

# Mobile device use when caring for children 0-5 years: A naturalistic playground study

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## Abstract

**Issue addressed:** Over the past decade, mobile device use has increased significantly. Adults are now using their mobile device whilst undertaking a range of work and social activities. This naturalistic study aimed 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 playgrounds.

**Methods:** A mixed methods approach was used to collect quantitative and qualitative data from parents/carers. Data were collected by observations (n = 50) and interviews (n = 25) in playgrounds on the North Coast of New South Wales, Australia.

**Results:** Of the 50 observed parents/carers, 76% (n = 38) used their mobile device, with usage time extending to 17.2 minutes of the 20 minute observation period. Text-/type-related mobile device use was most often used (69.6%), followed by voice-related (23.7%) and camera-related mobile device use (6.7%). The 25 interviewed parents/carers beliefs on mobile device use were centred on three themes: diversity of mobile device use, child relationships and mobile device use and the physical environment and mobile device use.

**Conclusion:** This study adds to the limited research into parent/carer mobile device use, which has become an integral part of peoples' lifestyle. However, research is required to better understand how parent/carer mobile device use may impact on child supervision and interaction.

**So what?** Mobile device use is increasing. We need to better understand its public health impact.

## KEYWORDS

behaviour change, children, healthy environments, mobile phones, parents, playgrounds

## 1 | INTRODUCTION

Over the past decade, mobile device use has increased significantly with an estimated 9 of 10 Australian adults using a smartphone.<sup>1</sup> Between 2012 and 2015, smartphone ownership increased by 35%,<sup>2</sup> which is thought to reflect the device's increased functionality and

ease of use.<sup>3</sup> Accordingly, mobile devices are an integral part of peoples' lifestyles.<sup>1</sup>

This increased uptake has resulted in adults using their mobile devices while completing a range of activities, including watching television, eating, using public transport, while in bed<sup>2,4</sup> and when supervising children in playgrounds.<sup>5,6</sup> Reasons identified for mobile

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device use while supervising children include boredom, the need to engage with others and search for information.<sup>5,7</sup> Although there is limited research around mobile device use by parents/carers, there are signs that their use may interfere with play-based parent/carer and child interactions,<sup>8</sup> with lower levels of interaction and availability between parent/carer and child, when using mobile devices.<sup>5,9</sup>

Early childhood (0-5 years) is a period of social, emotional and cognitive development<sup>10</sup> with parents/carers needing to undertake intensive management of their children, to support physical safety, emotional security and learning opportunities.<sup>11</sup> It is well documented that the best way to support child development and early learning is through mutual and responsive relationships, particularly with parents/carers.<sup>12</sup> Play offers an opportunity for parents/carers to engage and interact with their children, supporting development.<sup>13</sup> Conversely, inadequate parents-/carer-child interaction, often involving inconsistent responses to the child, rare or occasional eye contact or limited positive comments, can result in developmental issues.<sup>14,15</sup>

Significant research has been conducted on screen time for traditional media (eg. as televisions, computers and video games)<sup>16</sup> but little on parent/carer mobile device use.<sup>17</sup> Although there is limited empirical evidence, there is increasing anecdotal evidence generated by the popular press on parental mobile device use and the impact on children. This naturalistic study aimed 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 playgrounds.

## 2 | METHODS

### 2.1 | Study design

A mixed methods approach collected quantitative and qualitative data from parents/carers. The data were collected via observations (n = 50) and interviews (n = 25) in playgrounds. Ethics approval was granted by Curtin University's Human Research Ethics Committee (Approval number RDHS-140-16).

### 2.2 | Setting

Observations and interviews were conducted in three playgrounds located across on the north coast of New South Wales, Australia. The Socio-economic Index for Areas (SEIFA)<sup>16,18</sup> is less than 1000 (953-989) indicating socio-economic disadvantage.<sup>19</sup> The three parks were selected due to their popularity and suitability for children aged five and younger.<sup>20</sup>

### 2.3 | Participants

Observed and interviewed parents/carers were included if they appeared to be aged up to 40 (mobile device ownership use is high in this age group)<sup>2</sup> attending the playground by themselves (not with friends or partner), and with at least one child that appeared to be aged five or younger and independently mobile.

## 2.4 | Procedure

Observations and interviews were undertaken on weekdays between 9:30 AM and 12:30 PM. This time is popular with parents/carers of young children to attend playgrounds, thereby increasing the likelihood of reaching the target group.<sup>5</sup> School holiday periods were excluded due to the increase in number of children outside the age group. Observations were conducted during the months of June to August 2016 (southern hemisphere winter is typically dry with warm sunny days).

### 2.4.1 | Observation data collection

The researcher (EM) observed mobile device use and parent-/carer-child interaction of those entering the playground for a 20-minute period. Using a stopwatch, the time a parent/carer used a mobile device in each minute and the type of use (ie, typing, talking, photographing) were recorded. The interaction behaviour type between child and parent/carer was also recorded in each minute of the observation period.

### 2.4.2 | Interview data collection

Interview participants were provided with information about the study and then invited to participate in the study. Interviews were up to 20 minutes in duration. On completion of the interview, participants were provided with a \$20.00 gift card to thank them for their time.

## 2.5 | Measurement instruments

The measurement instruments were adapted from work previously conducted by Hiniker et al.<sup>5</sup> These comprised: (i) mobile device timing scale, (ii) parent-/carer-child interaction scale and (iii) interview schedule.<sup>5</sup> All instruments were trialled prior to data collection.

1. The *Mobile Device Timing scale*: This tool enabled the recording of the time parents/carers spent on mobile devices and the activity undertaken on the device (eg, typing, talking and photography). The timing schedule is divided into one-minute intervals; before observed behaviour is recorded, the corresponding time is marked next to each column (eg, 1:10:02).
2. The *Parent/Carer and Child Interaction Scale*: The interactions were categorised into: (i) no interaction, (ii) adult leaves interaction, (iii) equipment interaction, (iv) talking interaction, (v) play interaction, (vi) touch interaction and (vii) independent play (see supplement-category definitions).
3. The *Interview schedule* explored the participant's general mobile device use, perceptions and attitudes, along with demographic characteristics (see Figure 1).

## 2.6 | Analysis

Descriptive statistics were used to describe the demographic characteristics of those interviewed. Observed parent/carer mobile device usage (seconds) was quantified by frequency and duration of mobile

## Interview Schedule

- What do you use your mobile device for?
- Do you ever use your mobile device in the playground?
- What are the advantages of having a mobile device?
- What are the disadvantages of having a mobile device?
- When you think about how mobile devices are used, what do you think are the times or places or situations, when they should not be used?
- When you think about how mobile devices are used, what do you think are the times or places or situations, when they should not be used?
- When you think about how mobile devices are used, what do you think are the times or places or situations, when they should not be used?

**FIGURE 1** Interview schedule

device use by usage type; and interactions at the playground. All quantitative data were analysed using SPSS version 22.<sup>21</sup>

The interviews were transcribed verbatim by one researcher (EM), reviewed by two researchers (EM and JJ) and managed using NVivo version (11.3.2). This involved the breakdown of transcribed data into smaller units. Categories were created using inductive reasoning, and themes were identified. The inductive approach is a systematic process for analysing qualitative data, providing reliable findings.<sup>22</sup> EM performed the initial analyses and then met with the two other researchers (JJ, JL) to discuss data and confirm themes. Data are presented thematically and supported by direct quotes from participants.

## 3 | RESULTS

### 3.1 | Participant characteristics (playground observations)

The majority of the 50 observed parents/carers were female (74%;  $n = 37$ ), located in three parks suitable for children 0-5 years.

### 3.2 | Parent/carer mobile device use

Of the 50 observed parents/carers, 76% ( $n = 38$ ) used their mobile device during the 20-minute observation period. Of the total time spent by parents/carers on their mobile device, 69.6% were on typing tasks, 23.7% talking tasks and 6.7% on camera-related tasks. The mean time that parents/carers were observed using their mobile device was almost 4 minutes (236 seconds), with times ranging from 0 minutes to 17.5 minutes (1031 seconds). Most ( $n = 22$ ) used their device for less than 5 minutes.

### 3.3 | Parent-/carer-child interaction

Observations of children's and parent/carer interactions showed that most time was spent in child independent play (47.9%; 479 minutes), followed by equipment-related interactions (20.8%; 208 minutes; see Table 1).

### 3.4 | Participant characteristics (Interviews)

Twenty-five parents were interviewed. The majority were female ( $n = 24$ ), Australian born ( $n = 20$ ), with an education level of year 12 and above ( $n = 25$ ) (see Table 2). Three themes emerged from the data: (i) diversity of mobile device use, (ii) relationships and mobile device use, (iii) physical environment and mobile device use.

### 3.5 | Theme A: diversity of mobile device use

Participants indicated that they used their mobile device for a range of activities categorised as: communication, capturing moments and personal organisation (see Table 3).

### 3.6 | Communication

Interviewees used a range of methods to communicate. Having a mobile device supported their ability to undertake phone calls, use social media, text message and video call. Social media provided a way to stay instantly in touch while in a playground, especially for those who were particularly challenged by caring, with one

**TABLE 1** Observed parent-/carer-child interaction by type and time

Interaction descriptor	Time (min)	%
Independent play	479	47.9
Equipment interaction	208	20.8
Talking interaction	195	19.5
No interaction	49	4.9
Adult leaves interaction	39	3.9
Play interaction	23	2.3
Hold/touch interaction	7	0.7
Total	1000	100

see Data S1 for definitions.

**TABLE 2** Demographic characteristics of the interviewees  
(n = 25)

Characteristic	n	%
Sex		
Female	24	96
Male	1	4
Age (y)		
18-24	2	8
25-35	16	64
36-40	7	28
Country of birth		
Australia	20	80
Other	5	20
Highest level of education		
Year 12 or Equivalent	5	20
Trade/TAFE/Diploma	9	36
Bachelor Degree	11	44
Working Status		
In paid work	17	68
Not in paid work	8	32
Age of child		
<24 mo	8	19
25-48 mo	23	55
49-60 mo	1	2

TAFE, Technical and Further Education.

**TABLE 3** Category and type of mobile device use (n = 25)

Category	Type of use	n
Communication	Phone calls	19
	Social media	18
	Text messages	17
	Internet/Google	7
	Emails	6
	Skype	1
Capturing moments	Camera	13
	Video	2
Personal organisation	Apps (eg, banking, real estate)	12

participant discussing the value of being able to communicate with support networks.

*I have my own Facebook secret group that I post articles on and comments on and I have a network of friends with kids with Down syndrome, they're all on Facebook so I connect with them* (participant 12)

*...just like everyone, (I) just like the phone, phoning and texting* (participant 11)

*...mostly texting friends like today, I just quickly checked Facebook to see if I've got any messages from my friends* (participant 22)

### 3.7 | Capturing moments

When in a playground with their child, parents experienced moments they wanted to capture and the mobile device provided a camera and video to record these and share with others. Using the mobile device to capture moments was cited by over half of participants (n = 15). For example, a participant, whose family lives overseas, said

*it's super handy because with me living here overseas... everybody has an I-phone or an I-pad or whatever just how easy it is to send it and then the whole family sort of has a little piece of the day like the kids at the park* (participant 9)

Further participants reported the importance of recording activities

*...especially having little kids and stuff, you can capture just about anything or any moment when you need it* (participant 10)

*I love taking photos of my girls, so yeah, yeah – I bring both (phone and camera) but it's just easier on your phone* (participant 6)

*...sharing (photos) because we're on holidays – so just sharing everything and the experiences* (participant 18)

### 3.8 | Personal organisation

Parents reported having busy lives with many time demands. Often mothers used time in the playground to undertake simple employment duties, such as answering emails or responding to work telephone calls. Being able to organise certain business activities whilst in the playground and social activities was viewed as positive, as it helped participants to maintain a sense of productivity beyond caring for children.

*You can take care of business, like banking doing it all while you're sitting in a park* (participant 18)

*(using mobile device) For everything really, like Facebook, messaging, phone, banking* (participant 1)

*...contact, organisation, I'm looking for a house at the moment so I need to be constantly calling and be contacted for inspections...* (participant 22)

### 3.9 | Theme B: relationships and mobile device use

Interaction with the child whilst at the playground was viewed as a priority by all parents (n = 25) as this was the main reason for being in the playground environment. The majority (n = 19) believed that children can be supervised when using a mobile device, with over three-quarters (n = 16) reporting using their device in the playground on the day they were interviewed. They acknowledged the importance of supervising their own children (n = 12), as well as others' children (n = 3), with the need to consider the child's age (n = 3) and their safety (n = 6).

#### 3.9.1 | Interaction

Those interviewed expressed that if a child is trying to communicate with a parent, it is inappropriate to be using a mobile device and they take priority. Nominated "inappropriate" situations for mobile device use included when interacting with children (n = 7) and adults (n = 3).

*definitely when your child's trying to communicate with you and they're wanting you to watch, because that's their time* (participant 25)

*I definitely feel like the kids pick up on when you're using it (mobile device) too much and I can't help but feel bad and responsible for that* (participant 9)

*You know obviously I want to be more interactive with him as well because he's always like "mummy look at me doing this"* (participant 17)

*Because I've tried to do it (use a mobile device while supervising) before. I tried to talk on the phone and watch her and it's really difficult* (participant 12)

#### 3.9.2 | Supervision

Supervision was reported as central to being a parent, including keeping your child safe and ensuring they do not injure themselves. The supervision of other people's children was also perceived as being very important as you are entrusted with the responsibility of their care.

*I mean if the kids are old enough I suppose that's okay to use your mobile. If the kids are young I think probably no* (participant 12)

*You really need to watch your child because they can just get hurt or a lot of things can happen* (participant 15)

*Just because I don't trust other people in the park* (participant 23)

*They (children) can sort of run off, people start talking to them or yeah they could escape* (participant 4)

*If you're looking after other people's kids it is probably always going to be inappropriate (to use a mobile device)* (participant 10)

### 3.10 | Theme C: physical environment and mobile device use

A number of parents reported that the playground is an inappropriate environment for mobile device use (n = 5) as it was thought to be an environment for spending time with and caring for your child. Participants identified the need to remain aware of what is happening in the environment, particularly in unfamiliar or risky surroundings, and the need to be prepared for any emergency (n = 5).

*...if you're in a playground that's yeah- yeah like the river you need to be paying more attention* (participant 16)

*If there's unsafe things around you or if you need to be on guard. If there's dogs or big groups of people* (participant 18)

The interpretation of what constitutes an "emergency" varied between parents and ranged from the need to be contacted by one's husband or school through to the need to call an ambulance. Being able to act quickly in the case of an emergency situation was prominently reported as a motivator for mobile device presence and potential use.

*It's a safety thing I like to have it there in case I'm out with the kids or something like that* (participant 8)

*...if the kids got bitten by something and you need to get like ring the nurse or something like that or the doctors* (participant 5)

*I don't generally turn it (mobile device) off because if I had an emergency call I wouldn't want to miss it particularly with kids at school and if my husband really needed to call me* (participant 9)

## 4 | DISCUSSION

Just over three-quarters of observed parents/carers used their mobile device while supervising a child at the playground, these findings are consistent with a North American study, which reported that 59% of observed parents/carers use of mobile devices while supervising in the playground.<sup>5</sup> Similarly, Radesky et al<sup>9</sup> observed parents/carers mobile device use whilst eating at fast-food

restaurants with children and found almost three-quarters used mobile devices. These findings highlight the high level of mobile device use by parents/carers while with children in typically interactive environments. Traditionally, playgrounds and restaurants have provided opportunity for the exchange of information, social skill building and role modelling,<sup>13</sup> although seemingly these opportunities may be diminishing.

In this study, 58% of those observed used their mobile device for up to five minutes. This finding contrasts with Hiniker et al.'s study, whereby two-thirds of study participants spent less than 5% of the observation period using their mobile device, and 41% did not use a device at all.<sup>5</sup> Typing was the predominant type of mobile device use during this study's observation period (69.6%). It is documented that Australians aged 25-34 years nominate typing functions such as social networking (25%), email (23%) and SMS (16%), as the main activities they undertake on mobile devices.<sup>2</sup>

Parents/carers value mobile devices to communicate, capture moments and organise their lives, demonstrating their breadth of use and the integral role these devices play. For example, the parent of a child with Down's syndrome was able to connect with a network of friends, while others could send up-to-date photographs of their children to family and friends overseas, and feel better equipped to remain safe and deal with an emergency. This highlights the perceived benefits of mobile devices in providing an opportunity to network with others, increase the feeling of social support<sup>23,24</sup> and seek out relevant services.

Three-quarters of those interviewed reported that they felt parents/carers could successfully supervise children while using a mobile device; a finding that is consistent with the Hiniker et al.<sup>5</sup> (2015) study. This is achieved by prioritisation of children-parent interactions when using the mobile device in the playground. Conversely, parents also identified situations where they felt it was inappropriate to use a mobile device, such as when supervising and interacting with children in playgrounds. This somewhat aligns with the existing literature whereby factors such as compromised child safety, response difficulties and the modelling of undesired mobile device-related behaviours to children have been identified as prompts to put mobile devices down.<sup>5</sup> However, parents still continued to use their mobile devices when caring for children in the playground.

It is recognised that mobile device use can negatively impact upon face-to-face interaction and conversation quality,<sup>25</sup> with parent/carer mobile device use associated with fewer interactions with children especially during a typically interactive task.<sup>26</sup> In this study, the observed parent/carer mobile device behaviour and responses to their child's bids for attention showed that a number either ignored child bids for attention or left an interaction in 39 instances or around 4% of total observation time, which is relatively small and of little concern. However, to better understand child-parent/carer interactions, more comprehensive and intensive research is required, with consideration being given to how best to capture non-verbal communication beyond what was undertaken in this study.

## 4.1 | Strengths and limitations

To our knowledge, this is the first such study to have been conducted in Australia with only two other similar studies conducted in North America.<sup>5,9</sup> The sample population, although relatively small, is unique, as it was in an area of socio-economic disadvantage. There is an overrepresentation of females in the study; however, it is recognised that women are the predominant child carers.<sup>27</sup>

## 5 | CONCLUSIONS

Increasingly, mobile devices are integral to how people live, organise and enjoy their lives.<sup>2</sup> Although there are many benefits to mobile devices, such as increased social connectedness and access to services, their use may impinge on activities, such as interaction with children during their formative years. However, mobile device use is on an upward trajectory, and the implications of this use are yet to be understood. This study adds to the limited research into parent/carer mobile device use; however, research is required to better understand mobile device behaviour and how it may impact on parent-/carer-child interaction.

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## CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in connection with this article.

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## SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

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