https://doi.org/10.3109/17518423.2013.801529

Norris, P. (2001). *Digital divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge University Press.

O'Connor, T. G., Woolgar, M., Humayun, S., Briskman, J. A., & Scott, S. (2019). Early caregiving predicts attachment representations in adolescence: Findings from two longitudinal studies. *Journal of Child Psychology and Psychiatry*, *60*(9), 944-952. https://doi.org/10.1111/jcpp.12936

Oduor, E., Neustaedter, C., Odom, W., Tang, A., Moallem, N., Tory, M., & Irani, P. (2016). The frustrations and benefits of mobile device usage in the home when co-present with family members. In *Proceedings of the 2016 ACM conference on designing interactive systems* (pp. 1315–1327). ACM. https://doi.org/10.1145/2901790.2901809

Ofcom. (2015, August 6). *UK now a smartphone society*. Retrieved from https://www.ofcom.org.uk/about-ofcom/latest/features-and-news/uk-now-a-smartphone-society

Offer, S. (2016). Free time and emotional well-being: Do dual-earner mothers and fathers differ? *Gender & Society*, *30*(2), 213-239. https://doi.org/10.1177/0891243215596422

Orben, A. (2020). Teenagers, screens and social media: A narrative review of reviews and key studies. *Social Psychiatry and Psychiatric Epidemiology*, *55*(4), 407-414. https://doi.org/10.1007/s00127-019-01825-4

Osofsky, J. (1995). The effects of exposure to violence on young children. *American Psychologist.*, *50*(9), 782–788. https://doi.org/10.1037/0003-066X.50.9.782

Oulasvirta, A., Rattenbury, T., Ma, L., & Raita, E. (2012). Habits make smartphone use more pervasive. *Personal and Ubiquitous Computing*, *16*(1), 105–114. https://doi.org/10.1007/s00779-011-0412-2

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3-72. https://doi.org/10.1037/0033-2909.128.1.3

Palen, L., & Hughes, A. (2007). When home base is not a place: Parents' use of mobile telephones. *Personal and Ubiquitous Computing*, *11*(5), 339-348. https://doi.org/10.1007/s00779-006-0078-3

Palsson, C. (2017). Smartphones and child injuries. *Journal of Public Economics*, *156*, 200-213. https://doi.org/10.1016/j.jpubeco.2017.10.008

Pandey, A., Hasan, S., Dubey, D., & Sarangi, S. (2013). Smartphone apps as a source of cancer information: changing trends in health information-seeking behavior. *Journal of Cancer Education*, *28*(1), 138-142. https://doi.org/10.1007/s13187-012-0446-9

Panova, T., & Carbonell, X. (2018). Is smartphone addiction really an addiction?. *Journal of Behavioral Addictions*, *7*(2), 252-259. https://doi.org/10.1556/2006.7.2018.49

Parker, J. S., & Benson, M. J. (2004). Parent-adolescent relations and adolescent functioning: self-esteem, substance abuse, and delinquency. *Adolescence*, *39*(155), 519-530.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Sage.

Payne, G., & Williams, M. (2005). Generalization in qualitative research. *Sociology*, *39*(2), 295-314. https://doi.org/10.1177/0038038505050540

Petrass, L., Blitvich, J. D., & Finch, C. F. (2009). Parent/caregiver supervision and child injury: A systematic review of critical dimensions for understanding this relationship. *Family & Community Health*, *32*(2), 123e135. http://doi.org/10.1097/FCH.0b013e3181994740.

Petticrew, M., & Roberts, H. (2003). Evidence, hierarchies, and typologies: horses for courses. *Journal of Epidemiology & Community Health*, *57*(7), 527-529. https://doi.org/10.1136/jech.57.7.527

Pew Research Center. (2019a). *Mobile technology and home broadband 2019*. Retrieved from https://www.pewresearch.org/internet/2019/06/13/mobile-technology-and-home-broadband-2019/

Pew Research Center. (2019b). *Smartphone ownership is growing rapidly around the world, but not always equally*. Retrieved from https://www.pewresearch.org/global/2019/02/05/smartphone-ownership-is-growing-rapidly-around-the-world-but-not-always-equally/

Phelan, S. K., & Kinsella, E. A. (2013). Picture this... safety, dignity, and voice - Ethical research with children: Practical considerations for the reflexive researcher. *Qualitative Inquiry*, *19*(2), 81-90. https://doi.org/10.1177/1077800412462987

Piguet, C., Barrense-Dias, Y., Ramelet, A. S., & Suris, J. C. (2017). Monitoring screen use: a qualitative exploration of family strategies in Swiss homes. *International Journal of Adolescent Medicine and Health*, *31*(1), 20160146. https://doi.org/10.1515/ijamh-2016-0146

Pleck, E. H., & Pleck, J. H. (1997). Fatherhood ideals in the United States: Historical dimensions. In M. E. Lamb (Ed.), *The role of the father in child development* (3rd ed., pp. 33–48). Wiley.

Plowman, L., McPake, J., & Stephen, C. (2010). The technologisation of childhood? Young children and technology in the home. *Children & Society*, *24*(1), 63-74. https://doi.org/10.1111/j.1099-0860.2008.00180.x

Polit, D. F., & Beck, C. T. (2010). Generalization in quantitative and qualitative research: Myths and strategies. *International Journal of Nursing Studies*, *47*(11), 1451-1458. https://doi.org/10.1016/j.ijnurstu.2010.06.004

Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology*, *52*(2), 137-145. https://doi.org/10.1037/0022-0167.52.2.137

Poulain, T., Ludwig, J., Hiemisch, A., Hilbert, A., & Kiess, W. (2019). Media use of mothers, media use of children, and parent–child interaction are related to behavioral difficulties and strengths of children. *International Journal of Environmental Research and Public Health*, *16*(23), 4651. https://doi.org/10.3390/ijerph16234651

Qiao, L., & Liu, Q. (2020). The effect of technoference in parent-child relationships on adolescent smartphone addiction: The role of cognitive factors. *Children and Youth Services Review*, *118*, 105340. https://doi.org/10.1016/j.childyouth.2020.105340

Rabin, A.I., & Zlotogorski, Z. (1981). Completion methods: Word association, sentence, and story completion. In A.I. Rabin (Ed.), *Assessment with projective techniques* (pp. 121–149). Springer.

Radesky, J. S., Eisenberg, S., Kistin, C. J., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Overstimulated consumers or next-generation learners? Parent tensions about child mobile technology use. *The Annals of Family Medicine*, *14*(6), 503-508. https://doi.org/10.1370/afm.1976

Radesky, J. S., Kistin, C., Eisenberg, S., Gross, J., Block, G., Zuckerman, B., & Silverstein, M. (2016). Parent perspectives on their mobile technology use: The excitement and exhaustion of parenting while connected. *Journal of Developmental & Behavioral Pediatrics*, *37*(9), 694-701. https://doi.org/10.1097/dbp.0000000000000357

Radesky, J. S., Kistin, C. J., Zuckerman, B., Nitzberg, K., Gross, J., Kaplan-Sanoff, M., Augustyn, M., & Silverstein, M. (2014). Patterns of mobile device use by caregivers and children during meals in fast food restaurants. *Pediatrics*, *133*(4), e843-e849. https://doi.org/10.1542/peds.2013-3703

Radesky, J., Leung, C., Appugliese, D., Miller, A. L., Lumeng, J. C., & Rosenblum, K. L. (2018). Maternal Mental Representations of the Child and Mobile Phone Use During

Parent-Child Mealtimes. *Journal of Developmental and Behavioral Pediatrics*, *39*(4), 310-317. https://doi.org/10.1097/DBP.0000000000000556

Radesky, J., Miller, A. L., Rosenblum, K. L., Appugliese, D., Kaciroti, N., & Lumeng, J. C. (2015). Maternal mobile device use during a structured parent–child interaction task. *Academic Pediatrics*, *15*(2), 238-244. https://doi.org/10.1097/DBP.0000000000000357

Rakow, L. F., & Navarro, V. (1993). Remote mothering and the parallel shift: Women meet the cellular telephone. *Critical Studies in Media Communication*, *10*(2), 144-157. https://doi.org/10.1080/15295039309366856

Raley, S., Bianchi, S. M., & Wang, W. (2012). When do fathers care? Mothers' economic contribution and fathers' involvement in child care. *American Journal of Sociology*, *117*(5), 1422-1459. https://doi.org/10.1086/663354

Rasmussen, E. E., Shafer, A., Colwell, M. J., White, S., Punyanunt-Carter, N., Densley, R. L., & Wright, H. (2016). Relation between active mediation, exposure to Daniel Tiger's Neighborhood, and US preschoolers' social and emotional development. *Journal of Children and Media*, *10*(4), 443-461. https://doi.org/10.1080/17482798.2016.1203806

Reed, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2017). Learning on hold: Cell phones sidetrack parent-child interactions. *Developmental Psychology*, *53*(8), 1428. https://doi.org/10.1037/dev0000292

Rennie, D. L., Watson, K. D., & Monteiro, A. M. (2002). The rise of qualitative research in psychology. *Canadian Psychology/Psychologie canadienne*, *43*(3), 179 -189. https://doi.org/10.1037/h0086914

Rice, R. E., & Katz, J. E. (2003). Comparing internet and mobile phone usage: digital divides of usage, adoption, and dropouts. *Telecommunications Policy*, *27*(8-9), 597-623. https://doi.org/10.1016/S0308-5961(03)00068-5

Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). *Generation M: Media in the lives of 8- to 18- year olds*. Henry J. Kaiser Family Foundation. Retrieved from http://www.eric.ed.gov/PDFS/ED527859.pdf

Rodriguez, E. T., Tamis-LeMonda, C. S., Spellmann, M. E., Pan, B. A., Raikes, H., Lugo-Gil, J., & Luze, G. (2009). The formative role of home literacy experiences across the first three years of life in children from low-income families. *Journal of Applied Developmental Psychology*, *30*(6), 677-694. https://doi.org/10.1016/j.appdev.2009.01.003

Rosen, L. D., Carrier, L. M., & Cheever, N. A. (2013). Facebook and texting made me do it: Media-induced task-switching while studying. *Computers in Human Behavior*, *29*(3), 948-958. https://doi.org/10.1016/j.chb.2012.12.001

Rosenblum, K. L., McDnough, S., Muzik, M., Miller, A., & Sameroff, A. (2002). Maternal representations of the infant: Associations with infant response to the still face. *Child Development*, *73*(4), 999–1015. https://doi.org/www.jstor.org/stable/3696266

Rothbaum, F., & Weisz, J. R. (1994). Parental caregiving and child externalizing behavior in nonclinical samples: A meta-analysis. *Psychological Bulletin*, *116*(1), 55-74. https://doi.org/10.1037/0033-2909.116.1.55

Rudi, J. H., Walkner, A., & Dworkin, J. (2015). Adolescent–parent communication in a digital world: Differences by family communication patterns. *Youth & Society*, *47*(6), 811-828. https://doi.org/10.1177/0044118X14560334

Samaha, M., & Hawi, N. S. (2016). Relationships among smartphone addiction, stress, academic performance, and satisfaction with life. *Computers in Human Behavior*, *57*, 321-325. https://doi.org/10.1016/j.chb.2015.12.045

Sánchez-Martínez, M., & Otero, A. (2009). Factors associated with cell phone use in adolescents in the community of Madrid (Spain). *CyberPsychology & Behavior*, *12*(2), 131-137. https://doi.org/10.1089/cpb.2008.0164

Sharaievska, I., & Stodolska, M. (2017). Family satisfaction and social networking leisure. *Leisure Studies*, *36*(2), 231–243. https://doi.org/10.1080/02614367.2016.1141974

Silber, S. (1989). Family influences on early development. *Topics in Early Childhood Special Education*, *8*(4), 1-23. https://doi.org/10.1177/027112148900800402

Smahelova, M., Juhová, D., Cermak, I., & Smahel, D. (2017). Mediation of young children's digital technology use: The parents' perspective. *Cyberpsychology: Journal of*

Psychosocial Research on Cyberspace, 11(3), article 4. https://doi.org/10.5817/CP2017-3-4

Solomon-Moore, E., Matthews, J., Reid, T., Toumpakari, Z., Sebire, S. J., Thompson, J. L., Lawlor, D.A., & Jago, R. (2018). Examining the challenges posed to parents by the contemporary screen environments of children: a qualitative investigation. *BMC Pediatrics*, *18*(1), 129. https://doi.org/10.1186/s12887-018-1106-y

Solomon-Moore, E., Sebire, S. J., MacDonald-Wallis, C., Thompson, J. L., Lawlor, D. A., & Jago, R. (2017). Exploring parents' screen-viewing behaviours and sedentary time in association with their attitudes toward their young child's screen-viewing. *Preventive Medicine Reports*, *7*, 198-205. https://doi.org/10.1016/j.pmedr.2017.06.011

Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. *Child Development*, *48*(4), 1184-1199. https://doi.org/10.2307/1128475

Stalin, P., Abraham, S. B., Kanimozhy, K., Prasad, R. V., Singh, Z., & Purty, A. J. (2016). Mobile phone usage and its health effects among adults in a semi-urban area of southern India. *Journal of Clinical and Diagnostic Research*, *10*(1), LC14–LC16. https://doi.org/10.7860/JCDR/2016/16576.7074

Stockdale, L. A., Coyne, S. M., & Padilla-Walker, L. M. (2018). Parent and Child Technoference and socioemotional behavioral outcomes: A nationally representative study of 10-to 20-year-old adolescents. *Computers in Human Behavior*, *88*, 219-226. https://doi.org/10.1016/j.chb.2018.06.034

Stockdale, L. A., Porter, C. L., Coyne, S. M., Essig, L. W., Booth, M., Keenan-Kroff, S., & Schvaneveldt, E. (2020). Infants' response to a mobile phone modified still-face paradigm: Links to maternal behaviors and beliefs regarding technoference. *Infancy*, *25*(5), 571-592. https://doi.org/10.1111/infa.12342

Strauss, A., Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Sage.

Stupica, B. (2016). Rounding the bases with a secure base. *Attachment & Human Development*, *18*(4), 373-390. https://doi.org/10.1080/14616734.2016.1170052

Sundqvist, A., Heimann, M., & Koch, F. S. (2020). Relationship between family technoference and behavior problems in children aged 4–5 years. *Cyberpsychology,*

Behavior, and Social Networking, *23*(6), 371-376. https://doi.org/10.1089/cyber.2019.0512

Sweetser, P., Johnson, D., Ozdowska, A., & Wyeth, P. (2012). Active versus passive screen time for young children. *Australasian Journal of Early Childhood*, *37*(4), 94-98. https://doi.org/10.1177/183693911203700413

Terras, M. M., & Ramsay, J. (2016). Family digital literacy practices and children's mobile phone use. *Frontiers in Psychology*, *7*, 1957. https://doi.org/10.3389/fpsyg.2016.01957

Terry, G., Hayfield, N., Clarke, V., & Braun, V. (2017). Thematic analysis. In C. Willig & W. Stainton Rogers (Eds.), *The Sage handbook of qualitative research in psychology* (2nd ed., pp. 17-37). Sage. https://doi.org/10.4135/9781526405555.n2

Thompson, B., Diamond, K. E., McWilliam, R., Snyder, P., & Snyder, S. W. (2005). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children*, *71*(2), 181-194. https://doi.org/10.1177/001440290507100204

Toh, S. H., Howie, E. K., Coenen, P., & Straker, L. M. (2019). "From the moment I wake up I will use it… every day, very hour": a qualitative study on the patterns of adolescents' mobile touch screen device use from adolescent and parent perspectives. *BMC Pediatrics*, *19*(1), 30. https://doi.org/10.1186/s12887-019-1399-5

Trifan, T. A., Stattin, H., & Tilton-Weaver, L. (2014). Have authoritarian parenting practices and roles changed in the last 50 years? *Journal of Marriage and Family*, *76*(4), 744-761. https://doi.org/10.1111/jomf.12124

Tronick, E., Als, H., Adamson, L., Wise, S., & Brazelton, T. B. (1978). The infant's response to entrapment between contradictory messages in face-to-face interaction. *Journal of the American Academy of Child Psychiatry*, *17*(1), 1-13. https://doi.org/10.1016/s0002-7138(09)62273-1

Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. *Nursing & Health Sciences*, *15*(3), 398-405. https://doi.org/10.1111/nhs.12048

Valkenburg, P. M., Krcmar, M., Peeters, A. L., & Marseille, N. M. (1999). Developing a scale to assess three styles of television mediation: "Instructive mediation," "restrictive mediation," and "social coviewing". *Journal of Broadcasting & Electronic Media, 43*(1), 52–66. https://doi.org/10.1080/08838159909364474

Vanden Abeele, M. M., Abels, M., & Hendrickson, A. T. (2020). Are parents less responsive to young children when they are on their phones? A systematic naturalistic observation study. *Cyberpsychology, Behavior, and Social Networking*, *23*(6), 363-370. https://doi.org/10.1089/cyber.2019.0472

Villanti, A. C., Johnson, A. L., Ilakkuvan, V., Jacobs, M. A., Graham, A. L., & Rath, J. M. (2017). Social media use and access to digital technology in US young adults in 2016. *Journal of Medical Internet Research*, *19*(6), e196. https://doi.org/10.2196/jmir.7303

Wang, X., Gao, L., Yang, J., Zhao, F., & Wang, P. (2020). Parental phubbing and adolescents' depressive symptoms: Self-esteem and perceived social support as moderators. *Journal of Youth and Adolescence*, *49*(2), 427-437. https://doi.org/10.1007/s10964-019-01185-x

Warren, R. (2003). Parental mediation of preschool children's television viewing. *Journal of Broadcasting & Electronic Media*, *47*(3), 394-417. https://doi.org/10.1207/s15506878jobem4703_5

Warren, R., & Aloia, L. (2018). Parent–adolescent communication via mobile devices: Influences on relational closeness. *Journal of Family Issues*, *39*(15), 3778-3803. https://doi.org/10.1177/0192513X18793924

Wartella, E., Rideout, V., Lauricella, A., & Connell, S. (2013). Parenting in the age of digital technology: A national survey. *Center on Media and Human Development*. Retrieved from https://contemporaryfamilies.org/wp-content/uploads/2014/04/Wartella.pdf

Wartella, E., Rideout, V., Montague, H., Beaudoin-Ryan, L., & Lauricella, A. (2016). Teens, health and technology: A national survey. *Media and Communication*, *4*(3), 13-23. https://doi.org/10.17645/mac.v4i3.515

Wartella, E. A., Vandewater, E. A., & Rideout, V. J. (2005). Introduction: Electronic media use in the lives of infants, toddlers, and preschoolers. *American Behavioral Scientist*, *48*(5), 501-504. https://doi.org/10.1177/0002764204271511

Weinberg, M. K., Beeghly, M., Olson, K. L., & Tronick, E. (2008). A still-face paradigm for young children: 2½ year-olds' reactions to maternal unavailability during the still-face. *Journal of Developmental Processes*, *3*(1), 4–22

Weisskirch, R. S. (2011). No crossed wires: Cell phone communication in parent-adolescent relationships. *Cyberpsychology, Behavior, and Social Networking*, *14*(7-8), 447-451. https://doi.org/10.1089/cyber.2009.0455

World Health Organisation. (2019). *Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age.* Retrieved from: https://apps.who.int/iris/handle/10665/311664

Willoughby, M. (2019). A review of the risks associated with children and young people's social media use and the implications for social work practice. *Journal of Social Work Practice*, *33*(2), 127-140. https://doi.org/10.1080/02650533.2018.1460587

Winnicott, D. W. (1960). The theory of the parent-infant relationship. *International Journal of Psycho-Analysis*, *41*, 585-595. https://doi.org/10.1093/med:psych/9780190271381.003.0022

Wolfers, L. N., Kitzmann, S., Sauer, S., & Sommer, N. (2020). Phone use while parenting: An observational study to assess the association of maternal sensitivity and smartphone use in a playground setting. *Computers in Human Behavior*, *102*, 31-38. https://doi.org/10.1016/j.chb.2019.08.013

Wu, P. H., Lin, C. C., Liao, H. F., Tsao, F. M., Hsieh, W. S., & Chen, P. C. (2012). Maternal mobile phone use and children's neurocognitive development. *Taiwan Journal of Public Health*, *31*(5), 436-445.

Xie, X., Chen, W., Zhu, X., & He, D. (2019). Parents' phubbing increases Adolescents' Mobile phone addiction: Roles of parent-child attachment, deviant peers, and gender. *Children and Youth Services Review*, *105*, 104426. https://doi.org/10.1016/j.childyouth.2019.104426

Xie, X., & Xie, J. (2020). Parental phubbing accelerates depression in late childhood and adolescence: A two-path model. *Journal of Adolescence*, *78*, 43-52. https://doi.org/10.1016/j.adolescence.2019.12.004

Yamaguchi, S. (1994). Collectivism among the Japanese: A perspective from the self. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. Choi, & G. Yoon (Eds.)*, Individualism and collectivism: Theory, method, and applications* (pp. 175–188). Sage.

Yates, T. (2011). Parents Interacting with Infants: Strengthening Parent-Child Relationships to Support Social and Emotional Development. *Zero to Three*, *32*(2), 25-29.

Yavorsky, J. E., Kamp Dush, C. M., & Schoppe-Sullivan, S. J. (2015). The production of inequality: The gender division of labor across the transition to parenthood. *Journal of Marriage and Family*, *77*(3), 662-679. https://doi.org/10.1111/jomf.12189

Yen, J. Y., Ko, C. H., Yen, C. F., Chen, S. H., Chung, W. L., & Chen, C. C. (2008). Psychiatric symptoms in adolescents with Internet addiction: Comparison with substance use. *Psychiatry and Clinical Neurosciences*, *62*(1), 9-16. https://doi.org/10.1111/j.1440-1819.2007.01770.x

Yuan, N., Weeks, H. M., Ball, R., Newman, M. W., Chang, Y. J., & Radesky, J. S. (2019). How much do parents actually use their smartphones? Pilot study comparing self-report to passive sensing. *Pediatric Research*, *86*(4), 416-418. https://doi.org/10.1038/s41390-019-0452-2

Zillien, N., & Hargittai, E. (2009). Digital distinction: Status-specific types of internet usage. *Social Science Quarterly*, *90*(2), 274-291. https://doi.org/10.1111/j.1540-6237.2009.00617.x

Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2 years. *The Journal of Pediatrics*, *151*(4), 364-368. https://doi.org/10.1016/j.jpeds.2007.04.071

Appendices

Appendix A: Excluded Studies

Sample of Studies Excluded on Title	Reason for Exclusion
Arasu, S., Jain, A., Lakra, S., Sophia, A., & Johnson, A. R. (2019). Use of mobile phones and television for essential obstetric care among women availing maternal and child health services at a rural maternity hospital in South Karnataka. *Indian Journal of Community Health*, *31*(2), 208-212.	4
Fealy, S., Chan, S., Wynne, O., Dowse, E., Ebert, L., Ho, R., Zhang, M.W.B., & Jones, D. (2019). The Support for New Mums Project: a protocol for a pilot randomized controlled trial designed to test a postnatal psychoeducation smartphone application. *Journal of Advanced Nursing*, *75*(6), 1347-1359. https://doi.org/10.1111/jan.13971	4
Fletcher, R., StGeorge, J. M., Rawlinson, C., Baldwin, A., Lanning, P., & Hoehn, E. (2020). Supporting partners of mothers with severe mental illness through text–a feasibility study. *Australasian Psychiatry*, 28(5), 548-551. https://doi.org/10.1177/1039856220917073	3; 4
Gebremariam, K. T., Zelenko, O., Hadush, Z., Mulugeta, A., & Gallegos, D. (2020). Could mobile phone text messages be used for infant feeding education in Ethiopia? A formative qualitative study. *Health Informatics Journal*, *26*(4), 2614-2624. https://doi.org/10.1177/1460458220911779	4
Orr, T., Campbell-Yeo, M., Benoit, B., Hewitt, B., Stinson, J., McGrath, P., Dowling, D., & Thibeau, S. (2017). Smartphone and internet preferences of parents. *Advances in Neonatal Care*, *17*(2), 131-138. https://doi.org/10.1097/ANC.0000000000000349	4
Ragesh, G., Ganjekar, S., Thippeswamy, H., Desai, G., Hamza, A., & Chandra, P. S. (2020). Feasibility, acceptability	4

and usage patterns of a 24-hour mobile phone helpline service for women discharged from a mother-baby psychiatry unit (MBU) in India. *Indian Journal of Psychological Medicine*, *42*(6), 530-534. https://doi.org/10.1177/0253717620954148

Sample of Studies Excluded on Abstract	Reason for Exclusion
Bentley, G. F., Turner, K. M., & Jago, R. (2016). Mothers' views of their preschool child's screen-viewing behaviour: A qualitative study. *BMC Public Health*, *16*(1), 1-11. https://doi.org/10.1186/s12889-016-3440-z	3
Chang, F. C., Chiu, C. H., Chen, P. H., Chiang, J. T., Miao, N. F., Chuang, H. Y., & Liu, S. (2019). Children's use of mobile devices, smartphone addiction and parental mediation in Taiwan. *Computers in Human Behavior*, *93*, 25-32. https://doi.org/10.1016/j.chb.2018.11.048	3
Edwards, S., Henderson, M., Gronn, D., Scott, A., & Mirkhil, M. (2017). Digital disconnect or digital difference? A socio-ecological perspective on young children's technology use in the home and the early childhood centre. *Technology, Pedagogy and Education*, 26(1), 1-17.	3
Kelly, L., Duran, R. L., & Miller-Ott, A. E. (2017). Helicopter parenting and cell-phone contact between parents and children in college. *Southern Communication Journal*, *82*(2), 102-114. https://doi.org/10.1080/1041794X.2017.1310286	4; 5
Lepp, A., Li, J., & Barkley, J. E. (2016). College students' cell phone use and attachment to parents and peers. *Computers in Human Behavior*, *64*, 401-408. https://doi.org/10.1016/j.chb.2016.07.021	3; 5
Morrison, M., & Krugman, D. M. (2001). A look at mass and computer mediated technologies: Understanding the roles of television and computers in the home. *Journal of Broadcasting & Electronic Media*, *45*(1), 135-161.	6
Selwyn, N., Potter, J., & Cranmer, S. (2009). Primary pupils' use of information and communication technologies at school and home. *British Journal of Educational Technology*, *40*(5), 919-932.	3

Studies Excluded on Full Text	Reason for Exclusion
Ali, R. A., Alnuaimi, K. M., & Al-Jarrah, I. A. (2020). Examining the associations between smartphone use and mother–infant bonding and family functioning: A survey design. Nursing & Health Sciences, 22(2), 235-242. https://doi.org/10.1111/nhs.12684	4
Chawla-Duggan, R., Milner, S., & Porter, J. (2018). Reflexivity and visual technology in research: young children's perspectives of paternal engagement in the home environment. *Qualitative Research*, 18(4), 471-491. https://doi.org/10.1177/1468794117728412	3; 6
Christensen, T. H. (2009). 'Connected presence' in distributed family life. New Media & Society, 11(3), 433-451. https://doi.org/10.1177/1461444808101620	4
Cristia, A., & Seidl, A. (2015). Parental reports on touch screen use in early childhood. PLoS One, 10(6), e0128338. https://doi.org/10.1371/journal.pone.0128338	3
Devamani, S., Paul, H., George, J., Begum, S., Dsouza, S. N., & Lobo, M. R. (2019). Parent's perception regarding mobile phone usage led behaviour changes in children. Current Pediatric Research, 23(4), 143-147.	3
Domoff, S. E., Radesky, J. S., Harrison, K., Riley, H., Lumeng, J. C., & Miller, A. L. (2019). A naturalistic study of child and family screen media and mobile device use. Journal of Child and Family Studies, 28(2), 401-410. https://doi.org/10.1007/s10826-018-1275-1	3
Goh, S. N., Teh, L. H., Tay, W. R., Anantharaman, S., van Dam, R. M., Tan, C. S., ... & Müller-Riemenschneider, F. (2016). Sociodemographic, home environment and parental influences on total and device-specific screen viewing in children aged 2 years and below: an observational study. BMJ Open, 6(1), e009113. https://doi.org/10.1136/bmjopen-2015-009113	3
Jago, R., Stamatakis, E., Gama, A., Carvalhal, I. M., Nogueira, H., Rosado, V., & Padez, C. (2012). Parent and child	3; 6

screen-viewing time and home media environment. American Journal of Preventive Medicine, 43(2), 150-158.

Krcmar, M., & Cingel, D. P. (2014). Parent–child joint reading in traditional and electronic formats. Media Psychology, 17(3), 262-281. https://doi.org/10.1080/15213269.2013.840243 3; 6

Lahtinen, H. J. (2012). Young people's ICT role at home—a descriptive study of young Finnish people's ICT views in the home context. Quality & Quantity, 46(2), 581-597. 3

Latif, H., Şimşek Kandemir, A., Uçkun, S., Karaman, E., Yüksel, A., & Onay, Ö. A. (2020). The presence of smartphones at dinnertime: A parental perspective. *The Family Journal*, 28(4), 432-440. https://doi.org/10.1177/1066480720906122 3

Lee, E. J., & Kim, H. S. (2018). Gender differences in smartphone addiction behaviors associated with parent–child bonding, parent–child communication, and parental mediation among Korean elementary school students. Journal of Addictions Nursing, 29(4), 244-254. https://doi.org/10.1097/JAN.0000000000000254 3

Livingstone, S., & Franklin, K. (2018). Families with young children and 'screen time'. Journal of Health Visiting, 6(9), 434-439. https://doi.org/10.12968/johv.2018.6.9.434 3

McDaniel, B. T., & Coyne, S. M. (2016). Technology interference in the parenting of young children: Implications for mothers' perceptions of coparenting. The Social Science Journal, 53(4), 435-443. https://doi.org/10.1016/j.soscij.2016.04.010 4

Moyse, K. (2019). Children's and parents' views about using mobile phones to support outdoor play. Nursing Children and Young People, 33(3), 32-37. https://doi.org/10.7748/ncyp.2019.e1026 3

Mullan, K., & Chatzitheochari, S. (2019). Changing times together? A time-diary analysis of family time in the digital age in the United Kingdom. Journal of Marriage and Family, 81(4), 795-811. https://doi.org/10.1111/jomf.12564 4; 6

Notten, N., Kraaykamp, G., & Konig, R. P. (2012). Family media matters: Unraveling the intergenerational transmission of reading and television tastes. Sociological Perspectives, 55(4), 683-706. https://doi.org/10.1525/sop.2012.55.4.683 6

Padilla-Walker, L. M., Coyne, S. M., & Fraser, A. M. (2012). Getting a high-speed family connection: Associations between family media use and family connection. Family Relations, 61(3), 426-440. https://doi.org/10.1111/j.1741-3729.2012.00710.x 4; 6

Palen, L., & Hughes, A. (2007). When home base is not a place: parents' use of mobile telephones. Personal and Ubiquitous Computing, 11(5), 339-348. https://doi.org/10.1007/s00779-006-0078-3 4

Plowman, L., McPake, J., & Stephen, C. (2010). The technologisation of childhood? Young children and technology in the home. Children & Society, 24(1), 63-74. https://doi.org/10.1111/j.1099-0860.2008.00180.x 3

Piguet, C., Barrense-Dias, Y., Ramelet, A. S., & Suris, J. C. (2019). Monitoring screen use: A qualitative exploration of family strategies in Swiss homes. International Journal of Adolescent Medicine and Health, 31(1). Https://doi.org/10.1515/ijamh-2016-0146 6

Qiao, L., & Liu, Q. (2020). The effect of technoference in parent-child relationships on adolescent smartphone addiction: The role of cognitive factors. Children and Youth Services Review, 118, 105340. https://doi.org/10.1016/j.childyouth.2020.105340 3

Racz, S. J., Johnson, S. L., Bradshaw, C. P., & Cheng, T. L. (2017). Parenting in the digital age: urban black youth's perceptions about technology-based communication with parents. Journal of Family Studies, 23(2), 198-214. https://doi.org/10.1080/13229400.2015.1108858 4

Rocha, S. (2019). Talking with teens and families about digital media use. The Brown University Child and Adolescent Behavior Letter, 35(3), 1-7. https://doi.org/10.1002/cbl.30361 3

Rudi, J. H., Walkner, A., & Dworkin, J. (2015). Adolescent–parent communication in a digital world: Differences by family communication patterns. Youth & Society, 47(6), 811-828. https://doi.org/10.1177/0044118X14560334 3

Seo, H., & Lee, C. S. (2017). Emotion matters: What happens between young children and parents in a touch screen world. *International Journal of Communication,* 11, 561-580. 3

Sharkins, K. A., Newton, A. B., Albaiz, N. E. A., & Ernest, J. M. (2016). Preschool children's exposure to media, technology, and screen time: Perspectives of caregivers from three early childcare settings. Early Childhood Education Journal, 44(5), 437-444. https://doi.org/10.1007/s10643-015-0732-3 3

Strasburger, V. C., Jordan, A. B., & Donnerstein, E. (2010). Health effects of media on children and adolescents. Pediatrics, 125(4), 756-767. https://doi.org/10.1542/peds.2009-2563 3; 6

Teichert, L. (2020). Negotiating screen time: A mother's struggle over 'no screen time' with her infant son. Journal of Early Childhood Literacy, 20(3), 524-550. https://doi.org/10.1177/1468798420926623 3

Teichert, L. (2017). To digital or not to digital: How mothers are navigating the digital world with their young children. Language and Literacy, 19(1), 63-76. https://doi.org/10.20360/G22P5W 3; 4

Vaterlaus, J. M., Beckert, T. E., & Schmitt-Wilson, S. (2019). Parent–child time together: The role of interactive technology with adolescent and young adult children. Journal of Family Issues, 40(15), 2179-2202. https://doi.org/10.1177/0192513X19856644 4

Warren, R., & Aloia, L. (2018). Parent–adolescent communication via mobile devices: Influences on relational closeness. Journal of Family Issues, 39(15), 3778-3803. https://doi.org/10.1177/0192513X18793924 4

Weisskirch, R. S. (2011). No crossed wires: Cell phone communication in parent-adolescent relationships. Cyberpsychology, Behavior, and Social Networking, 14(7-8), 447-451. https://doi.org/10.1089/cyber.2009.0455 4

Wu, P. H., Lin, C. C., Liao, H. F., Tsao, F. M., Hsieh, W. S., & Chen, P. C. (2012). Maternal mobile phone use and children's neurocognitive development. Taiwan Gong Gong Wei Sheng Za Zhi, 31(5), 436-445. 5

Appendix B: Summary of Included Studies

Study	Research Objective(s)	Country	Sample	Design	Outcomes
Atlı et al. (2019)	To investigate the relationship between adaptive behaviours of 18- to 24-month-old infants and their parents' use of technology.	Turkey	58 married couples (i.e. 116 individuals) with 18- to 24-month-old infants	Quantitative research utilising a survey design to explore the associations between parents' technology use and their infants' adaptive behaviours	Parents' use of technology had an impact on adaptive behaviours of 18- to 24-month-old infants, across domains of concept, self-management, leisure, and communication.
Golen & Ventura (2015b)	To explore the extent to which mothers engage in distracting activities during infant feeding.	USA	41 mothers between 18 and 41 years of age, with 0- to 6-month-old infants	Mixed methods, involving diary report and Infant Behaviour Questionnaire – Revised (Peterson et al. 2017)	Mothers reported engaging in other activities during 52% of feedings; engaged in smartphone use 2% of the time.
Hong et al. (2019)	To examine the associations among parents' phubbing, the parent–child relationship, children's self-esteem, and problematic mobile phone use by adolescents	China	2,311 secondary school students (51.4% girls, 48.6% boys) aged between 11 and 17 years of	Quantitative data collected through a survey design	Parents' phubbing was directly associated with adolescents' problematic mobile phone use, and indirectly associated with problematic mobile phone use through the mediating roles of

			age		the parent–child relationship and children's self-esteem.
Johnson & Hertlein (2019)	To gain insight into attitudes, feelings, beliefs, experiences, and reactions of participants to further the understanding of what effects parental smartphone use may be having on today's children.	USA	Twelve parents (n = 12) aged between 26 and 54 years of age, with at least one child under the age of 18, with the majority being female (n = 10).	Phenomenological qualitative design employing individual semi-structured interviews.	Five themes emerged: (1) Disengagement, (2) Concern for Future, (3) Change in Social Norms, (4) Boundaries, and (5) Cognitive Dissonance
Kushlev & Dunn (2019)	To examine whether smartphones made parents feel distracted, thereby undermining key benefits parents reap when spending time with their children. I	Canada	Study 1: N = 200 parents Study 2: N = 114 parents	Study 1: Quantitative, non-randomised Study 2: Quantitative descriptive	Frequent phone use led parents to feel more distracted, which in turn impaired feelings of social connection and the meaning that parents derived when spending time with their children, and smartphones can distract parents from reaping a sense of social connection when

					spending time with their children.
Liu et al. (2019)	To examine (a) the effects of parental phubbing on teenagers' mobile phone dependency and (b) the mediating roles of subjective norm and dependent intention of underlying this relationship.	China	605 middle school students (females = 294, males = 274, 37 did not report gender), with a mean age of 15.09 years.	Quantitative survey design, exploring associations between parental phubbing behaviours, subjective norm, dependency intention, and mobile phone dependency behaviour.	Parental phubbing reinforced teenagers' mobile phone dependency intention, which in turn increased the likelihood of mobile phone dependency, and enhanced the tendency of parental mobile phone dependence norm perceived by teenagers, and thus reinforced their mobile phone dependency intention, ultimately increasing mobile phone dependency.
Mangan et al. (2018)	To understand parents/carers' use of mobile devices and their associated beliefs about mobile device use whilst caring for children aged five and younger in playground.	Australia	Parents/carers were included if they appeared to be aged up to 40, attending the playground by themselves (not	Both quantitative and qualitative data were collected using observations (n = 50) and interviews (n = 25).	Of the 50 observed parents/carers, 76% (n = 38) used their mobile device within the observation period. The 25 interviewed parents/carers beliefs on mobile device use were centred on three themes:

			with friends or partner), and with at least one child that appeared to be aged five or younger and independently mobile.		diversity of mobile device use, child relationships and mobile device use and the physical environment and mobile device use.
McDaniel & Radesky (2018)	To investigate whether parental problematic technology use is associated with technology-based interruptions in parent–child interactions, termed technoference, and whether technoference is associated with child behaviour problems.	USA	333 parents (168 mothers and 165 fathers from 170 families), with a child aged between 1 and 5 years (child mean age = 3.04 years).	Quantitative survey design	Maternal and paternal problematic digital technology use predicted greater technoference in mother–child and father–child interactions; then, maternal technoference predicted both mothers' and fathers' reports of child externalizing and internalizing behaviors.
Modecki et al. (2020)	To analyse the effects of parents' smartphone use on	Australia	659 parents (52% female)	Quantitative survey design.	Direct associations between smartphone use and parenting

	the parent–child relationship.		where their children were living at home and the youngest child was aged 18 or under.		were relatively weak and mixed. Instead, the relation between use and parenting depended on level of technological interference. This pattern was particularly robust for family displacement. At low levels of displacing time with family using technology, more smartphone use was associated with better (not worse) parenting.
Myruski et al. (2018)	To establish the impact of maternal mobile device use on child socioemotional behaviour and to examine whether or not maternal device use habits predict individual differences in infant behaviour during the Still Face Paradigm.	USA	Fifty infants (25 female) ages 7.20 to 23.60 months (M = 15.40, SD = 4.74), and their mothers. participated in a modified SFP	Quantitative non-randomised, Still Face Paradigm task.	Infants showed the most social bids during still face phases and more room exploration in still face than reunion phases. More frequent reported mobile device use was associated with less room exploration and positive affect during still face, and less recovery (i.e., engagement with

			with their mothers.		mother, room exploration positive affect) during the reunion phase.
Newsham et al. (2020)	To extend previous technoference research to more directly examine the interplay between maternal depression, problematic phone use, and technoference in parenting within a sample of mothers with young children.	USA	223 mothers with an average age of 31.5 years, with children aged 1 to 5 years.	Quantitative survey design.	Most mothers (76.7%–100%) reported that they engaged in the measured parenting activities with their children, and many (41.9%–71.8%) reported that technology interfered with those activities. Maternal depression was positively related to technology interference in playtime and in doing chores with the child.
Poulain et al. (2019)	To investigate the associations of media use of children, media use of mothers, and parent-child interactions with behavioural strengths and difficulties in	Germany	553 children (55% boys) aged between 2 and 9 years (*M* = 6.21 years, *SD* = 2.31). The	Quantitative research involving behavioural coding of the media use of mothers, media use of children, and parent–child interactions, and	High screen time of mothers was associated with emotional problems, conduct problems, and symptoms of hyperactivity/inattention. In contrast, a higher frequency

	children.		mean age of mothers was 38.11 years (*SD* = 5.44)	Strengths and Difficulties Questionnaire scores (Woerner et al. 2004).	of parent–child interactions was associated with fewer conduct problems, fewer peer-relationship problems, and more prosocial behaviour of children. Children might use the media behaviour of their mothers as a role model for their own media use.
Radesky et al. (2016)	To understand parent views regarding their mobile device use to identify actionable targets of potential intervention.	USA	35 caregivers consisting of 22 mothers, 9 fathers, and 4 grandmothers (mean age 35.8 years, age range of 23-55 years)	Qualitative design utilising semi-structured in-depth interviews consisting of open-ended questions	Participants consistently expressed a high degree of internal tension regarding their own mobile technology use, which centered around 3 themes: (1) Cognitive tensions, (2) emotional tensions, and (3) tensions around the parent-child dyad.
Radesky et al. (2014)	To describe naturalistic patterns of mobile device use by caregivers and	USA	55 caregivers eating with 1 or more young	Field notes were taken during 55 observation periods and these field	Forty caregivers used devices during their meal, with absorption with the device

	children to generate hypotheses about its effects on caregiver–child interaction.		children.	notes were then analysed qualitatively.	determined by frequency, duration, and modality of device use. Children child responded to caregiver use in a variety of ways, from entertaining themselves to escalating bids for attention. Highly absorbed caregivers often responded harshly to child misbehaviour.
Radesky et al. (2018)	To examine associations between maternal mental representations of their children and maternal mobile device use behaviours during home- and laboratory-based eating activities.	USA	195 mother-child dyads. Children were 5.9 (*SD* = 0.7) years old, mothers were 31.5 (*SD* = 7.4) years old.	Quantitative data were collected using the Working Model of the Child Interview (WMCI; Zeanah & Benoit, 1995) and behavioural coding of parent-child mealtimes.	During the family mealtime, 47 mothers actively used a smartphone at least once, while during the structured eating protocol, 44 mothers used a device. Higher child difficulties, lower sensitivity, and lower richness of perceptions were associated with smartphone use during mealtimes.

Radesky et al. (2015)	To examine associations of maternal mobile device use with the frequency of mother-child interactions during a structured laboratory task.	USA	225 mother-child dyads. The mean age of mothers was 31.2 years [SD 7.1], while children were approximately 6 years of age.	Quantitative descriptive research, with data collected based on observations of mother and child mealtimes.	Mothers with mobile device use had significantly fewer verbal interactions with their children the mothers who had no or negligible use during the eating protocol. Maternal use of mobile devices was associated with 20% fewer verbal and 39% fewer nonverbal interactions during the eating protocol.
Reed et al. (2017)	To explore how parental mobile device use affects word learning in infants.	USA	38 mothers (mean age = 35.26 years) and their 2-year-old typically developing children (mean age = 27.15 months)	Quasi-experimental quantitative research.	Children learned new novel words when teaching interactions were not interrupted. However, children failed to learn new words when teaching interactions were disrupted by parental smartphone use.
Stockdale et al. (2018)	To examine the effect of adolescents' perceptions of	USA	1072 adolescents,	Quantitative survey designed.	Adolescents' perceptions of their parents technoference was

	their own and their parents technoference on adolescent positive and negative behaviours, including anxiety, depression, cyberbullying, prosocial behaviour, and civic engagement, as mediated through adolescent perceptions of parental warmth.		aged between 10 and 20 years.		related to increased anxiety, depression, cyber bullying, and pro social behaviors as mediated through parental warmth.
Stockdale et al. (2020)	To investigate the effect of disruptions to parent–infant interactions due to mobile phone use on infant behaviours, and to examine the role of previous infant exposure to disruptions in parent–infant interactions due to cell phone use on infant behaviours.	USA	227 parent–infant dyads (infant age M = 8.03, SD = 2.51, range = 5–14 months; 52% male, 48% female; 221 mothers, three fathers, and	Quantitative survey design.	Infants displayed increased negative affect, decreased positive affect, increased self-comforting, object orientation, and escape behaviours during the “still-face” or phone distracted phase of the paradigm and frequently failing to return to baseline during the reunion phase. Higher levels of

			three unknown).		technoference also appear to attenuate the negative emotional response of infants during still face.
Sundqvist et al. (2020)	To explore parent's self-rated perceived technoference on the rated behaviour of their 4- to 5-year-old children.	Sweden	153 parents (133 mothers, 19 fathers, 1 declined to answer), with an average age of 34.1 years (*SD* = 4.99, range 23–45 years).	Quantitative survey design.	Parents' perceived technoference, triggered by the parent's use of mobile device, is associated with an increase in reported internalized and externalized child behaviour problems.
Vanden Abeele et al. (2020)	To examine whether parents are less responsive to their young children (0–5) when they use a phone.	The Netherlands	53 parent–child dyads (mean child age = 26.28 months; *SD* = 18.06, max = 5 years).	Quantitative data were collected observations of 1,038 ten second intervals, which were then behaviourally coded.	Parental phone use predicted a decrease in parental responsiveness. Moreover, parents' responses were less timely, weaker, showed less affect, and were less likely to prioritize the child over other

					activities.
Wang et al. (2020)	To examine the relationship between parental phubbing and adolescents' depressive symptoms and to determine whether self-esteem and perceived social support simultaneously moderated this relationship.	China	2407 students (1911 boys, 1202 girls, and 14 participants who did not report gender). The mean age of the participants was 12.75 years (*SD* = 0.58, range = 11–16 years).	Quantitative survey design.	Adolescents with a high level of parental phubbing were likely to have high levels of depressive symptoms, after controlling for variables such as adolescents' perceived economic stress, gender, and age. Low self-esteem adolescents who experienced higher levels of parental phubbing were more likely to be depressed than high self-esteem adolescents. Furthermore, higher levels of parental phubbing significantly predicted increases in adolescents' depressive symptoms when their self-esteem and perceived social support were both low, or one

					was low.
Wolfers et al. (2020)	To understand how mothers use their smartphone while spending time with their children.	Germany	89 mother-child dyads. Mothers appeared to be aged between 20 and 45. Children were less than 36 months old (M = 20 months, SD = 8).	Quantitative data were collected using observations and post observation surveys.	Mothers who used their smartphones for longer periods were less sensitive to their children, whereas there was no association between low sensitivity ratings and the frequency of use.
Xie et al. (2019)	To determine if adolescents' mobile phone addiction increase after being phubbed by parents, and examine effects of the mediating roles of parent-child attachment, deviant peer affiliation, and moderating role of gender.	China	1007 adolescents (518 girls and 489 boys; (mean age = 13.85 years, *SD* = 1.53).	Quantitative survey design.	Parents' phubbing increased adolescents' mobile phone usage, and the indirect effect of parents' phubbing on adolescents' mobile phone addiction through deviant peers was greater in boys than in girls.
Xie & Xie (2020)	To test the connections between parental phubbing and depression in late	China	Study 1: 530 Chinese students (268 boys and	Study 1 was a cross-sectional study, with data collected self-report	Parental phubbing was associated with students' depression in late childhood

	childhood and adolescence, as well as the mediating roles of parental warmth, parental rejection, and relatedness need satisfaction.		262 girls, *M*age = 13.15 years). Study 2: 293 Chinese students (151 boys, 141 girls, and one participant who did not report gender, *M*age = 12.87 years).	questionnaires. Study 2 used a short longitudinal design to validate the results of Study 1, in which data were also collected using self-report questionnaires.	and adolescence through two paths, namely the protection-reduced path and the risk-increased path.

Appendix C: Sample of Letts et al. (2007) Coding Protocol

Critical Review Form – Qualitative Studies (Version 2.0)

McMaster University

CITATION:

	Comments
STUDY PURPOSE: Was the purpose and/or research question stated clearly? O yes O no	Outline the purpose of the study and/or research question.
LITERATURE: Was relevant background literature reviewed? O yes O no	Describe the justification of the need for this study. Was it clear and compelling?
	How does the study apply to your practice and/or to your research question? Is it worth continuing this review?[1]
STUDY DESIGN: What was the design? O phenomenology O ethnography O grounded theory O participatory action research O other _____	Was the design appropriate for the study question? (i.e., rationale) Explain.

1 When doing critical reviews, there are strategic points in the process at which you may decide the research is not applicable to your practice and question. You may decide then that it is not worthwhile to continue with the review.

Was a theoretical perspective identified? O yes O no	Describe the theoretical or philosophical perspective for this study e.g., researcher's perspective.
Method(s) used: O participant observation O interviews O document review O focus groups O other _____	Describe the method(s) used to answer the research question. Are the methods congruent with the philosophical underpinnings and purpose?
SAMPLING: Was the process of purposeful selection described? O yes O no	Describe sampling methods used. Was the sampling method appropriate to the study purpose or research question?
Was sampling done until redundancy in data was reached?[2] O yes O no O not addressed	Are the participants described in adequate detail? How is the sample applicable to your practice or research question? Is it worth continuing?
Was informed consent obtained? O yes O no O not addressed	
DATA COLLECTION: **Descriptive Clarity** Clear & complete description of site: O yes O no participants: O yes O no Role of researcher & relationship with participants: O yes O no Identification of assumptions and biases of researcher: O yes O no	Describe the context of the study. Was it sufficient for understanding of the "whole" picture? What was missing and how does that influence your understanding of the research?

2 Throughout the form, "no" means the authors explicitly state reasons for not doing it; "not addressed" should be ticked if there is no mention of the issue.

Procedural Rigour Procedural rigor was used in data collection strategies? O yes O no O not addressed	Do the researchers provide adequate information about data collection procedures e.g., gaining access to the site, field notes, training data gatherers? Describe any flexibility in the design & data collection methods.
DATA ANALYSES: **Analytical Rigour** Data analyses were inductive? O yes O no O not addressed Findings were consistent with & reflective of data? O yes O no	Describe method(s) of data analysis. Were the methods appropriate? What were the findings?
Auditability Decision trail developed? O yes O no O not addressed Process of analyzing the data was described adequately? O yes O no O not addressed	Describe the decisions of the researcher re: transformation of data to codes/themes. Outline the rationale given for development of themes.
Theoretical Connections Did a meaningful picture of the phenomenon under study emerge? O yes O no	How were concepts under study clarified & refined, and relationships made clear? Describe any conceptual frameworks that emerged.

OVERALL RIGOUR Was there evidence of the four components of trustworthiness? Credibility O yes O no Transferability O yes O no Dependability O yes O no Comfirmability O yes O no	For each of the components of trustworthiness, identify what the researcher used to ensure each. What meaning and relevance does this study have for your practice or research question?
CONCLUSIONS & IMPLICATIONS Conclusions were appropriate given the study findings? O yes O no The findings contributed to theory development & future OT practice/ research? O yes O no	What did the study conclude? What were the implications of the findings for occupational therapy (practice & research)? What were the main limitations in the study?

Appendix D: Sample of Adapted Thompson et al. (2005) Coding Protocol

Authors(s):	
Coding Key: **2** = Met the Criteria **1** = Did Not Meet the Criteria **0** = Could Not Rate	
Measurement	
1. Score reliability coefficients are reported for all measured variables, based on analysis of the data in hand in the particular study, or based on induction from a prior study or test manual.	
2. Evidence is inducted, with explicit rationale, from a prior study or test manual that suggests scores are valid for the inferences being made in the study.	
3. Score validity is empirically evaluated based on data generated within the study.	
4. The influences of score reliability and validity on study interpretations are explicitly considered in reasonable detail.	
Total Measurement Score (Out of 4)	
Practical and Clinical Significance	
5. One or more effect size statistics is reported for each study primary outcome, and the effect statistic used is clearly identified.	
6. Authors explicitly consider study design and effect size statistic limitations as part of effect interpretation.	
Total Practical and Clinical Significance Score (Out of 2)	
Avoiding Some Common Macro-Analytic Mistakes	
7. When noteworthy results are detected, and the origins of these effects are investigated, the interpretation includes examination of structure coefficients.	
8. Persuasive evidence is explicitly presented that the assumptions of statistical methods are sufficiently well-met for results to be deemed credible	
Total Mistake Avoidance Score (Out of 2)	
CIs for Reliability Coefficients, Statistics, and Effect Sizes	
9. Confidence intervals are reported for the reliability coefficients derived for study data.	
10. Confidence intervals are reported for study effect sizes.	
Total Confidence Interval Score (Out of 2)	
Overall Total Score (Out of 12)	
Weight of Evidence Score	

Appendix E: Sample of Petticrew and Roberts (2003) Typology

Author(s): Study Design: WoE B Score:		
Typology of Evidence (Petticrew & Roberts, 2003)		
High (3)	Medium (2)	Low (1)
Randomised Control Trial studies	Cohort Studies	Case control studies
	Quasiexperimental studies	Non-experimental evaluations
		Survey Qualitative research

Appendix F: Sample of Criteria to Rate Topic Relevance

WoE C: Topic Relevance

Studies must meet all the criteria in a section in order to achieve the rating for that section.

Authors: **WoE C Score:**		
High (3)	At least two of the following demographics (age, gender, and ethnicity) are provided for children and the sample is deemed representative.	
	At least three of the following demographics (age, gender, martial status, educational attainment, measures of SES, ethnicity) are provided for the parent and the sample is deemed representative.	
	Objective data collection measures (e.g. observation) are also used.	
	There is evidence that the assessment measures used have high reliability and validity (r = .70 or higher).	
	Descriptions of settings are provided, if relevant (i.e. observational research, interview-based research)	
	Confounding variables are addressed and controlled for.	
Medium (2)	Confounding variables are addressed but not controlled for.	
	At least two of the following demographics (age, gender, martial status, educational attainment, measures of SES, ethnicity) are provided for the parent and the sample is deemed representative.	
	There is evidence that the assessment measure used has high reliability and validity (r = .70 or higher), or no statistical information on reliability of validity of attainment measure is provided.	
Low (1)	Measurement of parental device use is well described.	
	Limitations of the study are recognised sufficiently.	
	Appropriate rationale for the research is provided.	

Appendix G: Short Story Stems

Short Story Prompt: Condition 1

Sam was so bored. It had been raining all day and he was stuck inside, so Mam suggested they play a boardgame. Sam got the game out of the box and got all the pieces ready. Mam let Sam go first. Sam took his turn quickly and then it was time for Mam to play. Suddenly, Mam's phone started to ring. Mam picked it up and answered it. It was her sister, calling for a chat. Sam groaned. He knew the two of them could chat for hours!

How do you think Sam feels? What do you think he should do next?
Write what happens!

Short Story Prompt: Condition 2

Sam was so bored. It had been raining all day and he was stuck inside, so Mam suggested they play a boardgame. Sam got the game out of the box and got all the pieces ready. Mam let Sam go first. Sam took his turn quickly and then it was time for Mam to play. While Sam was taking his turn, Mam took her phone out and started reading the news. She didn't notice when Sam finished, and it was her turn to go. Sam had to let her know. As soon as she finished her turn, Mam picked her phone back up again.

How do you think Sam feels? What do you think he should do next?
Write what happens!

Short Story Prompt: Condition 3

Sam was so bored. It had been raining all day and he was stuck inside, so Mam suggested they play a boardgame. Mam let Sam go first. Sam took his turn quickly and then it was time for Mam to play. Suddenly, the doorbell rang, and Mam went to answer it. It was her sister, popping over for a chat. Sam groaned. He knew the two of them could chat for hours!

How do you think Sam feels? What do you think he should do next? ***Write what happens!***

Appendix H: Qualitative Questionnaire

What is your age?

_____

What is your gender?

- ○ Male
- ○ Female
- ○ Other
- ○ Prefer not to say

What is the highest degree or level of school you have completed?

- ○ Some secondary school, no diploma
- ○ Secondary school
- ○ Vocational training or diploma
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctoral or Professional degree

Do you own a smartphone (a mobile phone device that offers internet access)?

- ○ Yes
- ○ No
- ○ Unsure

Are you a parent or legal guardian of at least one child under the age of 12?

- ○ Yes
- ○ No

How many children do you have?

- 1
- 2
- 3
- 4
- 5 or more

Please state the age/s of your child/ren

_____

Please indicate the age of the child you are referring to when answering the survey questions.

_____

End of Block: Demographic Information

Start of Block: Block 3

During time I spend with my child, I find it difficult to stay away from checking my smartphone.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

I feel I use my smartphone too much when spending time with my child.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

There are times when I could play with my child, but I am on my smartphone instead.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

During time I spend with my child, I think about what I could be doing on my smartphone or what messages I might receive.

- Strongly agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

End of Block: Block 3

Start of Block: Block 4

Thinking about the questions you have just answered, would you like to give more information? Please indicate which question(s) you are commenting on.

_____

Is there a specific incident you can think of where your own smartphone use interrupted an interaction with your child? For example, did you miss something your child said or did? Did you have trouble carrying on a conversation with your child? Please describe the incident in as much detail as possible.

_____

Has your child ever commented on or complained about your smartphone use? If so, has this changed in any way as your child has gotten older. Please describe in as much detail as possible.

_____

In light of the ongoing COVID-19 pandemic, many parents have found they are spending significantly more time with their children. How do you feel your smartphone usage has impacted on your interactions with your child during these times specifically? For instance, has your smartphone usage around your child increased/decreased during this time? Please give as much detail as possible.

_____

Thank you for completing this survey. If you have any additional comments, please feel free to enter them below.

_____

End of Block: Block 4

Appendix I: Sample of Coded Parent Data

Theme	Subthemes	Codes
Family Functioning	Disruption to Parent Child Interactions due to Smartphone Use	Dividing attention between phone and child
		Would like to use phone less, focus on child more
		Ask the child to wait
		Use of phone when with children
	Smartphones and Family Life	Child can view the phone as desirable
		Involving the child when using the phone
	Smartphones are Sources of Family Conflict	Child feels parent is on the phone too much
		Child is upset by phone use
		Child compares own phone use to parent's
External Pressures on Family Functioning	Smartphone and Work-Life Balance	Use of phone for work
		Child's understanding of parent's work demands
	COVID-19 and Smartphone Use	Increased phone use during COVID-19
		Decreased phone use during COVID-19
		No change during COVID-19
Personal Behaviour in Relation to Smartphone Use	Efforts to Reduce Smartphone Use	Deliberate effort to avoid using the phone around children
		Strategies employed to reduce phone use around children

	Addictive Nature of Smartphone Use	Feeling pulled or drawn to their phone, using phone out of habit
		Requires effort to stay away from phone
		Parents feel pressure to engage with their phone

Appendix J: Confirmation of Ethical Approval

BRIATHAR DÉ MO LÓCHRANN
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MARY IMMACULATE COLLEGE
COLÁISTE MHUIRE GAN SMÁL

Mary Immaculate College
Research Ethics Committee
MIREC-4: MIREC Chair Decision Form

APPLICATION NO. A20-048

1. PROJECT TITLE

The Role of Smartphones in Parent-Child Interactions

2. APPLICANT

Name:	Hannah Browne
Department / Centre / Other:	EPISE
Position:	Postgraduate Researcher

3. DECISION OF MIREC CHAIR

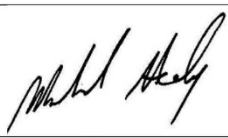
☐	Ethical clearance through MIREC is required.
☐	Ethical clearance through MIREC is not required and therefore the researcher need take no further action in this regard.
✓	Ethical clearance is required and granted. Referral to MIREC is not necessary.
☐	Ethical clearance is required but the full MIREC process is not. Ethical clearance is therefore granted if required for external funding applications and the researcher need take no further action in this regard.
☐	Insufficient information provided by applicant / Amendments required.

4. REASON(S) FOR DECISION

A20-048 – Hannah Browne - *The Role of Smartphones in Parent-Child Interactions*

I have reviewed this application and I believe it satisfies MIREC requirements. It is, therefore, approved.

5. DECLARATION (On behalf of MIREC CHAIR)

Name (Print):	Professor Michael Healy
Signature:	
Date:	28th September 2020

Appendix K: Parent Information Sheet for Child Research

The Role of Smartphones in Parent-Child Interactions

Information for Parents/Guardians

Dear Parent/Guardian,

My name is Hannah Browne and I am currently completing a doctorate in Educational and Child Psychology in Mary Immaculate College, Limerick. As part of my research, I am conducting a study and would like to invite you and your child to take part. Before you agree, it is important for you to understand what the study involves and why it is important. This information sheet outlines the purpose of the study, and what is involved in taking part. I have also provided you with an information sheet for you to read with your child, which explains the study in a way that is easy for them to understand. I am happy to answer any questions you may have at any time so feel free to contact me (my contact details are provided at the end of the information sheet). If you are happy for your child to participate, a consent form is attached for you to sign. Another form is attached for your child to complete, to indicate if they also agree to take part.

After reading the information sheet, if you are interested in being involved in this research, please complete and sign the enclosed parent/guardian consent form. I would ask that your child also complete and sign the attached child assent form, to indicate they understand the research and are happy to take part. Please return both forms to the school by DATE TBC. You may retain both information sheets for your own reference.

Purpose of the study:

The aim of the study is to explore children's perceptions of parental smartphone use. While there has been a lot of discussion in recent years about children's screen time, and how it impacts on them, less is known about the impact of caregiver device use. We want to find out what thoughts or emotions children identify in relation to their parent's smartphone use.

Who is conducting this study?

- I am the principal investigator involved in the research. I am supervised in the college by Dr Suzanne Egan (suzanne.egan@mic.ul.ie), Dr Marc Scully (marc.scully@mic.ul.ie), and Dr Laura Ambrose (laura.ambrose@mic.ul.ie). There are no other researchers involved in the project.

If I give consent for my child to take part what will he or she be asked to do?

- Your child will also receive an information letter. It will be a simpler, easier to read version of this letter which your child may find more accessible to read. I would encourage you to discuss this with your child and ensure they understand what the study is about.

- If you give consent for your child to take part, I will remind them that this does not mean they have to take part, just that if they want to take part you have said it is OK for them to do so.

- In order to collect data, I will visit your child's school. Your child will be asked to read a short paragraph about a child called Sam who is bored and trying to decide what to do at home one afternoon. Your child will be asked to respond to a couple of written questions about the story and to write the ending of the story about what Sam decides to do.

How long will it all take?

- Your child will have approximately half an hour to complete the story. The study will be conducted during the school day, however this should not affect your child's participation in his or her normal, everyday lessons.

What if my child does not take part?

- I understand that you may not be interested in allowing your child to take part in the study. If you do choose not to take part in the study, this will in *no way* affect you or your child's treatment by their school, nor will it prevent you being a part of any support groups, etc. in the future. If your child does not take part, they will remain in their classroom and will be given an alternative writing assignment to complete. This assignment will not be collected by the researcher.

What will be done with the information collected?

- Only myself and my supervisors, and possibly the examiners of my research project, will have access to information or data from the study and any data collected will be treated in the strictest of confidence.

- The information I collect will be used to write a report on the findings for my doctoral thesis. I may use anonymised extracts from your child's written piece during my thesis or in related presentations or publications. No information that might identify you, your family, or your child's school will be collected or reported at any point during the research.

What will happen to the data after research has been completed?

- Anonymised data may be retained indefinitely by the researcher.

What if I change my mind?

- If you agree to take part but later change your mind, all you have to do is let me know by phone or by email. If you do decide to withdraw, you do not have to give a reason for doing so. Withdrawing from the study will in no way affect your involvement with your child's school.

- Please note, once I have received your child's story, I will not be able to remove it from the study. This is because the stories I receive will be completely anonymous and I will have no way of knowing which story belongs to your child.

Contact details:

If at any time you have any queries / issues with regard to this study, my contact details are as follows:

Telephone: 061-204333
E-mail: 18097138@micstudent.mic.ul.ie

This research study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC) (quote approval number when you have received it). If you have any concerns about this study and wish to contact an independent authority, you may contact:

Mary Collins
MIREC Administrator
Research and Graduate School
Mary Immaculate College
South Circular Road
Limerick

Telephone: 061-204980
E-mail: mirec@mic.ul.ie

Thank you for taking the time to read this information sheet. Please retain this information for your own records.

Appendix L: Parent Consent form for Child Research

Consent Form for study – The Role of Smartphones in Parent-Child Interactions

By signing this form you are agreeing that _____ (child's name) has permission to take part in this study, having read and understood the attached information sheet.

You are confirming that:

1. You have read and understood the parent/guardian information letter.

2. You understand what the project is about, and what the results will be used for.

3. You are fully aware of all of the procedures involving your child.

4. You are aware that your child's results will be kept confidential.

5. You are also confirming that you understand that you have the right to withdraw your child from the study at any time before they hand their data in, but once your child's data has been received, it cannot be identified as your child's due to the anonymous nature of this study, and therefore cannot be withdrawn.

Parent's/Guardian's signature: _____

Parent's/Guardian's name in print: _____

Child's name in print: _____

Date: _____

Appendix M: Child Information Sheet

BRIATHAR DÉ MO LÓCHRANN
MIC
MARY IMMACULATE COLLEGE
COLÁISTE MHUIRE GAN SMÁL

Project – The Role of Smartphones in Parent-Child Interactions

Information for Children

Hi,

My name is **Hannah Browne.** I am doing a study to try and find out what children think and feel about their parents'/guardians' mobile phone use. To do this, I would like to ask you and other children in your class to write a story about a parent using their mobile phone around their child.

I am writing this letter to give you information about the study so you can decide if it is something you would like to take part in, or not. If there is anything on this sheet that you do not understand please ask your parent or another adult to explain.

Who is doing this study?

I (Hannah Browne) am doing this study, under the supervision of Dr Suzanne Egan, Dr Marc Scully and Dr Laura Ambrose.

Do I have to take part?

No! **You do not have to take part if you do not want to.** It is up to you and your parent/s or guardian/s to say yes or no. You can talk to them about whether or not you would like to take part.

Your parent/s or guardian/s will decide if they think it is OK for you to take part but that does not mean you *have* to.

What do I have to do if I want to take part?

After you read this sheet and talk to your parent/s or guardian/s about it, all you have to do is let them know that you would like to take part. They will sign the form I have sent with this letter. I have also given your parents/guardians a form for you to sign, if you are happy to take part. I have asked your parents/guardians to give both forms back to you when signed and ask you to give them to your teacher in school.

Next, I will visit your school. I will give you and the other children in your class the beginning of a story, and ask you to finish it. You will have half an hour to write the story. I will then collect the story and take it away with me to read.

This story will be completely anonymous. This means you will not be asked to write your name, or any other personal details, and no one will be able to find out what you wrote about in the story.
If you do not want to take part in this study, **that's fine!** I know that not all children or young people will want to take part.

What will be done with the story I give you?

- **The story you give me will be private** and only the I and my supervisors will see it. Your story will be kept in a locked place and your name will not be written on it.
- If you want to tell other people what you wrote about that's fine. You do not have to keep any of it secret unless you want to.
- I will put all the information together from you and all the other young people who take part in this study and write a report. This report may be printed in a magazine, newspaper or book and people at the University will be able to see it.

What if I change my mind?

If you agree to take part and then you change your mind **that's no problem.** All you have to do is let your parent/s or me know and I will leave your story out of the study. We will understand and we will be glad you told us.

Once you have handed your story to me, I won't be able to leave it out of the study. This is because your name will not be written on your story and I will have no way of knowing which story is yours.

What if I get upset when I'm writing the story?

If you feel upset or sad while writing the story **you do not have to keep writing.** It is your choice if you want to stop or keep going.

Please ask questions!!

If there is anything at all that you don't understand about this sheet or the study, please **ask** your parent/s or another adult to explain it to you.

If you would like to take part in this study, I would be very grateful if you could sign the attached form. Your parents/guardians will also be asked to sign a form to let me know it's OK for you to take part. Please return both these forms to your teacher in school as soon as possible.

Thanks for reading this information. I am looking forward to talking to you!

Hannah

Appendix N: Child Assent Form

ASSENT FORM FOR CHILDREN (to be completed by the child)

The Role of Smartphones in Parent-Child Interactions

Circle "yes" if you agree the sentences below. Circle "no" if you don't agree. If you're unsure about whether you agree or not, please speak to your parent/guardian.

Do you understand what this project is about?	**Yes/No**
Have you asked all the questions you want?	**Yes/No**
Have you had your questions answered in a way you understand?	**Yes/No**
Are you happy to take part?	**Yes/No**

If any answers are 'no' or you don't want to take part, **don't sign your name**!

If you do want to take part, you can write your name below:

Your name: _____

Date: _____

Thank you for your help!

Appendix O: Parent Information Sheet for Parent Research

BRIATHAR DÉ MO LÓCHRANN
MIC
MARY IMMACULATE COLLEGE
COLÁISTE MHUIRE GAN SMÁL

Participant Information

Study title: The Role of Smartphones in Parent-Child Interactions

What is the purpose of the study? The aim of the study is to explore parents'/guardians' perceptions of their own smartphone use, and how they feel this may be impacting their children. While there has been a lot of discussion in recent years about children's screen time, and how it impacts on them, less is known about the impact of caregiver device use. We want to find out what thoughts or emotions parents/guardians identify in relation to their own smartphone use.

Who is conducting this study? My name is Hannah Browne and I am currently completing a doctorate in Educational and Child Psychology in Mary Immaculate College, Limerick. I am the principal investigator involved in the research. I am supervised in the college by Dr Suzanne Egan (suzanne.egan@mic.ul.ie), Dr Marc Scully (marc.scully@mic.ul.ie), and Dr Laura Ambrose (laura.ambrose@mic.ul.ie).

What will happen if I take part? You will be asked to complete a short questionnaire which should take no more than 10 minutes to complete. You will be asked to agree or disagree with a series of statements about your smartphone use, and how much you feel it impacts on time spent with your child/ren. You will also be asked to detail any specific incidents you can recall in which your smartphone use disrupted or otherwise impacted on an interaction you had with your child.

Do I have to take part? It is up to you to decide whether or not to take part. If you decide to take part, you are still free to withdraw at any time and without giving a reason. Simply close the browser and the data will not be recorded. A decision to withdraw at any time, or a decision not to take part will not affect your rights in any way.

Are there any possible risks of taking part? Aside from the time commitment, there are no foreseeable risks related to participation.

Will my data be confidential? Yes. The raw data will identify you only by number. Only I and my supervisors and possibly the examiners of my research project will have access to information or data from the study, and any data collected will be treated with the strictest of confidence.

The information I collect will be used to write a report on the finding for my doctoral thesis. I may use anonymised extracts from written pieces during my thesis or in related presentations or publications. No information that might you or your family will be used.

What if I want to know more about the study? I understand you may have additional questions or concerns, and I would be happy to speak to you about these. My contact details are as follows:

Hannah Browne
Email: 18097138@micstudent.mic.ul.ie

This study has received Ethics approval from the Mary Immaculate College Research Ethics Committee (MIREC) (quote approval number when you have received it). If you have any concerns about this study and wish to contact an independent authority, you may contact:

Mary Collins
MIREC Administrator
Research and Graduate School
Mary Immaculate College
South Circular Road
Limerick
Telephone: 061-204980
E-mail: mirec@mic.ul.ie

Concluding statement. Whether you decide to participate or not, we would like to thank you for taking the time to read through this information sheet. If you would like to take part in the study, please proceed to the next page.