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Parents' perspectives on smartphone acquisition amongst 9- to 12-year-old children in the UK – a behaviour change approach

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ABSTRACT

Smartphone ownership has increased rapidly over the past decade, including amongst children and young people. Evidence is mixed in terms of the impact of smartphones on this population; with a number of benefits cited as well as a large number of risks. Given the pace of change in this area, research is sparse, including research to understand the influences on when children and young people acquire a smartphone. This is important because parents report struggling with deciding when to give their child a smartphone. This qualitative study applies the Behaviour Change Wheel to in-depth interviews, with a diverse sample of 11 parents, to report the barriers and enablers to parents giving children their first smartphone between the ages of 9 and 12 years old. Enablers include aspects of the physical and social environment, such as children starting to walk to school or preparing to move to secondary school, as well as the influence of other parents and children. Parents' skills are a barrier whilst their beliefs about the consequences of their child owning a smartphone are a mix of barriers and enablers. Recommendations for interventions include age restrictions, regulations, parental training, education and guidance to support parental decision-making.

Introduction

Since entering the mainstream in 2011, smartphone ownership in the United Kingdom (UK) has increased rapidly, including amongst children and young people (Sohn et al., 2019; Terras & Ramsay, 2016). They have replaced basic mobile phones as the dominant form of mobile device and reached a penetration of 92% amongst the over 16s in the UK by 2021 (O'Dea, 2021). Smartphones are a more sophisticated version of a mobile phone: being essentially small internet enabled computers, with the ability to store information and run programmes ('apps'), in addition to making phone calls, sending and receiving text messages (Peslak et al., 2011). Children are becoming smartphone owners younger;

in 2018 35% of children in the UK aged 8–11 years old owned a smartphone (Ofcom, 2018) and by 2022 this was 60% (Ofcom, 2022). Smartphone ownership becomes almost universal by the time children reach secondary school age (Ofcom, 2022; The Guardian, 2020). This shift means children being exposed to increasingly complex, mobile and personalized technologies at a younger age, allowing them access to the internet 'anywhere, anytime' (Livingstone et al., 2014), making the role of parents harder but arguably more important (Terras & Ramsay, 2016). In a rapidly changing technology landscape, up-to-date academic research on parenting in an online environment is lacking (Terras & Ramsay, 2016). This hinders policy making and the provision of advice and support for parents making significant decisions, such as when to give their child a smartphone (McGovern, 2019; Vaterlaus & Tarabochia, 2021).

Using behaviour change theory and frameworks to explore parents' decisions to give their child a smartphone can add knowledge by offering a new and valuable perspective to both understanding parental influences and offering evidence-based interventions to support their decision making. The present, qualitative study applies the Behaviour Change Wheel (BCW) (Michie et al., 2014) to interviews with parents of children aged 9–12 years, to answer the question 'what are the barriers and enablers to parents of this age group giving their child a smartphone?' It further answers the question 'what interventions can be suggested to support parents in this decision making?'.

The behaviour change wheel

The BCW is a comprehensive behaviour change framework, developed from the synthesis and integration of 19 existing key frameworks (Michie et al., 2011) and can be applied to a broad range of behaviours. It provides a systematic process of; defining a target behaviour, analysing the influencers on that behaviour and linking these to specific, evidence-based intervention strategies to bring about effective behaviour
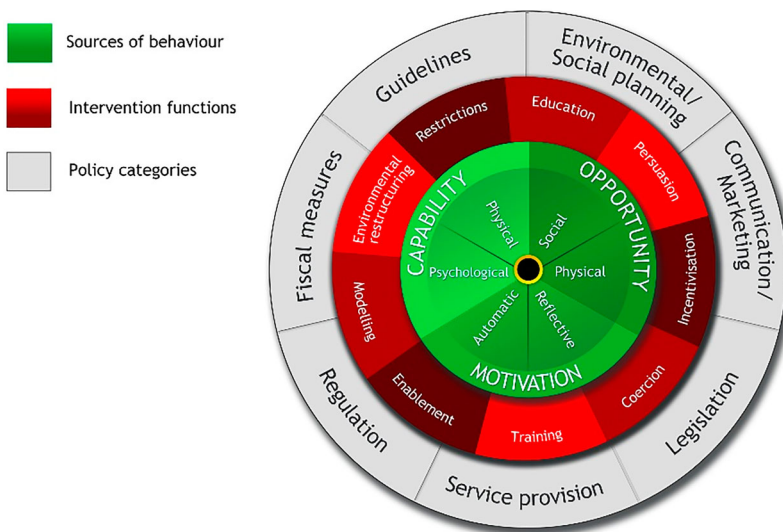

Figure 1. The behaviour change wheel (Michie et al., 2011).

change (Michie et al., 2014). The core of the BCW (Figure 1), contains the COM-B model of behaviour which provides the starting point for the process. It allows the analysis and categorization of barriers and enablers to a target behaviour into Capability (C), Opportunity (O) and Motivation (M) which interact to influence the performance of a Behaviour (B). The three core constructs can be further broken down; Capability can be Physical or Psychological, Opportunity can be Social or Physical and Motivation can be Reflective or Automatic. The next layer of the BCW allows evidence-based linkages to be made between the COM-B categorized barriers and enablers and nine Intervention Functions. The outer layer provides an additional seven Policy Categories which support the delivery of the Intervention Functions.

To accompany the BCW, the Behaviour Change Technique Taxonomy (BCTTv1) is a collection of 93 evidence-based techniques which have been linked, through expert consensus, to particular Intervention Functions and Policy Categories. They form the smallest level 'active ingredients' in a behaviour change intervention (Michie et al., 2013). Together, the elements of the BCW facilitate an evidence-based, end-to-end process from analysing a behaviour through to designing an intervention to produce successful behaviour change. The BCW has been used successfully to explore parental behaviours, for example with respect to child obesity and unhealthy food provision (Johnson et al., 2018).

Existing research

As smartphones are a relatively new phenomenon, academic research examining children and smartphones is limited. Given rapid advances in the technology, how smartphones are used and the potential impacts, this represents a significant gap (Dempsey et al., 2019). Most existing research focuses on the impact of smartphones on children rather than on the decision-making processes and timing of children obtaining a smartphone. Smartphones offer children a new element of freedom, whilst also providing reassurance in case of emergencies (Ling & Bertel, 2013). In this new and emerging area, evidence is mixed around the risks and benefits of children owning smartphones (Sun et al., 2023; Vaterlaus & Tarabochia, 2021).

Some studies point to the value to teaching and skills development that mobile technologies can bring – helping to improve digital literacy (Dempsey et al., 2020). It is also argued that smartphones can help children to develop social skills and communication (Sun et al., 2023). However, numerous studies also highlight the potential risks of smartphone use and ownership for children. A primary concern is the evidence that children and young people are particularly susceptible to addiction (Dempsey et al., 2020) or Problematic Smartphone Usage, where usage has become dysfunctional, creating anxiety when unavailable or causing the neglect of other activities (Sohn et al., 2019). Problematic Smartphone Usage rates are estimated at up to 30% amongst children and young people (Sohn et al., 2019). Associations have been reported between children's smartphone ownership, usage, Problematic Smartphone Usage and sleep issues, anxiety, stress, depression, poor educational attainment, lower quality of life scores and Attention Deficit Hyperactivity Disorder (Dempsey et al., 2019; Dempsey et al., 2020; McGovern, 2019; Sohn et al., 2019). Children also report feeling pressure to always be available to friends on their smartphone and say that overuse of the

internet interferes with 'real world' time with family, friends and on schoolwork (Livingstone et al., 2014; McGovern, 2019). Other studies have found evidence of negative associations between mobile phone or smartphone ownership in children and important areas of academic performance, abilities and confidence, with girls believed to be particularly at risk of negative adjustment and academic self-concept scores (Dempsey et al., 2019; Dempsey et al., 2020).

These concerns all point to the significance of the age or life-stage at which a child has access to smartphone technology and the world it opens up (Vaterlaus & Tarabochia, 2021). A 2019 study of 10–14 year olds in the United States (US) found that participants saw their parents as playing an important role in determining when they should receive their first smartphone. They actively wanted their parents' involvement in setting rules and expectations and in checking-in with them about their experiences (Moreno et al., 2019). A more recent US study by Vaterlaus and Tarabochia (2021) of late-adolescents (18–19 years of age), and their parents, explored factors influencing smartphone acquisition. Participants had acquired their first smartphone significantly later (average age 15.5) than the typical age of first ownership in the UK, perhaps because the majority had first owned a basic, non-internet-enabled, mobile phone (at the age of approximately 13). Factors influencing acquisition in this study included; a child's age and maturity, practical considerations and social and individual consequences (Vaterlaus & Tarabochia, 2021). These parent/late-adolescent dyads considered that a basic mobile phone or other device was important preparation for smartphone acquisition. Some felt there was a right age for smartphone ownership whereas others considered it more important for a child to demonstrate their maturity before being allowed to own a smartphone (for example, through their academic performance and attitude). Practical considerations including the cost of a smartphone led some families to opt for a basic mobile phone first. Finally, social and individual consequences such as: social connectedness to family and friends, peer acceptance and the risk of social exclusion, influenced smartphone ownership. Whilst parents worried that not following the social norm would lead to resentment from their child, they were also concerned about negative effects, such as access to inappropriate content, overuse, impact on face-to-face socializing and brain development. Some participants believed that for this reason children should not own smartphones before adolescence (Vaterlaus & Tarabochia, 2021). Similarly, 71% of parents in another US study in 2020 (Pew Research Center, 2020) believed there might be more harms than benefits of younger children using smartphones. Parents (of children aged 9–16) in the UK also report having concerns about their children's mobile device usage (Haddon & Vincent, 2015). In another UK-based study, 86% of children said they knew more about smartphones than their parents (Livingstone et al., 2014). Parents' lack of knowledge, combined with the small and portable nature of smartphones makes adult supervision more difficult (Dempsey et al., 2020; Ling & Bertel, 2013; Livingstone et al., 2014).

Academic research has a valuable role to play in understanding parenting in an online environment but in a rapidly changing landscape where technologies are developing at pace, it is a challenge for researchers to keep up (Terras & Ramsay, 2016). As a result, current research is sparse and this risks hindering policy making and advice at a time when there is considerable public interest in understanding the right time for smartphone acquisition (Sohn et al., 2019; Vaterlaus & Tarabochia, 2021). Existing research

tends not to be theory-based and often treats children and young people as one group, not recognizing that ownership and usage differ significantly by age (Terras & Ramsay, 2016). Few studies explore smartphone ownership or acquisition, as opposed to usage, for younger children (Vaterlaus & Tarabochia, 2021). This is an important distinction given the additional levels of independence and reduced parental oversight possible when children own their own device and have access, not just at home, but in the external environment, throughout the day (Dempsey et al., 2019).

In summary, no studies have been found which explore the decision-making process for parents of pre-adolescent children (the key age range for smartphone acquisition in the UK) in giving their child a smartphone. Filling this important gap could inform policy makers and support parents and professionals in this evolving area.

The present study

The present study aims to contribute to the literature by taking a theoretically-based, behaviour change approach to understanding the perspectives of parents when considering giving their pre-adolescent children, aged between 9 and 12 years, a smartphone. The Behaviour Change Wheel (BCW) (Michie et al., 2014), a comprehensive framework of behaviour change, will be used to understand and report the barriers and enablers to parents giving their child a smartphone. The BCW will be further used to establish intervention strategies to inform parents' decision making in this area.

Materials and methods

Sample and recruitment

Participants were initially recruited through school class WhatsApp groups across England. Members of school class groups, contacted through the researchers' extended networks, were asked to post an advert for the study on their groups. This ensured participation was completely voluntary and no participants were known to the researchers. Additional participants were recruited through snowball sampling as participants forwarded the advert to further school and parent groups (Palinkas et al., 2015). Adverts included the first author's email address and interested participants were asked to make contact directly via email, following which they were sent electronic participant information and consent forms. Participants included 8 mothers and 3 fathers covering a number of regions in England (including the North East, North West and South of England as well as London). Between the participants there were 14 children between the ages of 9 and 12 years. Of these, 5 were female and 9 were male; 5 parents had already given at least one of their children a smartphone and 6 had not. Table 1 provides a summary of participants.

Ethics

This study was determined to be low risk and ethical approval was covered by the Centre for Behaviour Change's pre-existing ethics – University College London (UCL) Research Ethics Committee number CEHP/2020/579 (07/02/2020).

Table 1. Detail of participants and their children.

Participant ID	Mother or Father	Age of child	Gender of child	Child's smartphone ownership
M1	Mother	9	Male	No
M2	Mother	10	Male	No
M3	Mother	9	Female	No
M4	Mother	12	Male	Yes
M5	Mother	12	Female	Yes
M6	Mother	9	Male	No
M7	Mother	12	Male	Yes
		10	Female	Yes
M8	Mother	9	Male	No
F1	Father	12	Male	Yes
		9	Male	No
F2	Father	12	Male	Yes
		9	Female	No
F3	Father	10	Female	No

Interview procedures

Once participant consent had been received, interviews were arranged and conducted via MS Teams. No participants withdrew through the process. Participation was compensated through a £25 voucher.

Data were gathered through in-depth, semi-structured interviews, of 45–60 minutes, to obtain rich data. Interviews were recorded using Microsoft Teams and transcribed verbatim before deletion. Transcripts had any identifying information removed and each participant was given an individual identification code (i.e. Mothers were M1, M2, etc., and Fathers were F1, F2, etc.) to ensure anonymity. Questions were designed to cover each COM-B construct and included, for example, the question 'How have other people influenced you in your decision making to give/not give your child a smartphone?' covering Social Opportunity, the question 'What sort of skills and knowledge do you need to make the decision about whether to give your child a smartphone?' targeting Psychological Capability and the question 'How do you feel about giving your child a smartphone?' covering Automatic Motivation. Additionally, broader questions, such as 'Are there any other factors that influenced your decision making that we have not covered?' were added at the end of the interview to allow participants to give freer responses unconstrained by the theoretical framework (McGowan et al., 2020) (Table 2).

Table 2. Example interview questions based on the COM-B model of behaviour.

COM-B construct	Question
Physical opportunity	How did aspects of the external environment influence your decision making, for example where you live etc?
Social opportunity	How have other people influenced you in your decision making to give/not give your child a smartphone?
Reflective motivation	What sort of planning did you undertake in preparation for giving your child a smartphone?
Automatic motivation	How do you feel about your child having a smartphone?
Capability (physical and psychological)	What sorts of skills and knowledge do you need to make the decision to give your child a smartphone?

Data analyses

Thematic Analysis, using Braun and Clarke's (2006) six-phase process, was used in line with similar studies (Mawdsley et al., 2022; Richiello et al., 2022). The first stage involved thorough familiarization with the data; through transcription, reading and re-reading. This was followed by coding barriers and enablers deductively using the COM-B theoretical framework. The study supervisor carried out a reliability check on one transcript and discrepancies were discussed until agreement was reached. The remaining transcripts were then coded in the same way. As part of this phase of analysis, a second, inductive coding exercise was then carried out. The third phase of analysis, in line with other, similar studies (such as Perowne & Gutman, 2022), involved searching for inductive themes by analysing inductive codes and aggregating these to generate a second layer of themes which related more specifically to the data. During phases four and five, these themes were reviewed, refined and named through an iterative process, based on the prevalence and relative emphasis placed on a subject by participants (Campagnola et al., 2022). The final themes were written up during stage six of the process.

In order to generate intervention strategies, the COM-B themes were mapped to the relevant Intervention Functions, Policy Categories and BCTs using BCW guidance to link barriers and enablers to the most suitable intervention components (Michie et al., 2014). This provided a shortlist to which APEASE (Acceptability, Practicability, Effectiveness, Affordability, Spill-over and Equity) criteria were applied, to assess each Intervention Function, Policy Category and BCT, resulting in identification of the most promising (Michie et al., 2014). Finally, a literature search identified specific evidence-based intervention strategies to deliver each Intervention Function, Policy Category and Behaviour Change Technique to optimize parents' decision making.

Results

Thirteen themes were identified, falling within five of the six COM-B constructs (see Figure 2). Eight of these themes were enablers, four were barriers and one was both a barrier and an enabler. These themes are described in more detail below.
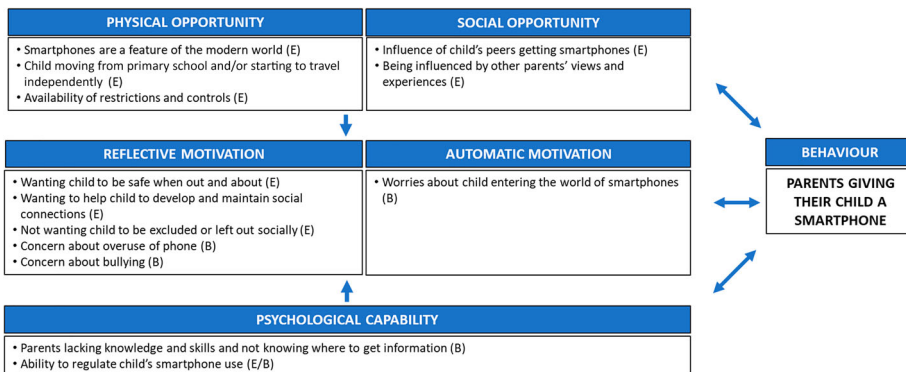

Figure 2. Map of barriers (B) and enablers (E) to parents giving their child a smartphone, categorized by COM-B construct.

Physical opportunity

Smartphones are a feature of the modern world

Participants commented on the ubiquity of technology and how the world had changed since they were children 'It's everywhere, technology is everywhere' (M6). There was a sense that this change was inevitable, but not always positive. For example M5 stated: 'it feels like their generation and the generations to follow are kind of on this slippery slope with tech' perhaps because 'most of the things we do happen through a phone'. (M2). A number of participants noted that the way in which people communicate has also changed, making mobile phones a necessity: 'When I was a teenager if you wanted to call someone you'd just use the landline … I guess that's not the way it works anymore' (M3).

Child moving from primary school and/or starting to travel independently

Parents all spoke about preparation for the move from primary school (to secondary school in year seven or middle school in year six) or starting to walk to school as moments of greater independence for children and a key transition point. This was when children start to organize their own lives but also need a way of keeping in touch with parents when they are out and about. For some parents, giving a smartphone was an essential part of this transition, M1 explained: 'When they come to secondary school, then they start to be more independent. They may go to school by themselves, then obviously I need to give the smartphone'. For some children this transition came earlier: 'At some point he will start wanting to walk himself to school. I think it might happen when he's in year six' (M2). For other parents, the smartphone also signified a point of maturity 'you're old enough to go to secondary school now you're old enough to have a phone' (M3).

Availability of restrictions and controls

This was the most frequently mentioned theme with all parents describing, sometimes extensively, the different physical controls (e.g. restrictions and filters) available that they had or were intending to place on the smartphone to prevent excess or inappropriate usage. M7 described some of the tools used to do this including 'Google Family Link is great … You can lock it (the phone) down entirely … you can have complete control over it'. Parents set up automated time limits for some apps and disallowed others. F1 explained why he felt this was so important, 'Most people wouldn't just let like a 10 or 11-year-old watch a 15 or an 18 movie so, you know, you have to then ensure that they're not able to do to do that on their phones as well'.

Parents also used tracking apps, calls and messages to check their child's whereabouts. For example F3 'When she's out and about on her own we just use it (Find my Phone app) to sort of see that she is where she roughly said she was'. For those who had not yet given their child a phone this feature was also an important driver. As M6 explained 'We might give him one really solely for the purpose that we need to make contact with him when he's … you know, he'll be a bit more independent going to secondary school.'

Social opportunity

Influence of child's peers getting smartphones

Most parents described the social pressure they felt for their child to have a smartphone, especially once a critical mass of peers had one, with one parent describing a 'domino effect' (F3). As M4 explained: 'I think if the majority of the class had ended up with one, I think I would have got him one'. Parents also experienced or anticipated that their child would report back to them when their peers were given smartphones and appeal to have one themselves.

> so the pressure will be over year five and six as kids actually do start getting a phone and it comes back from school that 'well, you know x has got one y has got one? Why don't I have one yet?' And that'll be when the proper peer pressure starts (M3).

Being influenced by other parents' views and experiences

Other parents, especially those with older children, were a critical source of advice and information for participants. As M8 explained 'if I struggle with things I kind of look to friends with older children and kind of go, 'what's going on here' or 'this has just happened and do you know what's going on here''. This was particularly important given that parents found it difficult to know where to find information, as M1 described 'We don't have any print to learn from, so it's all about 'hey, how do you do that, how you handle this'?'.

Reflective motivation

Wanting child to be safe when out and about

With the extra independence that comes with leaving primary school or walking to school, many parents wanted to be contactable by their child when they were travelling to school or out with friends. This was a significant motivator for a number of parents giving their child a phone. M4 commented that 'So it was just him getting that extra independence but us still being able to contact him or him being able to contact us if there was an issue'. Although parents had given their child a phone to accompany their new independence they still wanted to be on hand to help if needed, as M7 explained 'they (son and his friend) were texting us going 'is there anyone free to pick us up because there's no buses for a while?''

Wanting to help child to develop and maintain social connections

A number of participants talked about giving their child a smartphone in their final year of primary school to enable their child to stay in touch with friends, especially those who may not be going to the same next school. As F1 explained 'most of his friends went to different secondary schools, it's allowed him to sort of stay in touch'. In addition, a number of parents felt that the phone enabled development of new social connections and helped their child to build friendships and relationships with their peers and to start to arrange their own social life. M5 explained 'she can communicate with her friends and create, you know, arrange social meetups. I think that's important now and creating, maintaining friendships'. This was considered especially beneficial for

children with special educational needs or who were shy. For example 'It's been really quite beneficial and definitely in terms of how it brings friendships on and social interaction if you're someone that's quite shy'. (F3)

Not wanting child to be excluded or left out socially

Parents' desire for their child not to be left out or excluded from social interactions and groups was another enabling influence on giving them a smartphone. One parent (M8) explained 'well that's the difficult thing isn't it. I feel like with technology I feel like I have to (go with the majority) otherwise it makes him feel left out and he's the only one'. M2 anticipated that 'we will get to a point where 'all my friends did this yesterday, but I didn't know because I don't have a phone' and that will also play a part.'. This motivation extended to the type of phone parents had given/intended to give their child. As the same parent (M2) explained 'it's not so much about the specific features that a smartphone would have compared to a brick phone, it's literally about not wanting him to be singled out'.

Concern about overuse of phone

All participants expressed concern about overuse of phones and possible addiction. Those whose children had phones described their child's phone usage. 'You know he's now sort of glued to his phone' (F1). Parents whose children did not have a smartphone were concerned about the potential for overuse. For example, M3 explained 'they will just try and use the phone all the time and I don't think that's particularly healthy. And the older they get, the harder it will be to persuade them to go and do something else with you'. Participants with professional experience of working with children were particularly conscious of the problems that overuse could cause. For example, M6 stated 'one of the reoccurring themes is that they tend to go to bed late because they're on their screen. Sleep is very important'. M4 added: 'Having his phone in his room at night is a big worry for me just because I've been involved in safeguarding issues at (work) with that'.

Concern about bullying

Most participants were concerned about their child experiencing online bullying through their smartphone, for example by being excluded from groups, or peers saying unkind things in WhatsApp groups or through social media. M3 stated 'there is a big fear that they're going to get bullied mercilessly' and M5 explained 'I certainly think at this age, a 12/13-year-old girl isn't equipped to deal with some of the aspects of social media and what that can create in terms of like the bullying that can happen'. Parents whose children had smartphones spoke about being aware of incidents that their child had experienced or been involved with. For example F2 stated 'something we were quite acutely aware of was groups at school getting WhatsApp groups and it becoming inappropriate or troublesome'. One parent (M4) who worked with young people explained 'I have a lot of students sort of with autism or ADHD or just slightly less social awareness who can get really caught up or sort of are on the receiving end of bullying'.

Automatic motivation

Worries about child entering the world of smartphones

Participants used emotive language when talking about their feelings around smartphone ownership and the world of smartphones. For those whose child did not have a smartphone, these feelings often focused around worry or dread. For example M2: 'So it's just something else that adds to, how else am I supposed to now be concerned for my kid basically?' One parent (M2) described being 'daunted' by the prospect of her son getting a smartphone, describing it as a 'minefield' and 'yet another nail to the coffin of his childhood'. Parents whose children did have a smartphone, also worried. For example M5 stated 'I worry about what the future holds for young children and their mental health, in regards to tech and socializing'.

Psychological capability

Parents lacking knowledge and skills and not knowing where to get information

Almost all parents reported lacking sufficient knowledge in a number of areas relating to smartphones. A common capability gap included understanding the controls and restrictions on the phone that parents deemed necessary. For example: 'I think there's a whole field of parental controls that I can't even start to think of … I don't know how to go about it' (M2). And 'I think to actually put that sort of stuff in place requires a reasonable, I was gonna say advanced, level of knowledge' (F2). Some parents also described not having a good understanding of the impacts of smartphones on children. M3 explained 'I don't feel particularly informed. You know, I think there are certain risks and I think there are certain benefits, but it's very much kind of in my own head'. On the other hand those involved with children and young people professionally were able to list many risks. For example, 'there's just all sorts, so much sort of online bullying or excluding people from things, deleting people off WhatsApp and the use of horrific language online and grooming. It's just sort of, it's that horrific, never ending list, really' (M4). They were also more confident in their knowledge. M6 was planning to use this knowledge for when her child got a smartphone

> I think with my exposure to working with secondary school aged children it's very easy for me to find out what that (controls) is, and so I'll just be, you know, creating my own memory bank of what sorts of things to be mindful for.

Parents were not always sure of the best sources of information – many used Google to find information or asked other parents for advice. Even some, including M6, who worked with young people, felt there were gaps in information available or that it was not readily accessible: 'it's not so obvious where to find, you know, information about helping children to stay safe and what we should be aware of'. One parent felt that a recommended age for children owning smartphones would be helpful: 'I still … want to know … do we have a recommended age for a child to have their own device and … how might we ensure it has more benefit than disadvantages' (M1).

Ability to regulate child's smartphone use

Many parents described rules and boundaries that they had created to reduce some of the risks, such as no phones in bedrooms at night and regular checking of messages. A few

parents talked about agreeing rules with their child before they were given the phone. 'She (daughter) wrote down the rules and then we discussed them … And then she agreed to it and then she was able to have her phone'. (M5). One parent controlled phone usage by keeping ownership of the phone, 'The phone belongs to me, me and my partner, not him. It's our phone and … if he's abusing that privilege, his phone will be removed' (M4). However, there was a recognition by some parents that enforcing rules and regulating their child's phone usage was a challenge. For example F1 'once you've put something out there, it's out there. It's very difficult to kind of do anything about it'. M5 added 'as she gets older it's gonna get harder to police it'.

Intervention functions, policy categories and behaviour change techniques

To answer the second research question, the barriers and enablers, identified through the interviews, were mapped onto the most relevant Intervention Functions, Policy Categories and Behaviour Change Techniques, using the evidence-based connections with the COM-B constructs, as set out in the BCW (Michie et al., 2014). An assessment of Acceptability, Practicability, Effectiveness, Affordability, Side Effects and Equity (Tombor & Michie, 2017) supported the final selection of suitable intervention strategies. These included Restriction, supported by Regulation and Guidelines, to address Physical Opportunity influences; Enablement, such as Communications, Marketing, Social Support and Action Planning, to address Social Opportunity; Education, through Communication and Marketing of Information about Consequences of smartphone ownership and Persuasion, through Guidelines provided by Credible Sources, to tackle Motivational influences and Education and Training, through the provision of services and Communications and Marketing, to address parents' Psychological Capability gaps (see Table 3). These intervention strategies are described in detail below with practical examples, including from existing literature, of how they could be delivered.

Discussion

This qualitative study takes a theoretically-based, behaviour change approach to understanding what influences parents in giving their child a smartphone, adding to the literature on parenting in the online environment. Using the BCW, thematic analysis identified 13 themes; eight enablers, four barriers and one both a barrier and enabler. Enablers and barriers are discussed here in relation to existing literature. Evidence based recommendations are then made, using the BCW, to inform interventions to assist parents making this significant decision.

Some of the main themes identified in the present study, with parents of pre-adolescent children in the UK, were similar to those in Vaterlaus and Tarabochia's (2021) US-based study of parental perspectives on smartphone acquisition for late-adolescents. However, there were also differences. Acquisition in Vaterlaus and Tarabochia (2021) happened later (at 15.5 years old on average). This was often because these young people started off with a basic mobile phone, unlike in the present study, to support them travelling more independently, whilst reassuring parents of their safety and allowing them to keep in contact. Parents of children in the present study had all given, or were intending to give, their child a smartphone significantly younger; all the children aged 12

Table 3. Table of barriers and enablers with their suggested intervention types, policy categories and behaviour change techniques.

Theme	COM-B construct	Selected intervention types	Selected policy categories	Behaviour change techniques and example interventions
Smartphones are a feature of the modern world (E) Child moving from primary school and/or starting to travel independently (E) Availability of restrictions and controls (E)	Physical opportunity	Restriction	Regulation Guidelines	Restriction (no BCT) – make smartphones less available to children until they are deemed a suitable age eg by restricting sales/having a recommended age limit on smartphones
Influence of child's peers getting smartphones (E) Being influenced by other parents' views and experiences (E)	Social opportunity	Enablement	Communication/ Marketing	Social support Action planning – help for parents to think through the options and how to go about setting up the phone in the way they want
Wanting child to be safe when out and about. (E) Wanting to help child to develop and maintain social connections (E) Not wanting child to be excluded or left out socially (E) Concern about overuse of phone (B) Concern about bullying (B)	Reflective motivation	Education Persuasion	Communication/ Marketing Guidelines	Information about consequences (health and social) Credible Source – (such as the BBC or a charity or the government) to help parents understand the importance of controlling usage and access to keep children safe and minimize risks
Worries about child entering the world of smartphones (B)	Automatic motivation	Persuasion	Communication/ Marketing Service Provision	Credible source – provide information about consequences to allow parents to make the optimum decision and minimize worry
Parents lacking knowledge and skills and not knowing where to get information (B) Ability to regulate child's smartphone use (E/B)	Psychological capability	Education Training	Service Provision Communication/ Marketing	Instruction on how to perform the behaviour – independent advice and guidance about when to give your child a smartphone, how to go about getting your child a smartphone, what to consider, how to set up controls and restrictions

in the present study already had a smartphone. This is in line with the picture across the UK where smartphone ownership rises from 44% at age 9 to 91% by the age of 11 (Ofcom, 2022). One other contrast between the findings in Vaterlaus and Tarabochia (2021) and the present study was the prominence of themes around controls, rules and restrictions. All participants in the present study discussed, often in depth, the controls and restrictions they had, or would, put in place on their child's phone, whereas this was not raised by parents of children who acquired their smartphone at an older age. Perhaps because, in line with self-regulation development theory (Gestsdottir & Lerner, 2008), parents felt their child was mature enough at the age of 15.5 not to need to restrict or control access on their behalf. Whether giving a child a smartphone

at age 9 or age 15, findings in the present study, as elsewhere, suggest that parents do not find this decision straightforward, with parents reporting both barriers and enablers (Terras & Ramsay, 2016; Vaterlaus & Tarabochia, 2021). Broadly speaking, in the present study, external influences, including Physical and Social Opportunity, enabled smartphone ownership whereas Motivational and Capability factors were a combination of barriers and enablers.

External influences (physical and social opportunity) enable smartphone ownership

Research into smartphone ownership and usage amongst children highlights the significance of contextual and environmental factors, such as the behaviour of family and friends, the home environment and beyond (Terras & Ramsay, 2016). The present study also found that external physical factors, as well as the social environment, were influences on parents giving their child a smartphone. Participants suggested that if their child's peers were being given smartphones at a particular age then they would follow suit, not wanting their child to feel left out – not necessarily wanting to be the first but not wanting to be the last to give their child a smartphone (social opportunity). In Vaterlaus and Tarabochia (2021), as in the present study, features of the physical environment (physical opportunity) such as a child walking to school or moving to secondary school were also points at which parents give their child a smartphone. Participants in this study, as reported elsewhere (Ofcom, 2022), used technology to restrict and control their child's smartphone usage and this was an enabler. The Intervention Function of Restriction is relevant to these influences and could take a number of forms, such as implementing the existing, or enhancing, types of technical restrictions such as filters and time limits (Terras & Ramsay, 2016). Restriction has been used successfully in other areas of potentially addictive behaviour such as alcohol and gambling (McGovern, 2019).

Regulation or Guidelines are Policy Categories which could also be effective in this context. For example, some countries such as France and Australia have introduced bans on mobile phones in schools (McGovern, 2019). Pilot bans of smartphones in Ireland, inside and outside of school, reportedly increased engagement of children with their families and with outdoor activities (Lucey, 2018). Reports in the UK suggest that more than two-thirds of parents of children aged 10–18 support age legislation for the use of smartphones among young people (Priory, n.d.) and parents report wanting to delay giving their child a smartphone (Press and Journal, 2022). Having a recommended minimum age for smartphone ownership, as suggested by one participant in this study, may lead some parents to opt first for an alternative such as a more basic phone or tracking device (as in Vaterlaus & Tarabochia, 2021) which offer the same safety benefits but without some of the risks.

Addressing the social influences of other parents and children could be achieved via the Intervention Function of Enablement, through the implementation of Communications/Marketing and the Behaviour Change Technique 'social support'. One such example, the 'Wait until 8th' campaign, was instigated by a group of parents in the US. It is described as a form of 'community support', which encouraged parents to sign a pledge to wait until their children reached eighth grade (around 13 or 14 years of age) before giving them a smartphone (Moreno et al., 2019). This could be effective

in tackling what one participant described as parents 'group thinking' their way into giving their child a smartphone at an earlier age.

Parents' motivation (reflective and automatic motivation) is both a barrier and an enabler

In terms of motivational factors, participants in this study, as also reported elsewhere, appeared to be conflicted. They perceive benefits of smartphone ownership, but they also reported barriers such as feeling daunted at the prospect of their child having a phone and being worried about the consequences, such as bullying and overuse (Harcourt et al., 2014; Ofcom, 2022; Terras & Ramsay, 2016; Vaterlaus & Tarabochia, 2021). Livingstone et al. (2014) found that 15% of 9–15-year-olds surveyed had been troubled by something that they had seen online within the past 12 months and Ofcom (2022) state that 39% of children aged 8–17 report having been bullied online.

Participants wanted their child to be accepted within their social group, a concern highlighted in other studies (Vaterlaus & Tarabochia, 2021), believing that the smartphone would support the development of friendships. This enabled smartphone giving. Participants also believed that having a phone would help keep their child safe and this parental belief has been reported elsewhere in the literature (Vaterlaus & Tarabochia, 2021). It is interesting that, although participants described their concerns and beliefs about the benefits of smartphone ownership for their child, at the same time a number of participants also reported lacking awareness of the risks and benefits.

To address these influences, Education and Persuasion are identified as the most relevant Intervention Functions, again delivered through Guidelines and Communication/ Marketing and including the Behaviour Change Techniques Information about Consequences (Social and Health) and Credible Source. Credible sources, suggested by participants in this study, could be government, charities or another public institution, such as the BBC (British Broadcasting Corporation) providing resources for parents with information about risk, benefits and keeping children safe when using smartphones.

Skills and knowledge are a barrier but regulating phone usage is both an enabler and a barrier (psychological capability)

Capability was a further barrier to some participants' decision making because they perceived that they lacked the knowledge, skills and abilities needed to make and implement the decision to give their child a smartphone. This extended to not knowing where to access appropriate information. In contrast, those participants who worked with young people were able to describe many more risks than other parents interviewed. Whilst parents in Ofcom's (2022) report expressed confidence in their knowledge, when 'tested', only 34% correctly identified the correct age limits for social media applications. Vincent (2015) recognized that the ability of parents to control their child's phone usage was moderated by their own digital literacy. Similarly in the present study, parents' ability to regulate their child's smartphone usage was reported as both an enabler and a barrier but, as discussed previously, evidence suggest that this is not a significant factor for parents giving their child a smartphone at an older age (Vaterlaus & Tarabochia, 2021).

To address gaps in Psychological Capability, evidence from the BCW identifies Intervention Functions of Education and Persuasion which could be delivered through the Policy Categories of Service Provision. This is in line with Sohn et al. (2019) which recommended improving parental awareness of the issues that Problematic Smartphone Usage can cause as a way to help manage children's exposure to smartphones and reduce the risk of problematic use. The Behaviour Change Technique 'Instruction on How to Perform the Behaviour' is commonly used in such interventions. An intervention could be to provide training and guidance for parents in areas such as deciding when to give your child a smartphone, preparing for giving your child smartphone, what to consider, how to set it up and regulating usage.

Limitations and conclusions

Being a qualitative study, the sample recruited was not intended to be representative of a particular population (Marshall, 1996), although the sample included participants of different gender, ethnicity and geographic location within the UK. Most parents interviewed had given, or were expecting to give, their child a smartphone between the ages 9 and 12, only one had given a phone earlier (at age 8). Whilst this is in line with the UK average, many parents across the UK give their child a smartphone at a younger age (Ofcom, 2022). Terras and Ramsay (2016) recognized that social class, parental education and values amongst other demographic factors are likely to have an influence on parenting behaviour in this context. These demographic data were not gathered for reasons of sensitivity. Decisions around when parents give their child a smartphone can be sensitive and therefore it is possible that using interviews led to some social desirability bias. Future studies could employ a quantitative approach to test the themes identified with a larger sample of parents.

This study provides a valuable addition to the literature, giving insight into the factors influencing parents of pre-adolescents in the UK in deciding whether to give their child a smartphone. This is important as previous literature has been US-based and focused on the views of children themselves (Moreno et al., 2019) or on parents whose children acquired their smartphones in later adolescence (Vaterlaus & Tarabochia, 2021). Given that children in the UK generally acquire their own smartphone between the ages of 9 and 12 it is important that the perspectives of parents of this age group are represented in the literature. To illustrate, whilst some of the barriers and enablers to children acquiring a smartphone in the present study were similar to other studies, there are also notable differences. External influences were significant with both age groups but the availability of restrictions and the ability to impose rules about usage were important to parents of pre-adolescents but not their older counterparts.

The present study also extends previous research further by offering suggested interventions to respond to the influencers on behaviour. These include Restriction and Regulation as well as Guidelines, Education and Training for parents. It further demonstrates that the Behaviour Change Wheel can be effectively applied to parents' decision making and the considerations they make on behalf of their children. One interesting and potentially novel aspect of this study is that the behaviour studied is not obviously categorisable as desirable or undesirable. Therefore both barriers and enablers were considered for behaviour change intervention to help parents making an optimum decision for their child.

Overall, this study provides a valuable insight regarding the factors that influence parents' decision making about giving their pre-adolescent children smartphones. It is hoped that the findings will be informative for parents making this significant decision, as well as policy makers who are responsible for regulation and restriction in the world of online and digital safety, and practitioners involved with advising parents and children in this context.

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