Parental Smartphone Use and Parent-Child interactions During The Covid-19 Pandemic

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ABSTRACT

PARENTAL SMARTPHONE USE AND PARENT-CHILD INTERACTIONS DURING THE COVID-19 PANDEMIC

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Northern Illinois University, 2022
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This study explored parental smartphone usage during the COVID-19 pandemic, as well as examined parents’ perceptions of technology interference in interactions with their young children, ages 0-5. The COVID-19 pandemic brought on far-reaching consequences for many children and families across the United States. Technology quickly began to play an important role during the pandemic to obtain public health information, promote coping, and provide social support. However, parents using a mobile device can cause them to become less responsive while in the presence of their child. Current studies have not adequately addressed parental smartphone usage and parent-child interactions during the pandemic. Using a cross-sectional design, this study surveyed a total of 141 parents with young children, ages 0-5, to specifically look at: 1) How were parents using mobile devices during the pandemic? 2) Did parents perceive technoference in their interactions with their young children? 3) Is there a relationship between parents’ perceived stress and the frequency of technoference in their interactions with their young children? Results found that on average most parents were using their devices during the pandemic for social media, text messaging, and/or work purposes. We were able to also examine those parents disagreed or “somewhat disagreed” that technology was disrupting their thoughts during parent-child interactions and there was a slight correlation between parent’s stress level and technoference.
PARENTAL SMARTPHONE USE AND PARENT-CHILD INTERACTIONS DURING THE COVID-19 PANDEMIC

BY
GIANA LAGIOIA
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A THESIS SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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Thesis Director:
Melissa Clucas Walter, PhD.
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DEDICATION

First and foremost, I would like to dedicate this thesis to my family. My parents and my brother have showed me unconditional support throughout this entire process. I would have never made it this far without them. Thank you to my parents, for making all my dreams come true and encouraging and pushing me in every way possible throughout my entire life. Thank you to my brother, Joe, for setting the academic bar too high when we were younger, which has always pushed me to do better. I love you three more than words could ever say and appreciate you more than you will ever know. Dad, Mom and Joe, this thesis is dedicated to you three.
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CHAPTER 1
INTRODUCTION

In January of 2020, most people in the United States had never heard of COVID-19 (Coronavirus Disease-2019). However, by March of 2020, it became rare for someone to have never heard of the term. According to the CDC (Centers for Disease Control & Prevention), COVID-19, became a hastily dangerous disease caused by a virus beginning in the late December of 2019. The virus became briskly spreading and exceptionally contagious across the entire globe (Centers for Disease Control and Prevention [CDC], 2020). Within a matter of days, the socialization and daily lives of children and families all over the world were altered as they were deprived of their normal routines (Henderson et al., 2020). COVID-19 began in March of 2020, originating with a lock-down period, which required American families to “shelter in place” and “stay at home” until further notice (Centers for Disease Control and Prevention [CDC], 2020).

Having a mobile device to engage, connect, and communicate was crucial during the COVID-19 pandemic. The use of mobile devices increased during this time as Americans were eager to obtain updated information about the COVID-19 pandemic (Iyengar et al., 2020), and they used their mobile devices to engage, connect, and communicate during this period of isolation. This increased use of mobile device is important to note, as we are also aware that mobile devices can provide an opportunity for great distraction. The time parents spend on
technology can often decrease parent-child interaction quality (Anderson, 2015). This is particularly concerning for parents of young children, under the age of 5, because parent-child interactions that consist of high responsiveness and sensitivity are essential for development of a secure attachment, which is foundational for optimal development (Anderson, 2015). The aim of this study was to explore parents’ use of mobile devices during the COVID-19 pandemic, as well as examine parents’ perceptions of technology interference in interactions with their children ages 0-5.

Background

The COVID-19 pandemic led to emergency health orders which required the placement of severe restrictive measures and caused worry, loneliness, and uncertainty worldwide (Henderson et al., 2020; Parlapani et al., 2020). By the end of March 2020, Americans were placed on a government-issued order to stay inside of their homes, leaving if only necessary. The terms, “shelter-in-place” or “stay-at-home” were commonly used to protect people during this uncertain and wary time (Centers for Disease Control and Prevention [CDC], 2020). Regular day-to-day lifestyles were transformed as education, businesses, work life, healthcare, and simple every day interactions were impacted. Protocol for this initial phase of the pandemic was determined by state governors, along with the former president of the United States, Donald J. Trump. This time frame is commonly referred to as the “COVID-19: lock-down period”. Enforced stay-at-home measures mandated schools and childcares to abruptly shut down and no longer hold “face to face” instruction until further notice. Along with requiring school closures, the pandemic permitted only “essential” employees to continue work in person, mandating all other employees to work from home. These “essential workers” consisted of
employees that worked in health care and other essential places of work (e.g., first responders and grocery store workers) (Centers for Disease Control and Prevention [CDC], 2020). Majority of childcare centers stayed closed during this time, those that did remain open were only used for the children of essential workers (Centers for Disease Control and Prevention [CDC], 2020).

In addition to working from home, individuals who were parents of young children quickly had to learn to adapt to simultaneously take care of their children who were now at home as well. While it is important to consider how quickly COVID-19 touched the lives of individuals of all ages in varying and disparate ways, children were not at highest risk for physical harm (Centers for Disease Control and Prevention [CDC], 2020), however children stand to be the most adversely affected, and they will forever bear the long-term public health and socioeconomic impacts of this pandemic (Henderson et al., 2020).

Problem Statement

It quickly became evident that COVID-19 was a traumatic period for parents and their children (Henderson et al., 2020). The pandemic consisted of them juggling new ways of their daily life, multitasking, and even fear of what was still to come of the pandemic. Parents and their children were interacting more during this time with families having to be home together all day, every day. This allowed for an increase in the daily occurrence of quality parent-child interactions. It is imperative to remember that parent-child interactions that consist of high parental sensitivity and responsiveness allow for a child to establish their caregiver as a secure base and develop a secure attachment style (Ainsworth, 1979). While there was a significant increase in the opportunity for interactions due to parents working and spending more
time at home with their children, the pandemic had created an increase in reliance on technology as mobile devices were a medium of communication, which allowed for consistency in interactions and connectedness between one another (Pandya & Lodha, 2021). Several studies have noted that device usage can compromise the development of secure attachment relationships and affects the child’s development from an early stage (Ante-Contreras, 2016 & Blackman, 2016). These parent-child interactions become critical for a child’s development, especially during periods of stress, such as the COVID-19 pandemic. Additional research indicates that there is a correlation between parent-child interactions and a child’s development. The quality of the social interactions between parents and children has a significant factor on the child’s cognitive, language, and social development. When parents spend a large portion of their time with their children in the presence of a screen, it can have a negative impact on the development of a child (Anderson, 2015). According to attachment theory, parental sensitivity is a strong predictor of a high-quality parent-child relationship and secure attachment (Ainsworth, 1979). Technoference impairs a parent’s sensitivity; when parents are distracted by their phones, they become less attentive and responsive to their child, (Kildare & Middlemiss, 2017). The development of a child can be negatively impacted by the presence of a screen, as parental sensitivity remains relevant throughout the development of a child.

Across existing research on mobile device use and parent-child interactions, mobile devices can result in potential disruption of high-quality parent-child interactions known as “technoference” (McDaniel, 2015). According to McDaniel, technoference is the “everyday interruptions in interpersonal interactions or time spent together that occur due to digital and mobile technology devices (2015). Additional research indicates that when there
is technoference, parents’ mobile device use can interfere with properly caring for children, as the distraction of the mobile device disrupts the opportunity for high-quality parent-child interactions (Kildare & Middlesmiss, 2017). Increased use of mobile devices can lead to parents becoming less sensitive and reactive to their children. If mobile device usage is increased, not only can this lead to lower quality parent-child interactions, but children may also engage in behaviors that are attention seeking, resulting in higher risk of injury (Kildare & Middlesmiss, 2017). According to the displacement hypothesis (Coyne et al., 2014) time spent on technology may displace real life parent-child interactions and lessen the interactions that should have or could have been taking place in that moment with the child leading to a potential decrease in meaningful parent-child connections (Fay-Stammach, Hawes, & Meredith, 2014). The displacement hypothesis is important to note when considering how parents may have used their mobile devices for parental support and social connection, which was found to be extremely important during this pandemic (Klootwijk, 2020). Although parents may have been meeting their own needs for support through their mobile devices, the time they spent on technology could have been taking the place of opportunities for real life parent-child interactions.

Purpose Statement

The purpose of this study was to examine how parents of young children used their mobile devices during the COVID-19 pandemic, as well as whether parents perceived technology interruptions in interactions with their child during the pandemic. Due to the importance of parent-child interactions, this study primarily focused on the technoference that mobile devices can cause. According to John Bowlby’s attachment theory,
early bonds formed by children and their caregivers have a substantial impact that continues throughout a child’s entire life (Bowlby, 1998). The parent-child interaction patterns are important factors to consider when beginning to understand how a mobile device may have interfered with these interactions. Initial research has indicated that during the COVID-19 pandemic, mobile phones remained to be one of the best sources of information regarding the behaviors occurring within the large-scale population (Grantz et al., 2020). Individuals reported that over the course of the pandemic they felt pressured to rely on their phones daily to receive the assistance and guidance needed to make it through this difficult and challenging time (Grantz et al., 2020). Parents and individuals also reported that the use of their mobile devices during the pandemic was the only way they could communicate with family and friends. It was hypothesized that this increase in reliance on mobile devices may have led to an increase in technoferece in parent-child interactions, and that the more a parent was experiencing stress, the more technoferece that may have occurred. Therefore, this study sought out to answer the following research questions:

1. How were parents using mobile devices during the pandemic?
2. Did parents perceive technoferece in their interactions with their young children?
3. Is there a relationship between parents’ perceived stress and the frequency of technoferece in their interactions with their young child(ren)?

Significance

The significance of this study heavily relied on the process to examine how parents used their mobile devices during the COVID-19 pandemic. It was important to consider that during
the COVID-19 pandemic parents had reported that both they and their children had an increased technology use since the beginning of social distancing (Drouin et al., 2020). Parents began to use social media not only to socialize, but to also provide a source of critical information, along with social support during the isolation period. Social media was highly used by government agencies to dispense information effectively and efficiently during the height of the pandemic (Drouin et al., 2020). More importantly, researchers also found that mobile devices had a positive overall effect on life during this stressful time, as technology became one of the main sources used to process the trauma and stress (Drouin et al., 2020). However, when it comes to the importance of interactions for a child’s development, potential technofference can cause a disruption. Oftentimes the parental use of technology around children can cause “absent presence”, and parents have reported to feel less effective in their parenting (Radesky et al., 2016). Despite the benefits of mobile devices, one of the downfalls was, when they were at home, some parents may have lacked in providing the quality interactions needed for proper development and growth.
CHAPTER 2

LITERATURE REVIEW

Theoretical Framework

Attachment is a crucial factor when considering the importance of parent-child interactions and their responsive qualities. According to John Bowlby’s Attachment Theory (1988), attachment begins with the idea that when humans began to evolve, babies who stayed close to their mothers, or other caregivers, would have better capability to survive to have children of their own. Bowlby then hypothesized this idea that infants and their mothers adapt and evolve with a biological dependence and need to stay in contact with one another. Bowlby believed that attachment behavior is instinctive and activated by any conditions that seem to threaten the achievement of proximity, for example, separation, insecurity, and fear. When a child is born, they develop these innate attachment behaviors including sucking, clinging, following, crying, and smiling. The behaviors then help to ensure a close relation and connection with the mother or a similar attachment figure because when one of these innate behaviors is produced it stimulates an adult to perform caregiving to the child. The determinant of attachment is believed to root from the care and responsiveness that is provided to the child. Bowlby believed that the bonds formed with caregivers in the first five years of life have tremendous impact that will continue through the duration of a child’s life. Bowlby also believed that infants are biologically programmed with these behaviors through natural
selection, to ensure the occurrence of attachment. Essentially implying that the formation of attachment is extremely critical during a child’s first five years of life.

Bowlby stated that the result of the emotional attachment of a human comes from the internal working model of the child, which eventually has a huge influence on adulthood. The internal working model roots from the idea of attachment, focusing on a child’s experience with their caregiver. Bowlby described the working model as a framework, or “mental representative”, of understanding the world around them and building relationships as they grow and develop (1988). This internal working model is a concept that is drawn cognitively from one’s relationship with their primary caregiver, as well as an individual's understanding of themselves and the world around them (Bowlby, 1988). When the attachment of an individual is continuously disrupted, it can result in the child suffering long-term consequences of deprivation, and challenges on a child’s development (cognitively, socially, and emotionally) which affects them their entire life. Attachment theory posits that to grow up mentally and relationally healthy, children need to receive warm and responsive, intimate, and continuous relationships throughout the duration of their childhood. Without forming attachments and relationships, humans could not exist. Infants would simply die without the support of a primary caregiver in their lives. After years of researching attachment, Bowlby was able to determine that not only the quantity, but also the quality and timing of the responses matter.

Bowlby’s theory is often labeled, the “concept of sensitivity”, which was translated by experts of communications to a new idea of “serve and return” (Center on the Developing Child at Harvard University, 2016). Every time a baby “serves” a caregiver with a cue, and the caregiver “returns” it with an engaging response, new neural connections to begin to form. These
connections lead to the development of “brain architecture” which is the foundation of all future development. Serve and return interactions have been found to benefit a child’s development: socially, emotionally, physically, behaviorally, and cognitively. When parent-child interactions are powerful and meaningful, children are instilled with the ability to have better self-confidence, higher mental health status, more motivation, and higher relationship quality (Center on the Developing Child at Harvard University, 2016). These types of high-quality interactions are especially important during times of stress, such as during the COVID-19 pandemic, because typically a child’s attachment becomes stimulated by pain, fatigue, and anything alarming (Bowlby, 1988), and responsive interactions can help to buffer the child from the negative effects of stress (Center on the Developing Child at Harvard University, 2016).

Impact of COVID-19 Pandemic on Children and Families

The initial lockdown period of the pandemic was proven to be effective when it came to reducing the spread of the virus, however, it resulted in many concerning areas when it comes to the well-being of children and families. Researchers will be examining the effects and implications that the COVID-19 pandemic had on children for years to come. These effects include but are not limited to, school closures, social distancing, missed milestones, language barriers with masks, family stress, income loss, and parent mental illness (McArthur et al., 2021). While many Americans experienced stress during this period, on average American parents reported higher levels of stress compared to American adults without children (American Psychological Association, 2021). Parents faced many challenges including: financial loss, job
insecurity, navigating of children’s emotions around change, concerns of contracting COVID-19, and mandatory stay at home orders (American Psychological Association, 2021). A 2021 study was conducted by Adams, Smith, Caccavale, and Bean to determine patterns of parent stress across COVID-19. The study determined that with the disruption of daily routines, many families experienced chronic stress. The researchers found that parents’ two most common stressors during the pandemic were the change in their child’s daily routine and their worry that COVID-19 had an impact on their parenting (Adams et al., 2021). Another study reported parents were negatively affected, with almost one in three parents reporting a worsening of their overall mental health during the COVID-19 pandemic (Patrick et al., 2020).

Throughout the course of the pandemic, child mental health was often determined by parent and family stress factors. Maternal mental health tends to predict a child’s state of well-being (Prime et al., 2020); during the pandemic, maternal anxiety and depression nearly doubled, leading to an impact on a child’s mental health status (Prime et al., 2020). While dealing with the mental health impacts of COVID-19, schools, and daycares rapidly closed, enforcing social distancing, and separating children from forming and maintaining relationships. On top of this isolation, children’s daily routines and state of functioning was highly impacted (Madigan, 2019). The change of their daily routine led to different variations of sleep schedules, higher screen time use, and less physical activity (Lopez et al., 2021). An isolated world becomes a very difficult world for a child to thrive in. However, when responsive parent-child interactions occur, a child is benefitting by gaining self-regulation abilities, language skills, and cognitive development (Radesky, 2014).
In present day society, it is evident that mobile devices are an essential commodity in our daily lives. Perrin and Atske (2021) conducted a study on U.S adults smartphone usage in the beginning of 2021 determining that 85% of Americans say they use their smartphones daily. Of that 85%, 31% of adults reported that they are “almost constantly” online, which is a 21% increase from 2015. The use of smartphone and other technologies increased during the lockdown period simply due to quarantine. Researchers noted that parents AND children increased their technology use for school, gaming, working, and passing time use (Limeone & Toto, 2021). This increase led to a concerning factor, the mental health of children. McArthur (2021) found that children who had higher screen time usage during the COVID-19 pandemic reported less sleep and higher anxiety levels and depressive symptoms, but it is important to note that the study focused on children ages 9-11. Most of the research thus far on children’s increased use of technology during COVID-19 has examined school age children and adolescents, but the impact of technology use during this time is less well known for children under the age of five.

Farah (2021) and colleagues conducted a study focusing on the emotional states of children, parental screen use, and how the usage may have affected their relationship. The study had 178 parents of children (ages 12-36 months) complete multiple questionnaires and an emotional stress test. Results showed a chain reaction of effects. Parental employment correlated with parental mobile device use. The relationship between parent employment focuses on the many parents who became unemployed or worked from home during this duration, and because of this their device usage was increased. Child
stress was based off parental anxiety, leading to more child screen exposure. Parental screen time use on mobile devices was highly correlated with child screen exposure. Social distancing is also a factor to consider when examining mobile device use. Individuals were required to social distance and limit their face-to-face interaction, which resulted in more use of mobile devices to gain some type of interaction and maintain communication while being physically isolated. Limone and Toto (2021) referred to this phenomenon as a “lonely escape” during the pandemic.

Mobile Devices as a Source of Parenting Support

Coyne (2014) noted that minimal research has been done to investigate the possible benefits of parental smartphone use for family interactions. Studies have found that when parents and their children co-view mobile devices, parent-child interactions can increase which leads to a positive impact on the child’s development (Connell et al., 2015; Demers, et al., 2013). However, recent research has begun to focus on the benefits of smartphone for use for children and parents, such as feelings of connectedness within the family (Coyne et al., 2014). Mangan (2018) conducted several interviews that reported there has been positive effects on the use of smartphone devices when it comes to balancing and organizing life. Parents reported that they were able to gain parental support through technology, gathering and accessing useful parent information at their fingertips via social media. This study also found that technology allowed for opportunities to connect to distant family members and even provided feelings of safety and comfort (Mangan, 2018). This mobile device connection was crucial during the COVID-19 pandemic as families were extremely limited to in-person visitations and gatherings they could hold. Being able to connect to family and friends through
mobile devices allowed individuals to stay socially connected during the extremely uncertain pandemic.

However, it is also important to note that when parents use technology, they could be searching for ways to cope with stress and escape from demands. Parents may also look to technology for social support; while being interviewed, parents have noted that they use mobile devices when needing a quick escape from difficult child behavior, finding that they can relieve their stress through social media applications (Radesky et al., 2016).

While exploring the prevalence of maternal distraction when feeding an infant, Golen and Ventura (2018) took a different approach and focused on the advantages that can be gathered from parental smartphone use. The study consisted of 41 bottle-fed infants and their mothers; infants ranged in age from zero to six months. Mothers were asked to report their patterns for infants’ feedings by recording bottle-feeding for their infants. Results were omitted if the infant was not formula fed or tried any other type of food during the duration of the study. Mothers were also asked to complete a demographic questionnaire and Infant Behavior Questionnaire Very Short Form (IBQ-R). The questionnaire asked mothers what they were doing, if anything, while feeding their infants. The researchers then coded the results in two categories. The first one being the mother was never being distracted by devices and the second category being distracted during one or two feedings (Golen, Ventura., 2018). Results concluded that most mothers reported that their smartphones provided a sense of entertainment and relaxation during the feedings. Mothers reported that they were capable of being responsive to their infant’s cues. Simply their mobile devices allowed for a whole new level of connection with entertainments and learning together while feeding (e.g., watching educational
After the study was completed, mothers were asked to discuss the topic of mobile device use and parenting. All parents reported that their phones not only allowed them to stay connected, but also to organize life with an infant and document photo of their child.

**Technofference**

Despite the benefits researchers have found for parents related to mobile device use, it is important to understand the impact of parental mobile device use on parent-child interactions through the lens of Attachment Theory (Bowlby, 1988). As previously noted, from the day of birth humans are primed and “programmed” to find someone to meet their needs. When a parent is mesmerized by a mobile device, their focus and capability to meet the needs of their children can be altered (Center on the Developing Child at Harvard University, 2016). Children have the unique ability to understand when their parents are incapable of providing attention or focusing on their needs, and research shows that babies feel distressed when they attempt to connect to a caregiver and these connections are persistently ignored (Center on the Developing Child at Harvard University, 2016). The term “technofference” was coined to describe these everyday intrusions and interruptions in interactions that take place due to the use of technology devices and their “always-on” nature (McDaniel, 2015), and a growing body of research has begun exploring how technofference is impacting young children.

**Parental Responsiveness**

When parents are distracted by their phones, researchers have shown they are slower to respond (Ante-Contreras, 2016; Vanden-Abeele, 2020), and that they engage in fewer
interactions with their young children (Radesky et al., 2014). Ante-Contreras (2016) conducted a study to determine how a parent’s use of social media affects parent-child relationship and bonding and found that high social media usage was linked to decreased levels of attachment and bonding. It was reported that when parents had a smartphone in their hands for 10 consecutive minutes, the longest time reported that a parent looked up to observe their child was 2 continuous minutes. This result leads us to previous research which has established that parenting behavior and the quality of parent-child interactions shape the development of a child. Frequent eye contact, more one on one interactions, and undivided attention become necessary when building secure parent-child attachment (Ante-Contreras, 2016). When a parent becomes distracted with their devices, it makes it difficult for these types of interactions to occur.

In Vanden-Abeele's (2020) study, parents were examined on their response times to their young children when using a phone. The study explored 53 parent-child relationships in the setting of either a waiting room or playground. Parent-child dyads were video recorded, and coders noted behaviors after each observation interval. Researchers coded parents’ activities related to phone usage, child-directed activities, and non-child-directed activities using a coding instrument with a scale of 0-4 (“0= no involvement, 1= passive involvement [e.g., holding the phone or drink but not engaging with it], 2= occasional involvement [e.g., occasionally interacting with the phone or a magazine], and 3= exclusive involvement [e.g., being completely absorbed by the phone or a conversation]”). Parent-child behavior was observed for a total of 1,038 ten-second intervals across the whole study. Of these intervals, 641 of them contained a child “serving” bid for attention, resulting in more than half. The study also found that parents responded to their child five times less when using a phone. Not only that, but parents’ responses
were not as timely, less affective, weaker, and other activities were prioritized over the child’s needs. The study also found that when parents occasionally glanced at their phone, they had higher response times and interaction quality compared to parents who were passive and fully absorbed by their cell phones. Occasional glancing was determined by the caregiver being involved in their mobile devices, but still attending to child. One result of this study included that when children receive a weak or no response by their caregiver they may increase of the intensity of the bid.

Radesky's (2015) study focused on maternal mobile device use and the frequency of mother-child interactions that occurred. This study explored interactions between 225 low-income mothers and their children 6 years of age or younger. The dyads were videotaped to determine how often the mother and child interacted. The videotapes were than dichotomized based on whether the mother was using their mobile devices, while also counting the verbal and nonverbal exchanges from mother to child. The purpose of this study was to find the association of maternal mobile device use in a more controlled setting without any distractions. Mother and child were left alone for less than five minutes while being videotaped. Mothers were aware of the videotaping but were never prompted as to whether the mobile device could or could not be used, however, nothing was prompting them to use their devices. Findings indicated that mothers who used mobile devices during interactions had significantly fewer interactions compared to mothers who did not use mobile devices (8.8 vs 12.3, p=.03). Another finding indicated that maternal mobile device use is highly associated with fewer verbal, nonverbal, and encouragement interactions directed to their young child (Radesky, 2015). Mothers who engaged in phone usage during interactions with their child had 20% fewer verbal interactions and 39%
fewer nonverbal interactions. There was a decreased awareness from the mother of the child’s social cues while their attention was directed in their devices. Parents and young children often communicate through nonverbal interactions, so when there is significant decrease, it can lead to negative effect on the child’s emotional connection to the parent (Radesky et al., 2015). However, a limitation that exists within this study was the fact that participants were aware of the videotaping. Participants may have used their mobile devices less frequently because they were aware that they were participating in a research study and being videotaped.

**Parental Sensitivity**

In addition to being slower to respond to their child’s attempt to reengage, researchers have found that parents are also less sensitive within their responses while engaged on a mobile device (Blackman 2015; Radesky et al., 2014). Blackman’s 2015 study explored parent’s screen time, screen distractions and the effect they have on parent-child relationships. The study used a mixed methods approach (surveys and screen time questionnaires) to determine 93 parents/caregivers’ screen time use and frequency of mobile device usage. The study was able to determine that technology oftentimes causes distracted parents to be less responsive to their child. Blackman (2015) identified the moments in which a parent is distracted from performing parental behaviors becomes highly correlated with their frequent engagement on a mobile device. There was a positive correlation between parental screen time and parental distractions among all the caregivers in this study (Blackman, 2015).

Technology can replace daily interactions that serve as the foundation for learning behaviors and social-emotional skills (Radesky, 2014). Radesky preformed a study in 2014 to
describe the naturalistic patterns of mobile device use by caregivers and children to create a hypothesis that would establish what the effects on parent-child interaction was. The study consisted of observing 55 caregivers eating in fast-food restaurants with their child. Researchers would individually visit restaurants and sit as close as possible to a parent-child dyad to observe their interactions. The observer would take paper notes to provide anonymity. Observations were recorded in the researchers’ own interpretations of behaviors. Observers wrote in detail the aspects of the mobile device use on the caregiver while also focusing on the caregiver behavior during the mealtime. Once coded, the results were able to determine that when a caregiver becomes absorbed in their device, that oftentimes, when distracted by their cellphone, the child responds by attempting to gain their attention, and the parent initially ignores the child (Radesky, 2014). From the 55 caregivers in the study, 40 of them used their mobile devices during mealtime (Radesky, 2014). After determining the lack of attention, a parent has on their child when on their devices, Radesky also determined once a parent responds to a child’s attempt to gain attention, the response is rarely positive (Radesky, 2014). On the contrary, some studies found that after a parent realized that they were distracted, they become more attentive (Hiniker et al., 2015). These current studies add to the literature by determining how parental device usage can transform into a “technoference” that is placed on parent-child interactions. The next section focuses on how children can be affected by a parent’s smartphone use socially, emotionally, cognitively, and behaviorally.

Impact on Child Outcomes

Most of the research related to technology and young children has focused on the impact of children’s own screen use and development, but not many studies have examined the impact
of technoference directly on child outcomes (Knitter, 2020). However, in their 2018 study, McDaniel and Radesky began exploring such associations and reported that these technological interruptions can lead to higher externalizing (e.g., frequent tantrums and emotional reactivity) and internalizing (e.g., anxiety and withdrawal) child behaviors. When parent-child play is interrupted using a mobile device, parent responsiveness is also reduced. This reduction can factor into child behavioral problems (Radesky et al., 2016). They explored 183 individuals who have at least one child between 0-5 years of age. The study resulted that more parent technology use predicted greater child externalizing behaviors. Meaning that the more the parent appeared to be on their phone the high frequency of externalizing behavior. The study also reported that the parents who did not frequently use their cellphone had children who had higher social skills. Using Technology Interference in Life Examples (TILES) to measure, the study determined the parents who used their cellphones more frequently had very few exchanged words between parent and child throughout the duration of the study. Most parents in this study did not believe their child’s safety was at risk and found that their cell phones did not hold any sort of distraction.

This result leads us to previous research which has established that parenting behavior and the quality of parent-child interactions shapes the development of a child (Fay-Stammabach, Hawes, & Meredith, 2014; Zimmer-Gembeck, et al., 2017). A parent can promote the development of their child by positively interacting with them, because it is through these parent-child interactions that a child begins to develop a sense of “self” and learns social skills, such as cooperating, sharing, and respecting others and oneself (Kildare, 2017). Interactions assist in improving communication skills and develop motor skills (Zimmer-Gembeck et al., 2017). These
parent-child interactions are so crucial because they provide the crucial parental sensitivity and responsiveness which allows the child to identify their secure base needed for a successful and healthy development (Ainsworth, 1979). This process of positive interactions that occurs between a parent and child is an extension of Attachment Theory.

The Current Study

When children experience unexpected and intense change within their daily lives, such as during the COVID-19 pandemic, it can affect and impact their mental health in various ways (Gruber et al., 2020). It is particularly important that high-quality parent-child interactions occur often to regulate a child’s environment during a stressful or uncertain period because they can ease some of that stress. Researchers have found that parents and children increased their technology use during the COVID-19 pandemic, and it is important to examine whether that increase in technology use may have led to technofere in parent-child interactions. Therefore, the aim of this study was to explore parents’ use of mobile devices during the COVID-19 pandemic, as well as examine parents’ perceptions of technology interference in interactions with their young child(ren). This study also explored whether there was a connection between parents’ perceived stress and technofere in interactions with their young child(ren). This study specifically addressed the following research questions:

1. How were parents using mobile devices during the pandemic?
2. Did parents perceive technofere in their interactions with their young children?
3. Is there a relationship between parents’ perceived stress and the frequency of technofere in their interactions with their young child (ren)
CHAPTER 3

METHODOLOGY

Study Design and Participants

This study utilized a cross-sectional design to survey 141 parents of children aged 0-5, about their mobile device use, perceived stress, and perceived technoference in interactions with their children during the COVID-19 pandemic. Participants were recruited if they met the following criteria: The parent must have had at least one child who was five and under during the COVID-19 pandemic (i.e., during the months of March and April 2020), and the child did not attend kindergarten or any synchronous online learning during those months. The reason for this specific eligibility requirement was because including children six and older or in kindergarten could have potentially cause the researcher to run into issues related to the remote e-learning that took place during this time. Remote learning could have added a confounding variable to the study as children and families were using technology devices to attend school from home. The families in this study needed to be fluent in English, but English did not have to be their primary language. The reason for this is so participants were capable of reading and responding to the questionnaire. For data collection process, there were a total of 141 responses. However, due to incomplete responses, or participants who only answered select questions, only 63 participants completed the entire survey.
Participants that were recruited for this study were residents throughout the state of Illinois. The reason for this was because different states across the United States were placed on specific orders by their governors. The researcher wanted to eliminate a potential confounding variable as the policies were different and varied among states. To recruit participants, flyers were distributed around local childcare centers within the researcher’s hometown and at local childcare centers. Using local childcare centers enabled some bias as it was restricting to selected areas, so social media was also used as a recruitment tool to reach families in the state of Illinois as well. Recruitment flyers were posted to parent pages on social networking sites across different social media platforms. As a part of the survey, families were asked to complete a demographics portion of the questionnaire. This brief portion helped the researcher document the diversity, education levels, and occupation that the participants hold.

The sample for the current study consisted of a total of 141 eligible parent participants, however, 55% of these parents may have skipped some questions or partially completed the survey resulting in a study sample of 63 parents. Parents were primarily English speaking, female, and majority of them had obtained a bachelor’s degree or higher; however, there were several that had obtained a high school diploma or less. The parents ranged in age from 22-51 years old, with many parents in their 30’s ($M=33.57, SD=6.49$). The reported income from the participants demonstrates a wealth disparity with over 60% of them making 75,000 or more per year. When asked how many people were currently living in their home, 40.3% of parents reported they had four people living in their home. For a typical family of four, the 2022 poverty line is $27,750 (ASPE Guidelines, 2022), which would mean that roughly 10% of the participants have a family that is living in poverty, however this could be higher if the family included more than four individuals (See Table 1 Below).
Table 1. Parent Participant Demographics  
Note: n=63

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>76.2%</td>
</tr>
<tr>
<td>Male</td>
<td>22.8%</td>
</tr>
<tr>
<td>Nonbinary/Nonconforming/Queer</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>20-29</td>
<td>27.8%</td>
</tr>
<tr>
<td>30-39</td>
<td>52.4%</td>
</tr>
<tr>
<td>40-49</td>
<td>17.6%</td>
</tr>
<tr>
<td>50+</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
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<tr>
<td>High School Diploma or Less</td>
<td>23.1%</td>
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<tr>
<td>Associate Degree</td>
<td>9.3%</td>
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<tr>
<td>Bachelor’s Degree</td>
<td>45.2%</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>19.4%</td>
</tr>
<tr>
<td>Doctoral or PhD Degree</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Income</strong></td>
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<tr>
<td>$0-34,999</td>
<td>12%</td>
</tr>
<tr>
<td>$35,000-$74,999</td>
<td>30.7%</td>
</tr>
<tr>
<td>$75,000-$124,999</td>
<td>21.5%</td>
</tr>
<tr>
<td>$125,000-$149,999</td>
<td>25.2%</td>
</tr>
<tr>
<td>$150,000+</td>
<td>10.6%</td>
</tr>
<tr>
<td><strong>Remote Work</strong></td>
<td></td>
</tr>
<tr>
<td>During COVID Work</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>46.3%</td>
</tr>
<tr>
<td>Yes</td>
<td>53.7%</td>
</tr>
<tr>
<td><strong>Number of people living in household</strong></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4.8%</td>
</tr>
<tr>
<td>3</td>
<td>22.6%</td>
</tr>
<tr>
<td>4</td>
<td>40.3%</td>
</tr>
<tr>
<td>5</td>
<td>17.8%</td>
</tr>
<tr>
<td>6</td>
<td>11.3%</td>
</tr>
<tr>
<td>7</td>
<td>3.2%</td>
</tr>
</tbody>
</table>
Data Collection

After receiving approval from the Internal Review Board (IRB), surveys were made available online through Qualtrics. Using Qualtrics minimized the occurrence of human error that is oftentimes seen when collecting data for research. Interested participants completed a screening questionnaire at the beginning of the survey. Eligible participants proceeded to an online consent form before completing the survey. Because this study is with human subjects, explicit consent was needed from participants before any survey could be administered. Once the consent form was completed, if agreement was obtained, the parents were directed to begin the survey. The survey asked questions about the family demographics, mobile device use, perceived stress, and perceived technofference during the COVID-19 pandemic. The survey also included a few open-ended questions about how parents were using their mobile devices during pandemic.

Measures

Demographic Information

Data was collected on the sex, age, education level, income, and work life during COVID from the parents participating in the study (See Table 1). Data was also collected related to family composition, and age \( (M=2.46, SD=1.79) \) and sex of their youngest child under the age of five during the pandemic. Majority of the youngest child of the parents participating in the study were 1 or 2 years old (54.3%); of these children about half of them were male. (See Table 2 Below).
Table 2. Child Participant Demographics

<table>
<thead>
<tr>
<th>Child Age (N=63)</th>
<th>Under 12 months</th>
<th>1-2 years old</th>
<th>3-4 years old</th>
<th>5 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.7%</td>
<td>54.3%</td>
<td>23.6%</td>
<td>17.4%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex of Child(N=63)</th>
<th>Female</th>
<th>Male</th>
<th>Prefer to not identify</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>44.4%</td>
<td>53.9%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Technology Distraction in Parent-Child Interactions

The technology distractions of parent-child interactions were assessed via parental self-report using the Distraction in Social Relations and Use of Parent Technology (DISTRUPT) (McDaniel, 2020). DISTRUPT consisted of items meant to measure parents on their perception of their phone use and how it was used during their time spent with their child. Parents were asked to complete the scale based on their interactions with their child during the COVID-19 pandemic. McDaniel (2020) developed a validated measure of parent distraction with their mobile devices. DISTRUPT examines parents by having them reflect on their device use (cognitive salience) and difficulty staying away from their mobile devices (control loss) (McDaniel, 2020). This four-item measure examined a parent’s tendency toward phone use during times they spend with their child. DISTRUPT is specific to the parents’ phone use during
time spent with their child. The measure consists of 4 items (e.g., “During time I spend with my child, I find it difficult to stay away from checking my phone or mobile device”), and parents’ rate how much they agree with each item on a 6-point scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree). The results of the four items were averaged to produce an overall mean DISRUPT score for each of the participants in the study. This measure is unique from general measures of parental phone usage because items are measured while phones are used during time spent with their child, instead of focusing on phone use in general. McDaniel makes it clear that this measure is not intended to measure or diagnose phone addiction, nor is it intended to be a comprehensive measure of all aspects of problematic phone use. Instead, it is intended as a brief measure that can easily fit into most studies to find parents who may be struggling with phone use around their child (McDaniel, 2021). Earlier studies have measured high internal consistency with a Cronbach’s alpha of 0.895 for mothers and 0.865 for fathers. The current study measured a Cronbach’s alpha of 0.846 for the parents of the study. An example of the DISRUPT is in appendix (C) section.

Frequency of Technoference

The frequency of technoference was assessed through the Technology Interference in Life Examples (TILES), which measures the extent to which technology intrudes or interrupts interactions (McDaniel & Radesky, 2018). This instrument was adapted from a scale that was developed in 2016 by McDaniel and Coyne, originally measuring couples' technoference; it has been reworded to measure interactions with one’s child (McDaniel & Coyne, 2016). McDaniel &
Radesky (2018) developed this scale by simply changing the items to focus on parent technoference instead of technoference taking place in couple relationships. This scale measured the frequency of parent-child interactions interfered by technology. Parents were asked five questions such as, "On a typical day, about how many times do the following devices interrupt a conversation or activity you are engaged in with your child?" Parents responded to each item on a 7-point Likert scale, ranging from 0 (None) to 6 (More than 20 times)” (McDaniel & Radesky, 2018). Scores were averaged across the five questions; the higher scores represented more frequent mobile device disruptions. Consistency of the total scale was 0.67. McDaniel mentioned that although the alpha level was marginally lower than the typical cut-off, there was some variability within the participant’s responses that accounted for a lower alpha (McDaniel & Coyne, 2016). The current study conducted a higher Cronbach’s alpha of 0.826.

Perceived Stress

The stress levels of parents were measured using the 10-item Perceived Stress Scale (PSS) (Cohen et al., 1983). Parents completed the scale when reflecting on their feelings of stress during the COVID-19 pandemic. PSS is a popular tool that is used to measure an individual’s psychological levels of stress (Lee, 2012). This self-reported questionnaire is designed to measure situations of an individual’s life that could be viewed and considered as stressful. Parent participants were asked questions such as, “Since the start of the COVID-19 pandemic, how often have you been upset because of something that happened unexpectedly?” or “Since the start of the COVID-19 pandemic, how often have you been able to control irritations in your life?”. The 10-item questionnaire is rated on a 5-point Likert Scale: 0 (Never) to 4 (Very Often)
(Lee, 2012), and responses were averaged to determine a mean stress score. The PSS is a well-established and reliable measure ($\alpha = .78$). The current study measured a Cronbach’s Alpha of 0.772. An example of the PSS is in the appendix (E) section.

**Technology Life During COVID-19**

To gain more information on how parents were using mobile devices at home during the COVID-19 pandemic, open-ended questions were asked at the end of the survey. These questions allowed parents the opportunity to provide insight while answering these three questions: “How did you use your mobile device during the pandemic? Did you use your mobile device to interact with your child in anyway? In what ways did technology affect your stress levels during the pandemic?” The open-ended questions provided qualitative data which was then analyzed and coded to gain more insight and detail of what occurred during the COVID-19 pandemic regarding parent-child interactions and parental mobile device use.

**Ethical Considerations**

When a research study involves human participants, it is important that intentional ethical measures are taken to protect the participants of the study. The first ethical consideration was to give informed consent, meaning the participants were fully informed about the study that was conducted, which ensured confidentiality. The participants were also aware of how the findings would be used and who would have access to the data. The main purpose of this was allowing the participant to understand what they were participating in. Voluntary participation was also ensured, allowing families to participate free of coercion. Families were free to withdraw their
participation at any time throughout the study. The evaluation and results of the study did not harm participants, meaning it did not cause stress, pain, anxiety, or decreased self-esteem levels. The study remained confidential, meaning the information is not available to anyone but the researcher and her committee members.
CHAPTER 4

RESULTS

The overall purpose of this study was to examine how parents of young children used their mobile devices during the COVID-19 pandemic while also exploring parents’ perceptions of technology interference in interactions with their young children. This chapter presents the major findings that were obtained from the survey and the short-answer questionnaires of the parents who took part in the research study. Preliminary analyses included descriptive statistics on parental stress levels (PSS), frequency of technoference (TILES), and the technology distraction placed on parent-child relationships (DISTRUPT). This was then followed by an analysis to examine relations between these different constructs.

Preliminary Analyses

Descriptive statistics for the variables of study are presented in Table 3. The distributions of these variables were created to check for normality of the data. After normality of data was confirmed, ANOVA measures were run to examine relationships between the demographic variables. Race and gender were not significant factors when it came to the impact of the frequency of technoference and technology distraction in parent-child interactions. Income was not a significant factor related to frequency of technoference and the technology distraction.
between parent-child relationships. Marital status and education were significantly related to the frequency of technoference and the technology distraction between parent-child relationships. Parents who reported to be married, in a domestic partnership, or currently living in a marriage-like relationship had lower levels of frequency of technoference and the technology distractions between parent-child relationships compared to those who reported to be divorced or single. Parents who reported that they obtained little to no college education had higher levels of technoference and technology distractions in their parent-child relationships compared to those who obtained bachelor’s degrees or higher. Race was not a significant factor when it came to parents’ perceived stress, however gender was a significant factor in parents’ perceived stress, as parents who identified as woman were perceiving more stress than parents who identified as men. Marital status was significantly related to higher levels of perceived stress; parents who reported to be married, in a domestic partnership, or currently living in a marriage-like relationship had lower levels of stress compared to those who reported to be divorced and single. Educational status was significantly related to stress as well; parents who reported to have obtained a bachelor’s, master’s, or doctoral degrees had lower levels of stress compared to those who had some to no college or less. Descriptive and correlational analyses were conducted as part of the primary analyses to answer research questions 2 and 3.

**Primary Analysis**

**How were parents using mobile devices during the pandemic?**

To answer the first question of this study, examination began among the relationships between the three open-ended questions that were asked at the end of the survey. A total of 42
parents completed the open-ended survey questions. The responses were qualitatively coded by themes to determine categories as seen in the figures below. Figure 1 presents the distribution of how parents were using their mobile devices during COVID-19. Most parents reported social media (48%), followed by texting (43%), and work purposes (41%) as to how they were using their mobile devices during COVID-19.

Parents were also asked during the survey to explain how they specifically used their mobile devices around their child during COVID-19. Parents reported that they used mobile devices in the presence of their child for using FaceTime, taking photographs, and for entertainment pleasure as shown in Figure 2 below.

Lastly, parents were asked if they used their devices to interact with their children during COVID-19. Results showed about three quarters of parents reported that they did use their device to interact with their children.

![Distribution of Mobile Device Use During COVID-19](image)

**Figure 1. Distribution of Mobile Device Use During COVID-19.**
Did parents perceive technference in their interactions with their young children?

The TILES measure indicated a reported range for score responses of 0-6, with a mean of 3.1, and standard deviation of 1.4. This shows that, on average, parents reported using technology with their child during the COVID-19 pandemic once every few days according to the TILES measure. The reported range indicated for the DISRUPT measure was 3-6, with a mean of 2.5, and a standard deviation of 0.88. This shows that, on average, parents reported that they disagreed that technology was distracting them from interactions with their child.
Is there a relationship between parents’ perceived stress and the frequency of technofference in their interactions with their young child(ren)?

Correlational analyses were run to assess if there was any relationship present between Perceived Stress Scale (PSS), Distraction in Social Relations and Use of Parent Technology (DISRUPT) and Technology Interference in Life Examples (TILES). As indicated in Table 3, there was a slightly significant correlation between the PSS and DISRUPT, but no correlation between PSS and TILES. These results indicate that there was a slight correlation between a parent’s stress level and the technology distraction placed on parent-child relationships.
Table 4. Pearson Correlation

Note: *Correlation is significant at the .10 level (two-tailed). ** Correlation is significant at the .01 level (two-tailed).

<table>
<thead>
<tr>
<th></th>
<th>DISRUPT</th>
<th>PSS</th>
<th>TILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISRUPT Correlation</td>
<td>-</td>
<td>.222</td>
<td>.497**</td>
</tr>
<tr>
<td>Sig. (2 tailed)</td>
<td>.000</td>
<td>.094*</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>63</td>
<td>63</td>
<td>63</td>
</tr>
</tbody>
</table>

Because the relationship between parenting stress and technology use may be bidirectional, one of the open-ended questions qualitatively explored the relationship between parent technology use and parenting stress. Figure 3 and Figure 4 below shows the distribution of how parents believed technology was affecting their levels of stress. Most parents (59%) found
technology to negatively affect their stress, while 31% of parent participants found technology to positively influence their stress. 10% of parents did not find their stress to be positively or negatively affected by technology, while 22% of parents perceived both positive and negative impacts of technology on their levels of stress.

**Positive Ways Technology Affected Parental Stress**

![Pie chart showing positive ways technology affected parental stress]

- Family/Friend Connection: 40%
- Unwind: 20%
- Social Media: 12%
- Facetime: 8%
- Decreased Loneliness: 12%
- Promote Small Business: 8%

**Negative Ways Technology Affected Parental Stress**

![Pie chart showing negative ways technology affected parental stress]

- Increased Technology Addiction: 33%
- Work: 21%
- News: 17%
- Increased Anxiety Levels: 29%
- Increased Technology Addiction: 33%

**Figure 3. Distribution of Positive Ways Technology Affected Parental Stress.**

**Figure 4. Distribution of Negative Ways Technology Affected Parental Stress.**
CHAPTER 5
DISCUSSION

The purpose of this study was to explore parental smartphone use during the COVID-19 pandemic, as well as examine parents’ perceptions of technology interference in interactions with their young children. The primary focus of this study was the technofference that mobile device use can cause during parent-child interactions. These parent-child interactions are of such high prominence, especially for children under the age of five. The study was funneled by the theoretical precepts from John Bowlby’s Attachment Theory which guides us to believe that the bonds that are formed early on by children and their caregivers have tremendous impact on the child throughout their life (Bowlby, 1988). This theoretical concept was related to the study, as the high-quality parent-child interactions become important particularly during times of stress such as, the pandemic, as one’s child could have been more experiencing more stress and having received responsive interactions by their parents could have allowed for a barrier for that stress (Bowlby, 1988; Center of the Developing Child at Harvard University, 2016). As previously noted, the issue of technofference occurs when interactions are interrupted due to the use of technology (McDaniel, 2015). For the purposes of this study, the technology distractions in interactions, frequency of technofference and parents’ perceived stress were measured using three scales: Distraction in Social Relations and Use of Parent Technology (DISTRUPT), Technology Interference in Life Examples (TILES), and Perceived Stress Scale (PSS). Researchers
anticipated that parents with higher levels of stress would report higher frequency of technoference and greater technology distraction in parent-child interactions. However, the hypothesis was only slightly supported due to finding a slightly significant correlation between self-reported parenting stress and technoference.

The study set out to explore ways that parents of young children, under the age of 5, were using their mobile devices during the pandemic. First, the findings found that parents reported to use their mobile devices for mainly social media, texting, work, and emails. It was perceived that parents would be using their mobile devices for work related activities, for example, emails, because many of them were beginning the transition of working from home. When parents were asked how they believed their mobile device use was around children, the findings were the same. Parents disclosed that they used their devices for social media, texting, and work-related activities when in the presence of their child. These results are consistent with the prior research examining how parents used their mobile devices typically. Prior research found that the conveniency given by mobile devices allow parents to work through emails and phone calls, while also texting, calling, or using social media while in the presence of their child (Harmon & Mazmanian, 2013; Radesky et al., 2016). Previous research also found that with the quick availability given by mobile devices (emailing, phone calling, etc.), the expectation for a quicker reply is expected; Ames’ 2013 study found that phone users would often hear complaints if they were slow to reply and respond. When the pandemic hit, some parents found they were using their mobile devices for more work-related occurrences compared to prior to the pandemic. One parent reported in the open-ended question part that “I used it more for work because I didn't want to get out my laptop often-but I also found myself struggling to “clock out” of work since I was doing everything at home and could continue to work on it”.

The study also examined whether parents perceived technoference in their interactions with their young child through the DISRUPT and TILES measures. The purpose of the DISRUPT measure was to capture parents who struggle with using their device while parenting and parents who have thoughts of being on their mobile devices during parenting moments (McDaniel, 2021). Results indicated on average parents somewhat disagreed that technology was disrupting their thoughts when interacting with their child. The TILES measure was used for determining the frequency of technoference in parent-child interactions. Results indicated that parents did not perceive frequent technoference in their interactions with their child. The current study expands on prior work that looked at how parents perceived technoference prior to COVID. McDaniel and Radesky’s (2018) study, found that parents, on average, perceived that two of their devices were interfering with their interactions with their children at least once or more in a typical day. However, the current study found parents to perceive that technology was interfering in their interactions every couple of days. McDaniel and Radesky’s study also found that 11% of parents in the study reported that technoference did not occur throughout the duration of their study. Similarly, the current study found 8% of parents to report that technoference did not occur throughout the duration of the study. When parents are absorbed in their cell phones, their ability to provide, care, and attend for their child becomes slim and limited (Radesky et al., 2014). Previous research found mothers who were distracted with their mobile devices to have lower levels of verbal and non-verbal communication compared to mothers who were not engaged with a mobile device (Radesky et., 2014). Parents have also previously reported that they believe a technology distraction caused them to respond slower to
their child’s reengagement attempts and even become less sensitive to their overall eventual responses (Blackman, 2015; Radesky et al., 2014).

Existing research states, when caregivers are occupied in social media and work-related matters throughout the day, it is more likely for them to use smartphone devices during parent-child interactions (ex. text messaging while playing with their children) (McDaniel & Radesky, 2019). Due to the pandemic, some parents were required to work from home which could have also made it more likely for them to use their smartphones more often in general and while interacting with their child. The existence of mobile devices through quality family time may have affected the social-emotional development of children because parental attention is shifted away from their children’s needs and towards their device (McDaniel & Radesky, 2018).

The final research question focused on parental perceptions of stress and technoference during the COVID-19 pandemic. Bivariate correlations were conducted between the perceived stress and technology distraction in parent-child interactions, as well as the perceived stress and frequency of technoference to answer this research question. There was a slightly significant relationship that was determined between a parent’s perceived stress and technoference as measured by the technology distraction in parent-child interactions. This result indicates that parents who had higher levels of stress, were distracted more often by technology when interacting with their child.

The relationship between parenting stress and technology use may be bidirectional. Some parents viewed technology as a positive effect on their stress as they were able to use it to decrease their feelings of loneliness, unwind, connect with family/friends, and even a way to promote their small business. These findings could potentially be a reason that they did not find...
themselves perceiving frequent technoference during the COVID pandemic. However, some parents did find technology to have a negative impact on their levels of stress as many found increased levels of anxiety and an increased technology addiction. Other parents even found watching the news and hearing the information about the pandemic to be a stressor. There were also parents who found their new way of working from home to be stressful and difficult to “clock out” while being the presence of their own home. Overall, the results found that some parents found technology to negatively affect their levels of stress while some parents saw a positive stress influence, with some figuring out a neutral influence as well. It is possible that some parents did not acknowledge the association between technology and their stress levels.

Implications for Practice

Overall, the findings of this study are important when it comes to understanding parenting during the COVID-19 pandemic. The results allowed us to see ways parents were experiencing stress and mobile device usage, while also illuminating ways that they coped with their stress levels using their mobile devices during the pandemic. Technology could be used as a stress reliever when it came to parenting during this time, however it should be used with moderation. It is evident parents will continue to use technology, however, providing parents with useful and realistic guidelines when using technology in the presence of their child could be beneficial. Parents are not expected to unplug their devices completely but minimizing the use when in the presence of their child could decrease the disruptions that occur during these interactions. Times like these are when serve and return interactions can occur, allowing for everyday moments of powerful interactions to take place, and for a parent to build the foundation for a child’s development (Center on the Developing Child, 2016). When a parent begins to
apply the five steps of serve and return with their child, they are shaping their child’s brain architecture; simply “serving” a child an engaging response can eliminate technoference and help a child grow and reach their potential. The study also allowed researchers to determine the technoference that might have taken place during the pandemic. When working with young children and families, it is important to understand the significance of parent-child interactions and how mobile devices can place a distraction and disruption on these crucial interactions. Through the information found in this study, child development providers can guide parents in understanding how their continuous mobile device usage has the potential to negatively affect their child’s attachment. While there are some positives to using technology in moderation, it is beneficial for parents to become more aware of distraction mobile devices have and how they can take steps to reduce their usage when caring for their young children.

Limitations

The work of this study is not without any limitations. The limitations of this study are mainly focused on the sample size; the overall goal of this study was to gain over 200 participants, which the study did not reach that goal, when factored out the number of participants who completed the entire survey resulted in less than 100. Despite the varied methods of survey distribution, the respondents can be described as over-represented by mainly Caucasian/non-Hispanic, highly educated parents (bachelor’s degree or higher), which can cause skewness to the questionnaire significantly. It is recognized that a more diverse sample size could have constructed different or more nuanced results. The second limitation occurred from most of the survey had been in retrospective nature and relied on parents and caregivers to report
their COVID-19 levels of stress. It is extremely likely that parent participants may have felt more stressed during the beginning of the pandemic than they reported on the survey, as they were able to familiarize themselves to the impact of the pandemic. Finally, while participants were fully aware that their responses were completely anonymous, there is a possibility that responses could have held bias which may have fostered parent participants to feel pressured to respond in a more positive way due to the questions about parenting, technoparenting, stress, and overall mental health. As data from this study was self-reported, it is not completely known if the measure connects to the actual mobile device use or actual behaviors of the parent. Possible selection bias also took place during this study because the data was collected using technology (mobile devices or computers), and the focus of the study was on mobile device use.

Future Research Directions

Even with the evolution within this area of study within the past few years, there are still many holes within the literature. Future work should consider a broader population of parent participants. Future studies should also consider interviewing parent participants to gain more insight and information on home life. Future researchers should consider using alternative measures when it comes to measuring the levels of parenting stress to see which ways parents were specifically feeling stressed. While the Perceived Stress Scale is a very reliable measure, using a measure that is specific to parenting stress may be more beneficial. An earlier study found that the response options in the Perceived Stress Scale do not encompass all the stressors possible; to overcome this, researchers included an option for parents to provide alternative
responses for their stressors (Adams et al., 2021). Researchers for the current study found that it was difficult to measure parents stress levels during a time that occurred a while ago. Most of the current studies on parental technointerference explicitly focus on having caregivers use their mobile devices in a specific way or directly see caregivers while they are on their phone. It is rather limited when it comes to understanding parental phone use while supervising and in the presence of their children. Another gap to mention is there is no accurate measure to find how much time parents are spending on their mobile devices within the presence of their children. No studies have used a data collection measure, as most of them have been self-report. On the contrary, this could be difficult to achieve as parents may not be willing to use technology to track their usage.

Keeping all of this in mind, the current findings add to our overall understanding about the impact of COVID-19 and its effect on parental smartphone use and within their parent-child interactions. The COVID-19 pandemic illuminated the use of technology in our lives and gave us a dramatic shift in our digital world during such an uncertain time. In situations like this, it is important to understand the balance in using technology as a positive means of communication and entertainment, while also engaging in interactions that do not involve technology.
REFERENCES


APPENDIX A

IRB APPROVAL
Exempt Determination

10-Mar-2022
Giana LaGioia (01790326)
Family & Consumer Sciences

RE: Protocol # HS22-0332 "PARENTAL SMARTPHONE USE AND PARENT-CHILD INTERACTIONS DURING THE COVID-19 PANDEMIC"

Dear Giana LaGioia,

Your application for institutional review of research involving human subjects was reviewed by the Office of Research Compliance, Integrity, and Safety on 10-Mar-2022 and it was determined that it meets the criteria for exemption.

Although this research is exempt, you have responsibilities for the ethical conduct of the research and must comply with the following:

Amendments: You are responsible for reporting any amendments or changes to your research protocol that may affect the determination of exemption and/or the specific category. This may result in your research no longer being eligible for the exemption that has been granted.

Record Keeping: You are responsible for maintaining a copy of all research related records in a secure location, in the event future verification is necessary. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB, and any other pertinent documents.

Please include the protocol number (HS22-0332) on any documents or correspondence sent to the IRB about this study.

If you have questions or need additional information, please contact the Office of Research Compliance, Integrity, and Safety at 815-753-8588.

Please see the RIPS website for guidance on the impact of COVID-19 on research (including face-to-face data collection) https://www.niu.edu/divresearch/covid/index.shtml
APPENDIX B

CONSENT FORM
PARENTAL SMARTPHONE USE AND PARENT CHILD INTERACTIONS
DURING THE COVID-19 PANDEMIC

Key Information
- This is a voluntary research study on parental smartphone use and parent-child interactions during the COVID-19 pandemic.
- This study involves a 20-minute Qualtrics survey that will ask parents multi-choice and open-ended questions.
- The benefits include supporting research looking at how parental smartphone usage during COVID-19 led to perceptions in technology inference in interactions. The possible risks of this study include triggering psychological stressors when reflecting on COVID-19.

Description of the Study
The purpose of this study is to examine how parents of young children used their mobile devices during the COVID-19 pandemic. The study is also looking at the frequency of technology interruptions in interactions with parents and their children during the COVID-19 pandemic. If you agree to be in this study, you will be asked to do the following things:
- Complete a 20-minute Qualtrics survey

Risks and Benefits
The study has risks. If you choose to participate you will be asked to reflect on a time that may have been stressful. You may feel uncomfortable, and you may choose to discontinue your participation in the study at any time.

The benefits of participation are supporting research to help understand how parents of young children use their devices during COVID-19.

Anonymity
- This study is anonymous. We will not be collecting or retaining any information about your identity.
- The records of this study will be kept strictly confidential. Research records will be kept in a locked file, and all electronic information will be coded and secured using a password protected file. We will not include any information in any report we may publish that would make it possible to identify you.
Compensation

You will receive the following compensation for your time: All participants will be entered into a drawing. 5 participants will be randomly selected after all data is collected; those 5 participants will receive $20 gift cards.

Your Rights

The decision to participate in this study is entirely up to you. You may refuse to take part in the study at any time. Your decision will not result in any loss of benefits to which you are otherwise entitled. You have the right to skip any question or research activity, as well as to withdraw completely from participation at any point during the process.

You have the right to ask questions about this research study and to have those questions answered before, during, or after the research. If you have any further questions about the study, at any time feel free to contact the researcher, Giana LaGioia at z1790326@students.niu.edu or by telephone at (815)-530-6008. Faculty Advisor, Melissa Clucas Walter at mcwalter@niu.edu or by her telephone at (815)-753-6343. If you have any questions about your rights as a research participant that have not been answered by the investigators or if you have any problems or concerns that occur because of your participation, you may contact the Office of Research Compliance, Integrity, and Safety at (815)-753-8588.

Future Use of the Research Data

After removing all identifying information from your data, the information be used for future research studies or distributed to another investigator for future research studies without additional informed consent from you.

By continuing below, you are indicating that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above. Please take a screenshot or picture of this form to keep for your records.

☐ I agree to participate in this study. [or “Continue” or “Next”]
APPENDIX C

PERCEIVED STRESS SCALE
Perceived Stress Scale

A more precise measure of personal stress can be determined by using a variety of instruments that have been designed to help measure individual stress levels. The first of these is called the Perceived Stress Scale.

The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don’t try to count up the number of times you felt a particular way; rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?

2. In the last month, how often have you felt that you were unable to control the important things in your life?

3. In the last month, how often have you felt nervous and stressed?

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

5. In the last month, how often have you felt that things were going your way?

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

7. In the last month, how often have you been able to control irritations in your life?

8. In the last month, how often have you felt that you were on top of things?

9. In the last month, how often have you been angered because of things that happened that were outside of your control?

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
Please rate your level of agreement with the following statements

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

During time I spend with my child...

1. ... I find myself thinking about what I could be doing on or messages/notifications I might receive on my phone or mobile device.
2. ... I find it difficult to stay away from checking my phone or mobile device.
3. ... I feel like I use my phone or other mobile device too much.
4. ... there are times that I could play with or interact with my child, but I am on my phone or mobile device instead.