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Abstract

The increase in the prevalence of smartphones and mobile devices has spurred changes in the caregiving environment of infants and young children, as phones and mobile devices are used at times during caregiving and in caregiving spaces. This use could create disruptions and cause distractions during parenting (termed technoference). This article summarizes the potential impacts on parent responsiveness and the experiences of infants and young children. Yet, it also warns that it is important to consider the reason for and type of parent use. Finally, the article ends with practical tips for working with parents concerning mobile device use.

Keywords: Technoference; phubbing; smartphone use; parenting; child behavior

Technoference:

Parent mobile device use and implications for children and parent-child relationships

The increase in the prevalence of smartphones and mobile screen devices has spurred changes in the caregiving environment of infants and young children. As of 2019, 96% of U.S. adults age 18 to 29 years owned a smartphone and ownership was 92% among those age 30 to 49 years (Pew Research Center, 2019). Moreover, 90% frequently carry their phone with them throughout the day (Rainie & Zickuhr, 2015). It is inevitable that devices will be present during caregiving times and in caregiving spaces. Simply as an illustration, here are a few statistics:

- 73% of parents used a phone during meal time with their child or children in a restaurant (Radesky et al., 2014).
- 35% of caregivers were on their phone for 1 out of every 5 minutes (or sometimes more) during times they and their child were at the park (Hiniker et al., 2015).
- 36% of parents reported spending too much time on their phone (Jiang, 2018).

This phone and mobile device use could create disruptions and cause distractions during parenting. These disruptions, distractions, and interruptions in face-to-face parent-child time have been termed "technoference" (McDaniel & Coyne, 2016a; 2016b; McDaniel & Radesky, 2018a; 2018b). For example, mothers report technology interrupting their interactions with their infant or young child (age 3 years or younger; mean age = 11.74 months) at least sometimes in various parenting domains, such as 65% during playtime, 36% during book reading, 26% during mealtime, 26% during bedtime, and even 22% during discipline and limit setting (McDaniel & Coyne, 2016b). Phone use may be particularly prevalent during infant care, due to the sometimes monotonous and extended nature of the care tasks (such as feeding). Some studies on mothers of infants have found that 92% report using screens during daily infant feedings (Ventura & Teitelbaum, 2017), and 37% report often texting or using apps on a mobile device during infant feeding (Ventura, Hupp, Gutierrez, & Almeida, 2020).

Impacts on parent responsiveness and sensitivity

Overall, the research indicates at least small negative impacts of parent phone use during caregiving on parent responsiveness, although this research has primarily been self-report and observational (e.g., McDaniel, 2019). In interviews, parents and caregivers have expressed difficulty switching between their device use and attending to their child (Radesky et al., 2016) and feeling they are better at focusing on their child when their phone is not present (Blackwell, Gardiner, & Schoenebeck, 2016; Radesky et al., 2016).

Naturalistic and structured observations of parents and young children have revealed results such as the following, when parents use their device (especially when absorbed in the use):

- Fewer verbal and non-verbal interactions in restaurants, and at times inappropriate or harsh responses to the child (e.g., Radesky et al., 2014; Radesky et al., 2015).
- Less likely to respond to child bids for attention at playgrounds (e.g., Vanden Abeele et al., 2020; Hiniker et al., 2015).
- Lower sensitivity to infant cues during feeding (Golen & Ventura, 2015).

Although currently limited, some experimental work has begun to show impacts on parent behavior and responsiveness. In an experiment on 200 parent-child dyads during a museum visit, Kushlev and Dunn (2019) found that those parents who were experimentally assigned to greater phone use felt more distracted and less connected to their child. Ventura, Levy, and Sheeper (2019) had 25 mothers engage in infant feedings with and without device use, and they found that mothers engaged in less cognitive growth fostering during the device use condition. In other words, mothers talked less often to their infants when using a device during infant feeding. Reed, Hirsh-Pasek, & Golinkoff (2017) performed a word learning task with 38 mother-toddler dyads. Dyads were assigned to either a phone interrupted condition or an uninterrupted condition, and the researchers found that toddlers were less likely to learn the word in the interrupted condition. The researchers speculated that this was likely due to the decrease in contingency, joint attention, and responsiveness to the child.

Parents have always been distracted. How is distraction with devices any different?

Yes, parents have always been distracted at times, and we have often had to multitask as a human species, so this is a valid question. In a prior review, I answer this question as follows.

> "Yes, there have been concerns expressed with the advent of every technology over the years. However, this is the first time in the history of humanity where we have devices that are connected to almost all parts of our lives and identities and that travel with us (often in our pocket or hand) everywhere we go, from private to public spaces and from individual time to family time. Additionally, some initial work suggests it is more difficult for us to break our attention with our mobile devices than with other sorts of distractions, making child needs and bids for attention less likely to be successful (e.g., Abels et al., 2018; Hiniker et al., 2015)" (McDaniel, 2019).

In other words, it is different due to the way in which it has permeated our sense of self and our daily lives as well as the strong use habits that can be formed. In fact, 46% of U.S. adults felt they could not live without their phone in 2015 (Pew Research Center, 2015), and many individuals feel anxious when they do not have access to their phone (King et al., 2013). For a more detailed review of the reasons parents might use their device around their child, see McDaniel (2019).

What infants and young children see and feel

Overall, a small but growing body of survey, observational, and experimental research demonstrates that children are aware of and react to their parents' device use. When researchers ask children and teens how their parents' mobile device use makes them feel, they often use words such as sad, angry, and lonely, and they express dissatisfaction with those parent-child times (Steiner-Adair & Barker, 2013). In an experiment on 50 parent-child dyads (ages 3 to 12 years), children ran around a softball diamond. Children ran faster and were less likely to make a mistake when their parent was responsive versus on their phone (Stupica, 2016). Additionally, teens experience their parents as less warm when distracted by devices (Stockdale et al., 2018; Xie & Xie, 2020) and may even feel worse about themselves (e.g., Xie & Xie, 2020).

Focusing specifically on infants and young children, researchers have performed the Still Face Paradigm (SFP; Mesman, van van IJzendoorn, & Bakermans-Kranenburg et al., 2009; Tronick et al., 1978) with parents and infants, substituting phone use for the still face segment (Myruski et al., 2017; Stockdale et al., 2020). The SFP consists of three segments: (1) free play, (2) still face, where the parent stops interacting and goes devoid of emotion, and (3) reunion, where play and interaction resumes. Generally, during the mobile device use (still face) segment, these researchers found that infant bids for attention increased, negative emotions increased, and positive emotions decreased, meaning that many infants reacted to and were uncomfortable with their parent's disengagement with a device. Additionally, according to parent self-reports over 6 months in a sample of over 170 two-parent families, greater technoference in parent-child interactions led to greater externalizing behavior over time, such as child acting out, frustration, and anger (McDaniel & Radesky, 2018a; 2018b).

Infants and children can also be indirectly affected by parent phone and mobile device use. There is an ever-growing literature which has linked technoference in couple relationships with decreased relationship satisfaction, lower quality interactions, greater relationship conflict, decreased feelings of closeness to one's partner, and negative emotions in the individual feeling snubbed (e.g., Amichai-Hamburger & Etgar, 2016; Brown et al., 2016; Dwyer, Kushlev, & Dunn, 2018; Halpern & Katz, 2017; Krasnova et al., 2016; McDaniel & Coyne, 2016a; McDaniel et al., 2018; McDaniel et al., 2020; Roberts & David, 2016; Wang et al., 2017). Additionally, some work has linked technoference with lower coparenting quality, or the ability of partners to work together in parenting their children (McDaniel & Coyne, 2016b; McDaniel, Galovan, et al., 2018). We also know that the quality of the couple and coparenting relationship (in families with multiple caregivers) spills out into the quality of parenting that children receive as well as how secure children feel in their family relationships (e.g., Davies & Cummings, 1994; Erel & Burman, 1995; Margolin et al., 2001). In other words, technoference could negatively impact the quality of the interparental or other family relationships which then could negatively impact parenting quality and the child—yet no research has directly examined the link yet between technoference in the interparental relationship and child outcomes.

Technoference and bonding with a parent

Although there is no longitudinal or experimental research as of yet which can directly link certain types and frequencies of parent phone use to worse parent-child relationship quality or weaker parent-child bonding or attachment, young children's words and reactions above (e.g., Steiner-Adair & Barker, 2013; McDaniel & Radesky, 2018b) indicate that parent distraction with technology might negatively impact parent-child bonding if it occurs frequently. Focusing specifically on infants and very young children, researchers and clinicians are at times concerned about the potential impacts of parent distraction with devices due to the child's need for sensitive, responsive caregiving and assistance with the regulation of their emotions (e.g., McDaniel & Coyne, 2016b; Radesky & Christakis, 2016; Stupica, 2016). As cited earlier, parent responsiveness and sensitivity can be negatively impacted by parent phone use, and as I have stated in an earlier review, "If a parent was distracted by a phone or other device, the parent might be less aware of their child's cues and needs, less accurate in their interpretation of their needs, delayed in their responses (less contingent), less appropriate in their response, or all of the above" (McDaniel, 2019). Hypothetically, we would expect this decrease in sensitive caregiving,

if frequent, to negatively impact the overall quality of the infant or young child's bond with the parent (attachment). We would also expect this decrease to negatively impact the infant's or child's ability to regulate their emotions over time, as the parent is less available to soothe and assist the young infant or child with their emotions (e.g., co-regulation; Evans & Porter, 2009; Feldman, 2007). As some initial evidence, survey research indicates that adolescents feel less attached to, like their relationship needs are not being met, and worse about the parent-child relationship if their parents are distracted more often by their phones (Niu et al., 2020; Xie et al., 2019; Xie & Xie, 2020). Finally, there is some emerging survey research that has linked parents' greater phone use with worse feelings of attachment to their child in samples of parents with infants, young children, and school-aged children (Gieschen et al., under review; Johnson, 2019; Linder et al., under review). To be clear, it is unlikely that occasional glances at a smartphone would cause any meaningful damage to a parent-infant relationship. However, if the distractions were frequent enough and if they negatively influenced the sensitivity of the parent on an ongoing basis, then changes in parent-infant bonding would be expected.

Not all phone use is created equal: The importance of considering the reason for and type of use

There are a variety of reasons a parent or caregiver might get on their device while around their infant or young child. For a detailed review of these reasons, see McDaniel (2019). Additionally, see Radesky et al. (2016) for interviews of parents and caregivers about their reasons for using their devices around their children. As a summary, here are some of the main reasons for use from my review of the literature that relate to parents: (1) Phones are useful devices that facilitate many different parts of our lives, such as connection, work, information-seeking, and much more; (2) To entertain themselves or have something to do when bored by the parenting task or experience at hand; (3) To deal with negative emotions, such as loneliness or depression, and/or to seek for support; (4) To virtually escape from stressful parenting experiences, such as a crying infant or a tantruming toddler; (5) Simply out of a habit that has formed from frequently checking the device at certain times throughout the day, which habit has formed over months or even years. Additionally, in a sample of 296 parents with a child age 3 to 6 years old, I recently surveyed parent perceptions of phone use for positive purposes. As a few examples, I found that (McDaniel, 2020):

- 58% felt their device use helped them calm down when at their breaking point
- 65% felt their device use helped them see the positives in their child again
- 65% felt their device use helped them see what they liked about parenting again
- 75% were able find strategies that made them a more effective parent after the device use
- 79% said the use helped them come up with activities to do with their child

In other words, parent phone use often serves to gratify a need or fulfills a purpose, and we cannot forget this when intervening or working with parents, nor can we treat all phone use as the same.

Yet, although the parent's device use may help them and/or serve a purpose, we should still carefully consider whether the device use (and the type of device use) is the most effective way for the parent to accomplish their purpose or fulfill their need. For example, if a parent

needs to calm down, considering and helping a parent to implement strategies that are empirically supported to help alleviate anger and frustration within the parenting context would be better than the parent pulling out their phone and scrolling through social media. However, there may also be times when the device use is effective and helpful for the parent. For instance, a parent does not know what to do in that parenting moment and has a trusted friend who they can call and who will help them to quickly overcome this moment of need. Finally, parents should also consider whether using their phone during that moment (e.g., to control their emotions, to distract themselves from an experience they do not enjoy, to respond to a work email during family time) is the behavior they want to teach their children, as one of the strongest predictors of how children will use technology is how their parents use technology (e.g., Lauricella et al., 2015; Paudel et al., 2017; Xu et al., 2015).

Additionally, depending on the content and activities engaged in during the device use, we may see different impacts on or associations with parent mental health and well-being. For example, if a parent uses their device in a passive way—"consuming information without direct exchanges (e.g., scrolling through news feeds, viewing posts)" (Verduyn et al., 2015, p. 480)—this use may prove to be detrimental to, or at least not helpful for, their mental health. Passive use tends to be linked with greater depressive symptoms and worse well-being over time (Escobar-Viera et al., 2018; Verduyn et al., 2015; 2017). Furthermore, use of phones or social media to cope by disengaging from or avoiding life stress has been associated with worse life satisfaction (van Ingen et al., 2016). Therefore, passive use with no specified purpose or simply to escape may be ineffective and perhaps detrimental to mental health over time.

On the other hand, active use—such as "direct exchanges with others (e.g., posting status updates, commenting)" (Verduyn et al., 2015, p. 480) or reaching out to a trusted friend for help—could be beneficial (Deters & Mehl, 2013; Escobar-Viera et al., 2018), especially if individuals perceive that others are engaged with them or supporting them (Frison & Eggermont, 2015). Indeed, individuals can feel connected to and supported by their friends and family via technology, which can lead to or be associated with lower stress levels and better mental health (Lenhart et al., 2015; McDaniel et al., 2012). Indeed, in contrast to passive use, active use has been linked with fewer depressive symptoms over time (Escobar-Viera et al., 2018; Verduyn et al., 2015; 2017).

Practical tips for working with parents concerning their mobile device use

Overall, parent mobile device use and distraction with devices is a complex issue, and we should not simply view all parent device use around children as problematic. If parent device use around children happens frequently and if it interferes in parent-child interactions or parent sensitivity (such as awareness of child cues and needs, timeliness of parent responses, etc.), there is the potential for negative effects on infants and children. However, it is also possible for phone and device use to improve outcomes at times, if the use empowers the parent to be better in the moment such as through having access to social support and other resources or maintaining more sensitive caregiving (e.g., reducing harsh reactions such as yelling at the child). Finally, it is likely that many of these different types of uses (positive, negative, and neutral) will happen in a single day within a parent, and we do not know the exact consequences for parents and children based off of different combinations of parent distraction, use for pleasure, and use for

empowerment. We need to further explore both the potential positives and negatives of parent device use around their children and combinations of this use.

As we live in a device saturated world, it is easy to become stuck in patterns that may not be the best for our own well-being and the well-being of our children and family. As researchers, clinicians, and educators, we must assist parents in developing what I term "healthy digital habits." Below are some suggestions for working with parents concerning their phone and mobile device use.

1. Remember that phone/mobile device use often serves a purpose or fulfills a need.

    We should not approach parents with the mindset that all use is bad. Instead, work with parents to understand their reasons for use and what they do on their device when they use it around their children. Seek to understand them, not only to change them.

2. Work with parents to recognize how they might accomplish the task or fulfill the need utilizing a more effective strategy.

    If they would like to change their phone and mobile device habits, show and teach them effective strategies to accomplish what they need. For some, this might mean changing the type of device use to be an active support seeking (such as calling a friend directly) instead of mindlessly scrolling through social media. At other times, it may be that the device use needs to be removed entirely. If the device use is removed, a different activity or strategy will need to be used to replace it. Otherwise, we may have removed the parent's only strategy for fulfilling that particular need, which could set the parent up for failure.

3. Help parents to set up clear boundaries for their phone and mobile device use.

    Things often go better when there is a plan. The American Academy of Pediatrics (2016) recommends implementing screen-free times or screen-free zones. These are times of the day or areas of the home in which devices will be put away in order to minimize distractions and hopefully maximize connection and relationship building. Assist parents in identifying realistic goals as well as barriers for screen-free times and zones.

4. Stress the importance of sensitive caregiving for infant and child development.

    Help the parent understand the why behind examining and potentially changing their mobile device use—i.e., infants and children need caregivers that are aware of their needs and that give timely and appropriate responses, at least most of the time. The occasional distraction with a device will likely not cause harm. However, help them to recognize that a frequent pattern of distraction might impact bonding with their infant or young child, potentially increase child behavior problems, and more. Finally, do not overstate these effects. We do not wish to create fear or exaggerate the potential impacts of their device use. Instead, focus on how relationships can become stronger when parents focus on creating ways to connect and on their children's needs.

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Brandon T. McDaniel, PhD, is a research scientist at the Parkview Mirro Center for Research and Innovation in Fort Wayne, Indiana. He received his MS and PhD in Human Development and Family Studies from The Pennsylvania State University. He has published extensively on the intersection of technology and family life and is a nationally recognized expert on the impacts of technology use on children and families. Dr. McDaniel's research on technoference—the interference of device use in our face-to-face interactions and family relationships—has attracted international attention. He also regularly engages in community education in the promotion of healthy digital habits.

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