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Social Learning in the Digital Age: the Impact of Technoference on Mother-Child Attachment and Social Skills

Danielle N. Zayia
Illinois State University, danie128@att.net

SOCIAL LEARNING IN THE DIGITAL AGE: THE IMPACT OF

TECHNOFERENCE ON MOTHER-CHILD ATTACHMENT

AND SOCIAL SKILLS

DANIELLE N. ZAYIA

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Research has shown links between parenting practice and children's social development. However, there is little research examining the role of parental technology use or *technoference,* which is the disruption caused by technology. In this study, parental technology use, child attachment style, maternal insularity, and children's development of social skills were examined. Rating scales examining theses variables were completed by 80 mothers-child dyads between the ages of 18 and 50 with children between 6 and 10 years old. Confirmatory factor and measurement invariance analyses were conducted to examine and confirm the psychometric properties of each scale used in this study. Linear regression analyses were conducted to examine the associations between (a) parental technoference and attachment styles, (b) children's social skills and parental technoference, and (c) maternal insularity and parental technoference. Furthermore, hierarchical linear regression analyses were conducted to examine the effect of attachment on the relation between parental technoference and children's social skills. A greater frequency of technoference was associated with lower levels of attachment security as rated by mothers and children, lower levels of social skills as rated by mothers, and more problem behaviors, internalizing concerns, and externalizing concerns as rated by mothers and children. Attachment security was found to moderate the relationship between technoference and

externalizing concerns, but not between technoference and social skills, problem behaviors, or internalizing concerns. Further, given the finding that mothers receive social and emotional support through their use of technology. Thus, it is important for mothers to separate spending time with their child without technoference to help support their child's social and emotional development, and spending time on technology devices in order to receive social and emotional support.

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DANIELLE N. ZAYIA

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DANIELLE N. ZAYIA

COMMITTEE MEMBERS:

Leandra Parris, Chair

Brandon T. McDaniel

Greg Braswell

Corinne Zimmerman

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CHAPTER I: INTRODUCTION

As of January 2018, 95% of U.S. adults owned a cellphone, with rates of ownership even higher when examining 18- to 29-year-olds (100%) and 30- to 49-year-olds (98%; Pew Research Center, 2018). Clearly, mobile technology has permeated the daily lives of U.S. adults. Research has shown both positive and negative impacts of technology use (Engelberg & Sjoberg, 2004; Kendal, Kirk, Elvey, Catchpole, & Pryjmachuk. 2017). Technology has allowed for individuals to make and sustain relationships with those not in their immediate proximity. As a result, family members are better able to keep in touch across greater distances, and it is easier to stay in contact with friends who have moved away. Additionally, technology has resulted in more immediate supports that individuals can use to reach out for help, such as youth with eating disorders or depression (Griffiths et al., 2012; Kendal et al., 2017). However, technology has also been associated with negative health outcomes, such as reduced and/or disturbed sleep, social and emotional difficulties, self-regulation difficulties, and increased reports of loneliness for users (Engelberg & Sjoberg, 2004; Feldman, Greeson, Renna, & Robbins-Monteith, 2011; Johansson, Petrisko & Yates, 2005; McDaniel & Coyne, 2016b).

Furthermore, research has demonstrated that technology may impact the quality of relationships that adults have with a romantic partner and children, as well as children's quality of relationships with their peers (Garris et al., 2016; Hiduja & Patchin, 2010; McDaniel & Coyne, 2016b; Parris, Varjas, Meyers, & Cutts, 2012). Research on adult male relationships has highlighted that partner's report phone use negatively impacts their relationships, and these individuals wished their partner were more emotionally available (Czechowsky, 2008; Mazmanian, Orkilowski, & Yates, 2005). Additionally, McDaniel and Coyne (2016a; 2016b) examined how technology use interfered with co-parenting and relationship satisfaction with

one's partner. Greater technology use was predictive of reduced perceptions of both relationship satisfaction as well as the quality of the co-parenting relationship by mothers.

Further, increased technology use predicted fewer parent-child interactions, as well as parental hostility towards, and lower responsiveness to, children's requests (Hiniker et al., 2015; Radesky et al., 2015). Parental technology use commonly occurs during playtime or free time with one's child; but usage also occurs during educational activities, mealtime, bedtime, and discipline (McDaniel & Coyne, 2016b). Parental technology use appears within the parent-child relationship throughout the entire day. However, very little research exists that examines the impact that parents' technology use has on one's child's development. McDaniel and Radesky (2018) examined the relation between parental technology use, the interference of technology in the parent-child relationship, and childhood outcomes as measured by the *Child Behavior Check List* (CBCL; Achenbach & Rescorla, 2001). McDaniel and Radesky (2018) found that greater parent distraction with technology was associated with elevated internalizing and externalizing behavior problems in children.

As a result of these daily disruptions in parent-child interactions, it is possible to assume that parental technology use may have an impact on the attachment relationship between parents and their children. As previously discussed, parental technology use has been associated with more hostility towards, and lower levels of responsiveness to, children's requests (Hiniker et al., 2015; Radesky et al., 2015). Some initial survey research has also suggested that parents who are distracted by technology may show either overreactive or lax parenting (McDaniel, Everest, & White, 2018). Attachment research has highlighted the importance of parental responsiveness and sensitivity for secure attachment to develop (Grossman, Grossmann, Spangler, Suess, & Unzer, 1985). Research has shown that factors such as parental mental health, parental

relationships with others, as well as family stress can affect parental responsiveness (Aisenberg et al., 2007; Cowan, Cowan, & Mehta, 2009; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Teti, Gelfand, Messinger, & Isabella, 1995). It is possible that parental technology use has the same impact on parental responsiveness to their child, and in turn the quality of the attachment relationship with that child.

Maternal insularity may also impact parental responsiveness. Maternal insularity refers to the experience of some mothers in which they are typically isolated from social interactions, and when social interactions do occur, they are often aversive (Wahler, 1980). Research has shown that mothers may experience loneliness, or insularity, throughout the process of child rearing (Russell, Cutrona, Rose, & Yurko, 1984). Insularity has been shown to impact the type and quality of interactions that mothers have with their children. Specifically, insular mothers are more likely to engage in aversive and nonresponsive behaviors toward their children than non-insular mothers (Dumas & Wahler, 1985). Further, insular mothers may be more likely to engage in higher rates of technology use. Gratification theory (Grant, 2005) suggests that individuals actively choose media to gratify their needs (e.g., social support). Specifically, research examining gratification theory has shown links between media use to fulfill interpersonal needs (Rubin, 1998). As such, it is possible that insular mothers are using media or technology at excessive rates in order to meet their unmet social and emotional needs, thus increasing their rate of technology use. When technology use interrupts one's current in-person social interactions, it is referred to as *technoference* (McDaniel & Coyne, 2016a).

Social learning theory highlights the importance of learning through observation of modeled skills (Bandura, 1971). It is possible that parental technology use may decrease the frequency with which children are able to observe their parents engage in appropriate social

skills, and as a result, children may suffer with respect to the development of appropriate social skills. Research has highlighted a variety of negative outcomes that have been associated with deficits in social skills, such as poor peer relationships and the development of child psychopathology (Burnette et al., 2012; Hamilton et al., 2016; Miers et al., 2013; Renken et al., 1989).

The current study examined the impact that parental technology use has on the development of social skills, as well as the attachment process. The current study used quantitative survey methods to examine the impact of parental technology use, specifically *technoference* (i.e., interruptions due to technology in interactions; McDaniel & Coyne, 2016a), on attachment security within the mother-child relationship and social skills in children. The specific research questions were:

1. What is the association between technoference and differing levels of attachment styles?
2. How is children's social skill development related to rates of technoference in the mother-child relationship?
3. What is the association between maternal insularity and rates of technoference in the mother-child relationship?
4. After controlling for maternal insularity, does attachment security moderate the relationship between technoference in the mother-child relationship and children's social skills?

CHAPTER II: LITERATURE REVIEW

Although there are several phenomena that have been shown to impact the development of social skills (e.g., attachment, social learning, parenting practices), the goal of the current study is to investigate the impact that parental technology (i.e., technoference) use has on children's social skills and attachment. The following sections will describe each of these research areas and how each helps to shape the objectives of the current study.

Attachment Theory

Bowlby (1969/1982) defined attachment as the emotional bond between a child and his or her primary caregiver. He argued that the attachment system serves the main function of ensuring child safety by guiding individuals to seek proximity to their caregivers when they encounter threatening stimuli in the environment. Bowlby argued that the attachment system results in the universal attachment process. The universal attachment process is the manner in which the attachment system is activated when individuals encounter threatening stimuli, and then again turned off once they have been soothed by the caregiver. For example, a child may be playing at a park with a parent sitting at the side serving as a secure base. While the child is playing, the child comes across a stranger, a perceived threat, and the child's attachment system is activated resulting in proximity seeking to their parent. The parent provides safe haven and soothes the child, resulting in felt security and safety by the child and the attachment system is deactivated.

Ainsworth, Blehar, Waters, and Wall (1978) explored the attachment system through the strange-situation experiment. In this experiment, one-year-old children were separated from their mothers for a short period of time, and their responses to the mother upon leaving and re-entry of the room were examined. Through observations of these child's responses, Ainsworth and

colleagues organized attachment into three different styles: secure, avoidant, and anxious-resistant. Children with secure attachment style were distressed upon the mother's exit from the room but approached the mother and were easily soothed by her upon return. However, children who were classified as having an avoidant attachment style were distressed upon the mother's exit from the room, but ambivalent about approaching their mothers upon her return. Children who were classified as anxious-avoidant showed indifference in both their mother's separation and return.

After examining the patterns of classifications of the three-attachment classification system proposed by Ainsworth et al. (1978), Main and Solomon (1990) proposed a fourth style due to reports of several infants failing to fit into one of the three traditional categories. Specifically, these "unclassifiable" infants had been given a secure classification using a best-fit model but differed from traditional securely attached children in that they showed both avoidance and resistance behaviors. As a result, the disorganized attachment category was introduced and is used to describe patterns of infant attachment behavior that seemed odd or lacked an organized strategy regarding the caregiver figure.

Developmental Considerations

Attachment is not only a phenomenon seen between infants and their caregivers, but rather an important lifelong relationship that has implications for a child's development. Thus, a child's attachment style has been associated with the social and behavioral skills necessary for success in peer relationships and school functioning (Bowlby, 1973; Mitchell-Copeland, Denham, & DeMulder, 1997; Pianta & Walsh, 1996; Seven, 2010). Bowlby (1973) argued that children's expectations and beliefs regarding interactions, also known as their internal working model, are based on the interactions they have with their attachment figure. Specifically, children

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who are securely attached with their primary caregiver will approach peers expecting positive interactions, whereas children with insecure attachment styles will initiate less with peers and have more negative interactions. These expectations can impact the types of social behaviors a child engages in and gain more power in social behaviors with increased cognitive abilities.

The relationship between attachment styles and children's social behaviors has been widely studied. Children with a secure attachment have been found to be more social and more compliant to requests from others, whereas children with insecure attachment styles have been found to be more hostile, socially isolated, or withdrawn (Erickson & Crichton, 1981; Erickson, Farber, & Egeland, 1982; Pastor, 1981). Furthermore, these social behaviors have been shown to impact how the child functions at school (Erickson, Sroufe, & Egeland, 1985; Seven, 2010). Seven (2010) examined the relationship between attachment style, social behaviors, and adjustment to school for first grade students. Children with a secure attachment adapted better to school then children with insecure attachment styles. Children with insecure attachment styles displayed more problematic social behaviors, such as aggressive or shy and withdrawn behaviors, that interfered with their school adaptation in the first grade. Furthermore, research has indicated that the transition to elementary school is more critical for academic and social success than the transition to preschool (Parke & Kellam, 1994).

However, the importance of attachment is not just related to social functioning during the early years in elementary school, but with social functioning throughout the lifespan. Attachment styles have been predictive of functioning into adolescence, including the child's functioning during transition from elementary to middle school (Duchesne, Ratelle, Poitras, & Drouin, 2009). The anticipation of the transition to middle school can be daunting for many youth, as middle school requires the formation of new peer relationships, higher academic demands, and

less availability of teachers (Eccles, 2004; Steinberg, 2005). However, adolescents who report a higher quality of attachment to parents show fewer emotional problems, such as anxiety or depression, during this transition (Bogels & Brechman-Toussaint, 2006; Buist, Dekovic, Meeus, van Aken, 2004; Papini & Roggman, 1992). Furthermore, a secure attachment style has been shown to predict fewer anxious symptoms in early adolescents and fewer worries by teachers about an individual's transition to middle school (Duchesne, Ratelle, Poitras, & Drouin, 2009). The impact of attachment does not stop in adolescence but continues throughout the lifespan. The attachment process includes the development of schemas about relationships with others (i.e., internal working models) that are used to understand interactions with others throughout life (Bowlby, 1969/1982). Research has shown that the mind assimilates new information into existing schemas, which have been shown to influence the kind of reactions the individual elicits from others as well as the kinds of interpretations made about other people's intentions (Braumbaugh & Franley, 2006; Collins, 1996; Collins & Read, 1994; Troy & Sroufe, 1987). Since previous research has strongly connected attachment styles to social behavior throughout the elementary years that lay a foundation for development into adolescence and adulthood, the current study examined attachment security and social behaviors for 6- to 10-year-old children in elementary school.

Cultural Considerations

Attachment patterns have been studied across the world to determine the generalizability of attachment classifications in Western and non-Western cultures (van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwarts, 2006). The biggest difference between Western and non-Western families is the availability of parental and non-parental caregivers who regularly interact with infants. In Western cultures, the mother is consistently seen as the primary attachment figure,

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whereas in non-Western cultures, non-maternal caregivers are important attachment figures. Regardless, secure attachment is the normative attachment style across both Western and non-Western cultures.

Racial and cultural differences. Within the United States, large differences have been shown between African-American and Euro-American children in the first few years after birth across various domains of development have been shown, including attachment (Garcia Coll, 1990; Spencer, 1990). Specifically, African-American children and Euro-American children tend to grow up surrounded by different cultural norms around parenting. Childcare for African-American children is generally situated in a relatively large social network, with multiple adults having the responsibility of providing care for children (Jackson, 1991,1993). This childcare model aligns more closely to that seen within non-Western cultures compared to childcare models seen within Euro-American families that align more with childcare models seen in Western cultures.

When examining attachment styles, it is important to keep in mind the importance of the cultural norms that children experience with parenting style. Bakermans-Kranenburg et al. (2004) examined attachment in African-American and Euro-American families and found that children in African-American families have lower levels of secure attachment than children in Euro-American families. However, significant differences between important attachment-related variables, such as sociability toward strangers, were also found. Children in African-American families were more sociable towards strangers in their home than Euro-American children, which in turn impacted their attachment style. Although there is little evidence about how parenting practices in other cultures impact children's performance in the strange situation procedure, other research has highlighted different values in parenting practices. For example,

Latinx families emphasize familism, respect, and moral education, whereas Asian families emphasize respect for authority (Grusec; 2002; Halgunseth, Ispa, Rudy, 2006). This pattern of findings highlights the importance of the cultural norms regarding childcare that the child is exposed to, and how these cultural norms are related to attachment.

  Socioeconomic differences. Within the U.S., average socioeconomic status (SES) may be an explanatory factor of these differences in childhood outcomes between African-American and Euro-American children, rather than only attachment. On average, Euro-American children come from families with higher income and higher parental education levels than children from ethnic and racial minority families (American Psychological Association, 2017; Economic Policy Institute, February, 2005). Therefore, it is possible that the different childhood outcomes may be caused by differences in family income rather than race and ethnicity. Research on attachment and SES has shown a higher proportion of children with insecure attachment styles in low-SES samples compared to high-SES samples (Lyons-Ruth, Connell, & Grunebaum, 1990; van IJzendoorn & Bakermans-Kranenburg, 1996). Additionally, SES has been found to moderate the relationship between maternal sensitivity and attachment style (De Wolff & van IJzendoorn, 1997).

  The family stress model suggests that economic hardship impacts parenting practices, including parental sensitivity to children, which in turn impacts the quality of the attachment relationship (Conger et al., 1992a, 1992b). That is, financial stress may constrain the frequency of parental sensitivity that a child experiences. Furthermore, when Bakermans-Kranenburg et al. (2004) examined the impact of SES, race, and attachment, they found that maternal sensitivity, as opposed to demographic variables, was the strongest predictor of attachment security. Taken together, these results highlight that attachment is not just a White, middle-class, Western

phenomenon. However, the attachment relationship is also subject to contextual influences such as SES. Therefore, participants' SES was controlled for in the current study, in order to ensure that SES is not a confounding variable.

Parental Responsiveness

In order to gain a better understanding about attachment styles, researchers have examined parent-child interactions. Grossman et al. (1985) specifically examined the impact of responsive and non-responsive parenting styles. These researchers studied interactions between infants and their parents in the home by examining the quality and quantity of interactions that parents and infants had, and the infant's attachment style using the Strange Situation paradigm. They found that the level of maternal sensitivity assessed at two months and six months predicted the infant's attachment classification at one year of age. Specifically, more responsive parenting practice predicted secure attachment by the infant to the mother, whereas less sensitive or responsive parenting predicted either insecure or avoidant attachment by the infant. Said another way, when researchers rated parents' in-home interactions as responsive or sensitive, their children were more likely to show a secure response in the Strange Situation experiment.

As a result of the seminal work of Grossman et al. (1985), many researchers have begun to examine parental responsiveness. Parental responsiveness, or parents' prompt, contingent and appropriate reactions to their children, reflects a recurring three-part sequence of everyday exchanges between a child and their parent: the child acts, the parent reacts, and the effect of the reaction on the child (Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008). Furthermore, as described above, parental responsiveness is a parenting trait that can be seen across cultures and contexts (Girolametto et al., 2002; van IJzendoorn, Bakermans-Kranenburg, & Sagi-Schwarts, 2006). The impact that parental responsiveness has on attachment, as well as factors that could

impact parental responsiveness, have been widely studied. Factors such as parental mental

health, parental relationships with others, and family stress have been shown to have an effect on

parental responsiveness (Aisenberg et al., 2007; Cowan et al., 2009; Radke-Yarrow et al.,1985;

Teti et al., 1995).

  Maternal insularity. One aspect of parental relationships with others that could

significantly impact responsiveness is maternal insularity. Maternal insularity is the state in

which mothers are typically isolated from social interactions, and when social interactions do

occur, they are often aversive (Wahler, 1980). Research has shown that mothers may experience

loneliness, or insularity, throughout the process of child rearing (Russell et al., 1984). Insularity

has been shown to impact the type and quality of interactions that mothers have with their

children. Specifically, insular mothers are more likely to engage in aversive and nonresponsive

behaviors toward their children than non-insular mothers (Dumas & Wahler, 1985). That is,

insular mothers are also more likely to have negative interactions with their child than mothers

who experience more frequent positive social interactions with their peers. Negative interactions

between mothers and their children have been linked to a variety of negative childhood outcomes

including aggression, antisocial behaviors, and lower levels of social competence (Attili,

Vermigli, &Roazzi, 2010; Dumas & Wahler, 1985).

  Similarly, research has shown the importance of parents feeling supported in their own

lives, including in their social interactions, in order to engage in the most responsive parenting

practices. Belsky and Barends (2002) argued that parents who do not feel supported in their own

lives have depleted psychological resources and as a result are unable to provide optimal

childcare. Specifically, they argued that when parents have depleted psychological resources,

they are less responsive to their child. Moreover, maternal feelings of social and emotional

loneliness have been associated with increased ratings of insecure attachment by the mother in relation to her child (Al-Yogen, 2008). That is, mothers with secure attachments to their children were more likely to feel socially and emotionally connected to others, whereas mothers with insecure attachments to their children were more likely to feel socially and emotionally lonely. These results highlight the importance of mothers having positive social interactions outside of the home in order to feel socially and emotionally connected to their child, which subsequently has positive implications for their child's development.

   Technology use. Another factor that may influence parental responsiveness is technology use. Recently, research on parental technology use has been found to predict fewer parent-child interactions as well as parental hostility toward, and lower responsiveness to, children's requests (Hiniker et al., 2015; Radesky et al., 2014). This concept of everyday interruptions in interpersonal interactions or time spent together that occur due to technology use has been labeled "technoference" in recent research (McDaniel, 2015; McDaniel & Coyne, 2016a). Recent research has shown that parent distraction with technology is associated with lower quality parenting (McDaniel, Everest, & White, 2018). Furthermore, McDaniel and Radesky (2018) examined the relation between technoference and childhood outcomes as measured by the *Child Behavior Check List* (CBCL; Achenbach & Rescorla, 2001) and found that technoference was associated with the development of both internalizing and externalizing problems in children. Furthermore, these results were more strongly related to mothers' use of technology than to fathers' use. These results highlight the impact of parental technology use on parental responsiveness; other ways in which parental technology use has an impact on children will be expanded upon in a later section.

Social Learning Theory

Day-to-day activities require that individuals competently navigate social situations to achieve their goals. However, people vary in their level of social skills, as well as their success in social situations. Many theories have explained how social skills develop, with one of the most popular explanations of social learning and functioning being Bandura's (1971) social learning theory. Social learning theory highlights the importance of learning through observation of modeled skills, and posits that observational learning relies on four main components: attention, retention, motor reproduction, and motivation.

Each of these four components is important for individuals to integrate the information they observe, and to allow that information to impact their behavior. Bandura (1971) outlines that the individual must pay attention to the modeled events. The biggest requirement for an individual to pay attention is that the individual finds the modeled behavior attractive in order for the model get and keep the person's attention until the behavior is complete. After the individual attends to the information, it needs to be retained and represented in memory. In other words, the modeled behavior needs to be remembered. After the behavior is remembered, it must be converted into the appropriate actions as seen in the model. This step happens when the child applies the modeled behavior to him or herself and figures out what his or her action should look like in the same context as the model. The final component of modeling is motivation, which interacts with the environment to provide an opportunity for one to engage in the behavior. That is, there needs to be an opportunity that motivates the individual to perform the actions that he or she has learned from the model. For example, a child may have the understanding and skills to produce the words "thank you" appropriately based on the model provided by their parents, but a

situation needs to occur in which it is appropriate for the child to say "thank you" and the child must be motivated to say "thank you."

Bandura (1989) further hypothesized that this process is impacted by an individual's beliefs about his or her future actions, as well as his or her ability to self-regulate. Specifically, Bandura believed that this process is moderated by the beliefs that an individual holds about how effectively he or she can control his or her behavior, thoughts, and emotions. That is, beliefs that an individual holds about how effective he or she is in engaging in the skills that have been modeled impact how likely he or she is to engage in this behavior when provided an opportunity. With respect to social skills, there are a variety of behaviors including both verbal and non-verbal skills ranging from eye contact and posture, to initiating conversations and problem-solving skills. Individuals develop differing levels and qualities of social behavior at different times of their lives. Researchers commonly examine social skills in terms of both prosocial behavior (e.g., sharing toys, offering support, following rules) and behavioral challenges, such as aggression, poor peer relationships, and poor child adjustment. Research has indicated that high levels of competency with social skills are a protective factor against many negative outcomes, such as negative peer relationships and the development of child psychopathology (Burnette et al., 2012; Hamilton et al., 2016; Miers et al., 2013; Renken et al., 1989).

Developmental Considerations

Researchers have examined when young children begin to engage in the observational learning process. Specifically, observational learning skills have been examined through immediate and delayed imitation of behaviors. Immediate imitation of skills is a response that is often seen in young children. For example, newborn infants have been shown to immediately imitate facial movements of a caregiver (Field et al., 1982; Meltzoff & Moore, 1997). However,

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immediate imitation of behavior has been shown to be a different phenomenon than delayed imitation of behavior. Delayed imitation of behavior requires that children have a cognitive representation of an expected behavior given a cue from the environment (Gergely et al., 1995). That is, delayed imitation skills require a child to have engaged in the process of observational learning, whereas immediate imitation is more of a reflexive response.

Researchers have examined at which age children are able to move from immediate imitation of skills to delayed imitation of skills indicative of observational learning. Specifically, Gergely et al. (1995) examined 14-month-old children and their ability to understand the intention of someone's behavior. At 14 months, children are able to understand the intention of someone's behavior and engaged in similar behaviors to meet a desired goal. However, the ways in which children interpret and utilize observed behaviors change as they age. For example Huang, Heyes, and Charman (2006) found that three-and-a-half-year-old children were more likely to replicate the behavior of an adult resulting in a failed attempt by the parent to reach a goal when compared to two-and-a-half-year-old children. Specifically, they found that three-and-a-half-year-old children would place a chain of beads into a cup-like cylinder after they observed an adult attempt to place a chain of beads into a cup-like cylinder but fail three times, whereas younger children assumed it was the adult's intention to place the chain of beads next to the cylinder. Taken together, these results highlight that younger children relied on their understanding of the adult's intentions for engaging in a behavior, whereas older children tried to make a cognitive interpretation of the adult's behavior.

When examining the social skills of preschool and elementary school-aged children, research has indicated a progression of social skill development. Specifically, whereas preschool children are poor at determining when a person is thinking and what a person is thinking about,

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by the age of six they are able to identify when an individual would be thinking about a behavior to complete a task (Flavell & Flavell, 2004; Flavell, Green, & Flavell, 2000). Furthermore, when systematically examining changes in the "normal" developmental stages of social skills for children in kindergarten (five- to six-year-olds) to third grade (eight- to nine-year-olds) as reported by their parents, Lamont and Van Horn (2013) found a relatively stable social skill development. Specifically, 85-90% of children in their sample had a relatively stable skill development, with a subset of scores indicating that around first or second grade, some children had either a sharp acceleration of social skills or a sharp decline in social skills. These results suggest that, on average, children have a stable development of social skills without significant changes from one year to the next, but there may be a critical period within the first or second grade in which social skill development can be significantly impacted.

Social Skills and Social-Emotional Outcomes

Social skill deficits have been shown to have a variety of negative outcomes. Specifically, research indicates that a high level of social skills is a protective factor against many negative outcomes, whereas social skill deficits are a risk factor in the development of child psychopathology and poor peer relationships (Burnette et al., 2012; Hamilton et al., 2016; Miers et al., 2013; Renken et al., 1989). Poor social skills appear to have a strong relationship with internalizing disorders such as anxiety and depression. Specifically, research highlights how children who lack social skills and are at an increased risk for rejection, exclusion, and victimization from peers, and also at risk for anxiety and depression (Hamilton et al., 2016; Miers et al., 2013).

Quality of peer relationships. Poor social skills have been shown to contribute to poor peer relationships and a child's social status within the peer group. Young children who lack

social skills struggle to form friendships early on and are less accepted by their peers (Furman &

Buhrmester, 1985). This early struggle with peers further impacts the development of social

skills, the development, maintenance, and quality of friendships, and overall social competence

of children later in life (Engels, Dekovic, & Meeus, 2002). Additionally, deficits in social skills

have been shown to have a relationship with peer victimization. Rose and Rudolph (2006)

examined gendered friendship groups and found differing levels of socially acceptable behaviors

between male and female groups. Children who did not have the social skills to engage in the

appropriate amount of interpersonal behaviors within friendships experience higher levels of

stress, emotional difficulties, and problem with their peers. Specifically, children who

experienced difficulties with peers due to less developed social skills engaged in more aggressive

behaviors, rumination, and had a higher level of emotion dysregulation. Early aggressive

behaviors have been shown to be associated with with subsequent peer rejection and

victimization (Bierman, Kalvin, & Heinrichs, 2015; Bowes et al., 2013). Taken together, these

results suggest that children with poor social skills have more challenges within relationships

with peers, often resulting in peer victimization and rejection.

Furthermore, research has shown evidence for group homophily, such that like-minded

youth will interact more frequently with each other (Freeman, Hadwin, & Haligan, 2011). As a

result of group homophily, children with poor social skills are likely to create their own peer

group, in which peer deviancy training can take place. Ehrereich, Underwood, and Ackerman

(2014) examined the potency of peer contagion, and found that discussion of antisocial behaviors

were significantly associated with more involvement in subsequent antisocial behaviors. That is,

peers with deficits in social skills are likely to reinforce similar behaviors within their peer

group, resulting in a higher level of poor social skills being practiced by all members in the peer group.

Technology and Social Skills

Technology has changed the way that children engage in social interactions with their peers and their parents. Children frequently communicate with one another through online social interactions. However, communication online prevents youth from being able to detect nonverbal cues that can be crucial for understanding others' meanings during face-to-face conversations. Understanding nonverbal cues are a crucial social skill, as a large proportion of what we say is communication not by what we say but buy how we say it (Ephratt, 2011). Gelgoot (2018) proposes that children are at a heightened risk of experiencing these conversational mix-ups in online communication. Specifically, Gelgoot highlights that children have less advanced perspective-taking skills, as well as less advanced associative connections to understand varied meanings of words, which results in more frequent misunderstandings of communication. These developmental differences, coupled with a lack of nonverbal cues such as tone of voice, facial expression, context, or pacing of conversation, puts children at a heightened risk for misunderstanding during online communication.

As a result, youth have become less able to detect and demonstrate social skills such as empathy and sarcasm (Carrier, Spradlin, Bunce, & Rosen, 2015; Parris, Varjas, Meyers, & Cutts, 2012). The inability to detect or demonstrate sarcasm can result in difficulty separating jokes from insults, understanding from dismissal, and compliments from degrading comments. Such misunderstandings can lead to increased peer aggression online, which can be anonymous, appear permanent, and be seen by a large audience (Hinduja & Patchin, 2010; Sticca & Perren, 2013). However, online social interactions can impact face-to-face interactions a child has, as

well as their general functioning (Hinduja & Patchin, 2010; Parris, Varjas, Meyers, & Cutts, 2012). This pattern of findings may begin to explain the connection that researchers have found between technology usage and social and emotional difficulties, including increased reports of loneliness and depression (Engelberg & Sjoberg, 2004; Twenge, Gabrielle, & Keith, 2018).

The Role of Parenting Practice on Children's Social Development

Parenting practices act as a model of social behavior for children through observational learning. Specifically, parenting practices elicit social behavior from children, reinforce desired skills through praise, positive involvement, and warmth, while punishing undesired skills through discipline and reprimands (Domitrovich & Bierman, 2001; McFadyn-Ketchum, Bates, Dodge, & Pettit, 1996; Brody & Shaffer, 1982). Furthermore, through observational learning of parents' modeled behavior, social behaviors will transfer to interactions that children have with their peers. That is, children who have more positive interactions with their parents are more likely to display prosocial behavior with peers (Atteli, Vermigli, & Roazzi, 2010; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983), whereas children with negative interactions with their parents are more likely to display lower levels of prosocial behaviors and higher levels of aggressive behaviors with peers (Attili, Vermigli, & Roazzi, 2010; Brody & Shaffer, 1982; McFadyn-Ketchum, Bates, Dodge, & Pettit, 1996).

Differences in parental involvement have been shown to impact the development of children's social problem-solving and self-efficacy skills (McLeod et al., 2007; Pettit, Harrist, Bates, & Dodge, 1991; Waite & Creswell, 2015). Intrusive parenting, also known as parental over-involvement or "helicopter" parenting, occurs when parents take over doing tasks their children are capable of doing. This parenting style encourages dependency on parents, reduces the child's opportunities for the development of problem-solving skills and self-efficacy, limits

the child's novel experiences, and prevents the child from independently engaging with others or things (Chorpita & Barlow, 1998; Domitrovich & Bierman, 2001; Rapee, 1997; Waite & Creswell, 2015; Wood, 2006). Furthermore, children of parents who use this parenting style often report experiencing less warmth from their parents, have more aggressive social behaviors, or develop anxiety later in life (Chorpita & Barlow, 1998; Domitrovich & Bierman, 2001; Rapee, 1997; Waite & Creswell, 2015; Wood, 2006).

Conversely, the parenting style that involves being under-involved or absent is related to negative child outcomes. This is specifically true for parents who are physically present around their children, but are emotionally elsewhere. Researchers have examined links between absent parenting and childhood outcomes through examinations of parenting practices of parents with depression. Specifically, parental depression has been linked with child internalizing and externalizing behavior problems, physiological responses to stress, and parent-child conflict (Aisenberg et al., 2007; Trapolini, McMahon, & Ungerer, 2007). Taken together, these results highlight the importance of parents engaging in a parenting style in which they are involved with their child, but allow the child to have some level of independence to encourage the development of prosocial problem-solving strategies and behaviors (Domitrovich & Bierman, 2001; McLeod et al., 2007; Waite & Creswell, 2015).

Kohut (1977, 1984) theorized that some level of absent parenting may actually be necessary for children to develop a healthy self-concept. Specifically, Kohut argued that "infantile narcissistic tendencies" (e.g., crying and eliciting an immediate response from the primary caregiver) are shaped into healthy or unhealthy functioning by early parent-child interactions. That is, young children are expected to develop a theory of mind and reflexive functioning in order to recognize that their caregivers, as well as everyone else, have needs of

their own that also must be met. Kohut (1984) proposed that optimal frustration, or "the occasional disturbances of a basic attitude of appropriate empathetic affect and pride" (p. 16), is required for children to learn to do what their parents had previously done for them and develop a healthy self-esteem and self-concept. Winnicott (1960) proposed the concept of the "good enough mother," stating that although there is a need for a parent to provide adequate care and concern for the child, the expectation of perfection in parenting is not necessary. Rather, the goal of parenting should be to provide enough empathic concern, safe conditions, and the potential for growth, that confidence and trust is established within the relationship. That is, there is an optimum level of responsiveness in parenting that lies upon a continuum from absent parent to helicopter parent.

However, it appears the relationship between parenting style and child social skill development is more nuanced, as research has indicted differences in social skill development between mother-child and father-child interactions. Extensive research indicates that mothers play a more decisive role in children's social competence than fathers. Negative mother-child interactions have been shown to be more powerful in predicting negative peer relationship than negative father-child interactions (Aisenberg et al., 2007; Attili, Vermigli, & Roazzi, 2010; Connell & Goodman, 2002; McDaniel & Radesky, 2018). As a result, in the current study parental participants were limited to mothers, as research clearly indicates that mother-child interactions are more powerful in predictive negative child outcomes than father-child interactions.

Cultural Considerations

Positive parenting practices have been shown to differ across cultures. Children from Euro-American, middle-class backgrounds have been shown to have the most adaptive outcomes

from authoritative parenting styles that utilize high levels of parental warmth and encourage child autonomy (Chaudhuri, Esterbrooks, & Davis, 2009). This style of parenting includes moderate levels of parental control and is predictive of high levels of social skills within European American children (Harwood, Miller & Irizarry, 1995; Kagitcibasi, 1996). However, diverse cultural groups have different childrearing practices with different socialization goals (Polaha, Larzelere, Shapiro, & Pettit, 2004). For example, Latinx-American parents are more likely to emphasize obedience, place less value on child autonomy, and use physical discipline practices, which are associated with prosocial behaviors (Carlson & Harwood, 2003). African-American parents are more likely use an authoritarian parenting style that involves higher levels of parental control. This parenting style has been associated with higher levels of assertiveness and confidence for their children (Simons et al., 2002; Darling & Steinberg, 1993). Although high levels of parental control have been shown to have negative outcomes for Euro-American children, they have been shown to have positive outcomes for Asian-American, Latinx-American, and African-American children (Horn, Joseph, & Cheng, 2004). These differences in the relationship between parenting practices and child outcomes across cultural groups are important to recognize when examining the literature, with the understanding that results presented may only be applicable to specific cultural groups.

Socioeconomic differences. Within the United States, factors such as culture, ethnicity, and immigration status often interact with other variables such as SES. As previously discussed, a larger proportion of culturally diverse families experience poverty and financial difficulty within America than Euro-American families (American Psychological Association, 2017; Economic Policy Institute, February, 2005). Class differences have been found with respect to different socialization goals within childhood. For example, parents in working-class families are

more likely to promote obedience and respect for authority, whereas parents in professional

families encourage reasoning and independence (Chaudhuri et al., 2009). Moreover, these

different socialization goals can often be seen within the classroom. Classroom socialization

goals have been shown to differ by which SES category most of the children's families are in,

with low-SES schools focusing on following directions and completing often thoughtless work

that align with mechanical or wage labor and high-SES schools focusing on creativity, analyzing

and controlling situations, and finding rewards in work that align with more executive and elite

positions (Hatt, 2012; Finn, 1999).

Furthermore, low SES can influence parenting style as a result of stressors associated

with financial strain. Parents experiencing financial hardship have been shown to use more strict

disciplinary styles within their parenting than parents under less financial hardship (Crnic &

Greenberg, 1987). Taken together, these studies emphasize the importance of examining

parenting style through the lens of cultural and economic factors, understanding commonly

found differences in parenting style, and their relationship with the development of different

social skills. Additionally, these studies highlight the importance of understanding the types of

social expectations a child has within the home or their community, and determining if these

expectations are similar to or different from ones that a child experiences at school or with their

peers.

Emotional Availability

As previously discussed, the emotional availability of parents may impact parent-child

interactions and the social development of the child (Chaudhuri et al., 2009). Differences in

emotional availability of mothers have been shown to impact the selective attribution bias (e.g.,

hostile attribution bias, self-serving bias, fundamental attribution error) that children experience

throughout their lives. Specifically, children who have mothers high in emotional availability

have been shown to have a more positive and trusting orientation toward the world, whereas

children with mothers low in emotional availability have been found to have a more negative and

mistrusting orientation toward the world (Belsky & Pasco Fearon, 2002). These differences in

maternal emotional availability during parenthood and its relationship to selective attention

differences in children have been linked to the social-emotional functioning of children in the

toddler, pre-school, and early school years (Renken et al., 1989). Specifically, harsh parental

treatment combined with stressful life circumstances resulted in more aggressive behaviors

among children and fewer prosocial behaviors (Burnette et al., 2012; Renken et al., 1989).

Cultural considerations. This literature further highlights the importance of

understanding cultural and environmental differences parenting style and their relationship with

emotional availability. Although current research identified emotional availability as aligning

with Euro-American parenting styles, studies examining culturally diverse populations have

found fewer prosocial behaviors among children when parents emphasize autonomy and higher

levels of parental warmth (Carlson & Harwood, 2003; Simons et al., 2002), and more prosocial

behaviors among children whose parents emphasize obedience and parental control (Horn et al., ,

2004). Emotional availability may look different across cultures, and be less related to corporal

punishment and more related to the match between parenting practices and expectations.

Lansford et al. (2014) examined the relationship between corporal punishment, maternal warmth,

and children's social and emotional adjustment. These authors found evidence for the match

between child expectations to be more important than parental warmth. That is, children whose

parents were high in both corporal punishment and warmth had worse social and emotional

outcomes than children who had parents who demonstrated more consistent behaviors (e.g., low

corporal punish with high warmth). They hypothesized that because children of parents who are high in corporal punishment while also high in warmth were unsure what to expect from their parents at any given time, and subsequently were less consistent in their own behaviors

Maternal insularity. Insular mothers may have less emotional availability for their children than mothers who have positive social interactions and social support. Research examining parenting practices highlights the impact of individual differences in parental functioning. Specifically, Belsky and Isabella (1988) identified the importance of the parent's psychological resources as one of the greatest influences of positive parenting practices. Belsky and Isabella highlighted that when personal psychological resources are at risk, the quality of parenting style, and in turn parent-child interactions, decrease. This effect is even more pronounced for parents who do not feel secure in their own social interactions (Belsky & Barends, 2002). As previously discussed, insular mothers are more likely to experience social and emotional loneliness, resulting in decreased psychological resources and more non-responsive parenting behaviors toward their child (Al-Yogen, 2008; Dumas & Wahler, 1985). In the current study, levels of social and emotional loneliness of mothers were examined.

Technology use. Parental technology use may also impact the emotional availability of parents, if not only a perceived impact. Technology had drastically changed workplace expectations, with employees commonly expected to complete work outside of the workplace and traditional work hours. This change not only increases the level of job-related stress parents may experience, but it can also detract from parents' relationship with their children. Research by Garris and colleagues (2016) found that children are able to describe the specific ways in which technology influences their perceptions of their relationship with their parents. Specifically, children were aware when their parents were distracted during their time together

due to technology use, and this distraction often increased the sadness and hurt feelings the child reported.

Furthermore, research has demonstrated that some individuals have a difficult time disconnecting from technology, and experience discomfort when they have to temporarily disconnect from their mobile devices (Bianchi & Phillips; 2005; Jarvenpaa & Lang, 2005). This inability by parents to disconnect from technology may prevent children from perceiving their parents as emotionally available. McDaniel and Coyne (2016a; 2016b) examined how technology use interfered with co-parenting and relationship satisfaction with one's partner. More frequent interruptions due to technology was predictive of greater conflict over technology use, lower relationship satisfaction, and worse perceptions of the quality of the co-parenting relationship. It is possible that children perceive technology use as impacting the emotional availability and quality of the relationship with their parents in the same way that partners perceive technology use impacting their romantic relationships.

Technology Use

As noted previously, 95% of U.S. adults own a cellphone, with 77% owning smartphones (Pew Research Center, 2018). Furthermore, cellphone ownership is high across racial categories (98% of Black adults, 97% of Hispanic adults, 94% of White adults), income level (92% of adults with less than $30,000 annual income and 98% of adults earning $30,000 or more), and geographic location (96% of urban adults, 94% of suburban adults, and 91% of rural adults). Mobile technology has permeated the daily life of U.S. adults and impacted the way in which individuals interact with one another.

However, not all individuals will use mobile technology the same way. Horrigan (2009) identified 10 different types of technology users, with individual differences in these groups

regarding their attitude toward technology. Furthermore, research has highlighted individual differences in the frequency of one's mobile technology use. Specifically, predictors of frequent cell phone use include (a) being younger, (b) being female, (c) having greater feelings of depression, anxiety, or loneliness, (d) having lower self-esteem, and (e) having higher levels of extraversion (Bianchi & Phillips, 2005; Billieux, Van der Linden, & Rochat, 2008; Carbonell et al., 2013; Ehrenberg et al., 2008; Jenaro et al., 2007; Takao et al., 2009). Given this information, it was important to gather demographic information about mothers and their personal functioning to further examine the links between feelings of loneliness or depression and their technology usage. Specifically, it was anticipated that mothers with greater feelings of social or emotional loneliness would engage in higher rates of technology use.

General Impact of Technology

Although technology has countless advantages in today's society, including the ability to keep in touch with others across great distances, to access to large amounts of information quickly, and to decrease the physical constraints of space and time for work completion, it has also been associated with undesired outcomes. For example, research has highlighted both positive and negative impacts of technology usage and the workplace. Specifically, although technology use that focused on networking and job-related tasks was found to enhance adult work performance, there is also evidence that technology use for entertainment or self-gratification typically results in poorer work performance due to reduced cognitive attention to work-related information, reduced time on work-related tasks, and distraction (Ali-Hassan et al., 2015).

Similarly, technology has been shown to have both positive and negative impacts for children. Technology has allowed youth with eating disorders or depression to immediately

reach out for help and find support (Griffiths et al., 2012; Kendal et al., 2017). Additionally, schools often employ computer-based interventions to aid the development of both academic and social-emotional skills. Although technology can be beneficial for youth, it also has been associated with many negative outcomes. For example, technology has been associated with reduced and/or disturbed sleep, social and emotional difficulties, self-regulation difficulties, and increased reports of loneliness for users (Engelberg & Sjoberg, 2004; Feldman, Greeson, Renna, & Robbins-Monteith, 2011; Johansson, Petrisko & Yates, 2005). Furthermore, technology use has been shown to impact the quality of relationships that adults have with their romantic partner and children, as well as children's relationships with their peers (Garris et al., 2016; Hinduja & Patchin, 2010; McDaniel & Coyne, 2016a; 2016b; Parris, Varjas, Meyers, & Cutts, 2012).

Cultural Differences of Technology

Any keen observer can recognize generational differences in technology use. From differences in the types of technology owned, to how an individual uses and interacts with that technology, one can identify general differences between younger and older users. Yan (2017) describes two different cultures, general mobile culture and youth culture, resulting from technological advancements over time. The general mobile culture is the way in which technology use is facilitated and modeled, primarily by caregivers (Goggin, 2012). This culture provides children with one way to learn how to use, ways to interact with, and general rules of conduct regarding technology. However, youth culture is one in which expectations of mobile technology use are established within one's peer group. As a result, while youth are using mobile technology, they are navigating between general mobile cultural expectations and those established by the youth culture.

Furthermore, Akyıl, Bacigalupe, and Üstünel (2017) discuss differences in technology use between individualistic and collectivistic cultures. They posit that collectivistic cultures may be less able to ascertain meaning in electronic communication due to more frequent face-to-face forms of communication than those from individualistic cultures. This may result in more frequent miscommunication or misinterpretation during conversations among those from collectivist backgrounds. Furthermore, these challenges may be further exacerbated for children due to their less advanced associative connections to varied meanings of words and less developed perspective-taking skills (Gelgoot, 2018). These challenges of online communication, coupled with the complex navigation of expectations, can result in many challenges for youth using technology.

Parental Technology Use

Difficulties related to technology use do not stop at the individual level but have also been highlighted in interpersonal relationships. Research has highlighted the impact of technoference on parent-child interactions (e.g., McDaniel & Radesky, 2018). Generally, technoference has been shown to be predictive of fewer parent-child interactions, as well as parental hostility toward and lower responsiveness to children's request (Hiniker et al., 2015; McDaniel & Coyne, 2016b; Radesky et al., 2015; Radesky et al., 2014). McDaniel and Coyne (2016b) found that technoference commonly occurs during playtime or free time with the child, but also sometimes interferes with educational activities, mealtime, bedtime, and discipline. As such, technoference appears within the parent-child relationship throughout the entire day across many different activities.

Jarvenpaa and Lang (2005) highlighted how technology has resulted in the idea that individuals are (or should be) immediately and regularly available for work-related tasks and

non-work related communication. Specifically, they discuss the present-absent paradox through their proposed empowerment-enslavement paradox. The empowerment-enslavement paradox highlights the juxtaposition of the being regularly available. Specifically, it highlights how being able to connect with others at any time or anywhere is a great advantage, but it also results in individuals feeling pressured to respond immediately to their technology. This phenomenon then leads to the present-absent paradox in which they describe how one cannot fully engage in an in-person conversation while engaging in a conversation with someone through a mobile device. This present-absent paradox within technology parallels the present but absent parenting seen in those with depression. As previously discussed, parental depression has been linked to a variety of negative outcomes for children, including insecure attachment styles, internalizing and externalizing behavior problems, physiological responses to stress, and parent-child conflict (Ainsberg et al., 2007; Radke-Yarrow et al., 1985; Trapolini, McMahon, & Ungerer, 2007). Given these similarities, it seems likely that higher rates of parental technology use may similarly impact their child's development. In this study, technoference in the parent-child relationship was examined to determine its relation with attachment security and children's social skills.

Summary

As supported by the review of literature, individual differences in rates of parental technology use may be associated with negative outcomes for children including insecure attachment styles and decreased social skills. Furthermore, social and emotional resources of mothers may be associated with their rates of technology use. Given these hypothesized relations, this study examined how individual differences in maternal insularity were associated with rates of technoference, as well as how differing rates of parental technoference use were

associated with attachment security and their children's social skills. Additionally, this study examined how child and parent attachment security moderates the relationship between rates of parental technoference and social skills. Based on the review of the literature, the following research questions and hypotheses were developed.

<p style="text-align:center">Research Questions and Hypotheses</p>

Research Question 1

What is the association between technoference and differing levels of attachment security?

Hypothesis 1: Attachment styles and technoference. For the purpose of this study (and consistent with previous research), attachment style was assessed using a parent-report measure of attachment-related predictors (Perrelli, Zambaldi, Cantilino, Sougey, 2014), as well as a child-report measure of attachment (Kerns, Aspelmeier, Gentzler, & Grabill, 2001). Previous research has shown differences in responsive parenting practices due to technology use (Hiniker et al., 2015; McDaniel & Coyne, 2016b; McDaniel & Radesky, 2018; Radesky et al., 2015; Radesky et al., 2014). Furthermore, responsive parenting has been shown to be predictive of differences in parenting style (Grossman et al., 1985; Radke-Yarrow et al., 1985). Thus, it was hypothesized that there would be a negative correlation between technoference rates and attachment security. That is, mothers reporting higher rates of technoference are predicted to have lower levels of attachment security with their child (see Figure 1).
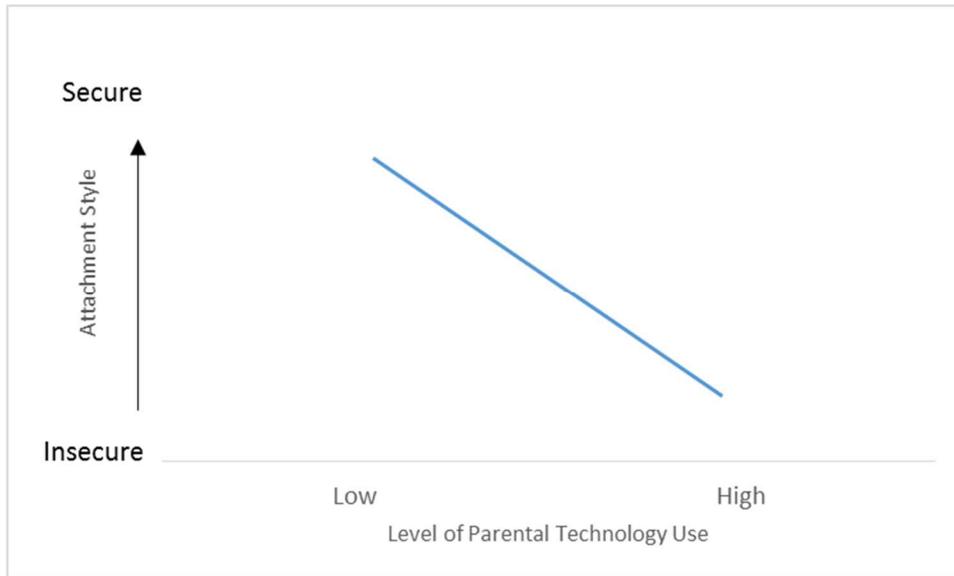
Figure 1. Hypothesized negative correlation between attachment style and level of parental technoference

Research Question 2

What is the association between children's social skills and rates of technoference in the mother-child relationship?

Hypothesis 2: Children's social skills and technoference. Children's social skills were assessed using a parent-report measure and a child-report measure. Previous research has shown the effectiveness of using parent-report measures to assess children's social functioning (Burnette et al., 2012; Lansford et al., 2014; Renken et al., 1989). As previously discussed, parents who engage in high rates of technology use engage in fewer interactions with their child, resulting in fewer opportunities for the child to engage in the observational learning process (Hiniker et al., 2015; McDaniel & Coyne, 2016b; McDaniel & Radesky, 2018; Radesky et al., 2015; Radesky et al., 2014). Thus, it was hypothesized that mothers who reported lower rates of technoference would report higher levels of social skills in their children. That is, a negative correlation is predicted between technoference rates and child social skills (see Figure 2).
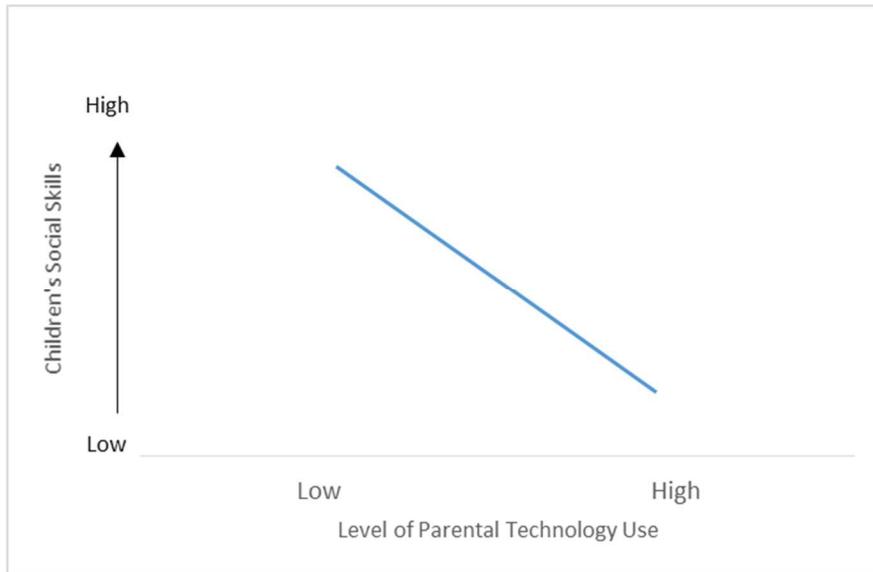
Figure 2. Hypothesized negative correlation between children's social skills and level of parental technoference

Research Question 3

What is the association between maternal insularity and rates of technoference in the mother-child relationship?

Hypothesis 3: Maternal insularity and technoference. As previously discussed, research has shown that some mothers may experience loneliness throughout the process of child rearing (Russell et al., 1984). Insularity can result in decreased psychological resources, which has been shown to influence parenting practices (Belsky & Isabella 1988; Belsky & Barends, 2002). Furthermore, insular mothers are more likely to engage in aversive and non-responsive parenting behaviors than non-insular mothers (Dumas & Wahler, 1985). Gratification theory (Grant, 2005) suggests that individuals may actively choose media to gratify their unmet needs. Specifically, research has shown links between media use to fulfill interpersonal needs (Rubin, 1998). In the current study, it was hypothesized that there would be a positive correlation

between maternal insularity and technoference (see Figure 3). That is, mothers with high levels of insularity (i.e., lack of social support) will have the highest levels of technology use.
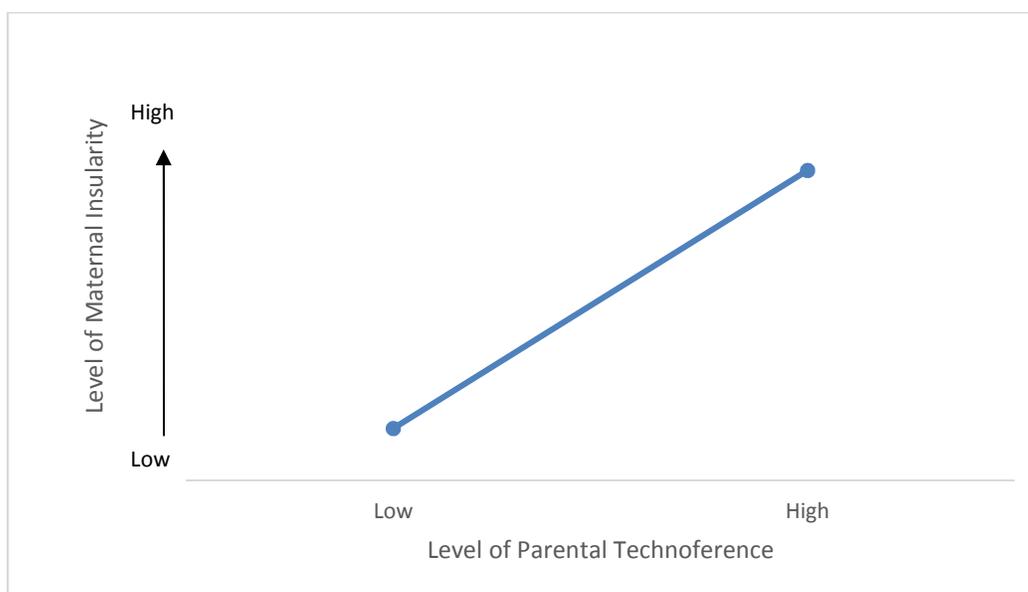
Figure 3. Hypothesized positive correlation between maternal insularity and level of parental technoference

Research Question 4

After controlling for maternal insularity, does attachment security moderate the relationship between technoference in the mother-child relationship and children's social skills?

Hypothesis 4: Moderating effect of attachment on child social skills. As described in Hypothesis 1, participants' attachment security was assessed with a parent-report and a child-report measure of attachment-related characteristics. As previously discussed, children with secure attachment styles have more positive social outcomes (Pastor, 1981; Erickson & Crichton, 1981; Erickson et al., 1982). Children's social skills were expected to follow the same pattern as described in Hypotheses 2, but with the relation being moderated by attachment security. That is, higher levels of attachment security are expected to buffer the impact of high rates of

technoference on children's development of social skills, whereas lower levels of attachment security are expected to exacerbate it (see Figure 4).
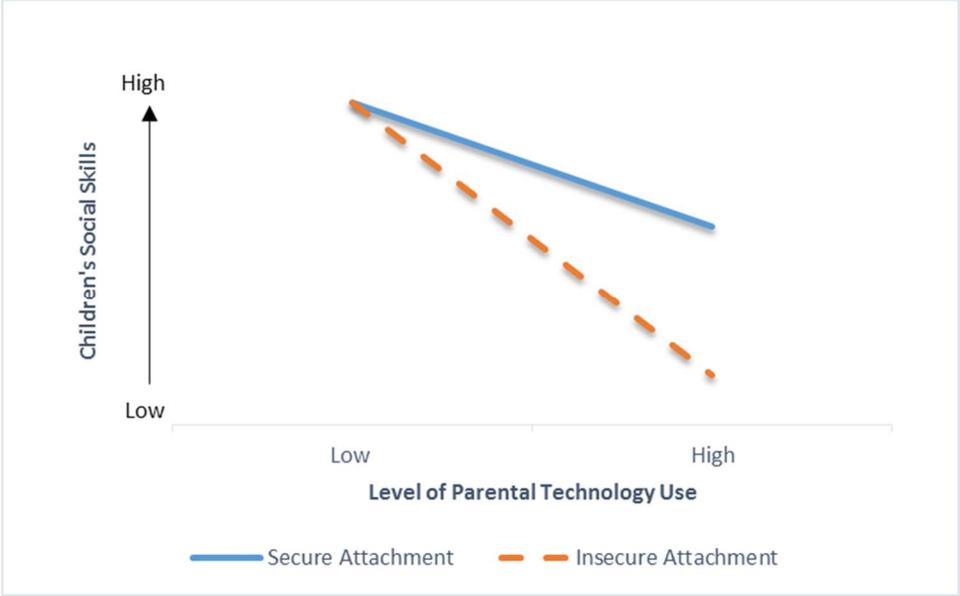
Figure 4. Hypothesized pattern in which attachment security moderates the relationship between technoference and children's social skills after controlling for maternal insularity

CHAPTER III: METHODS

Participants

This sample contained 80 mother-child dyads, including 40 male children (50%) and 40 female children (50%). The target number of participants was determined through a power analysis anticipating a medium effect size (f^2) of .15, power of .80, and $p = .05$ (Faul, Erdfelder, Lang, & Buchner, 2007). Participants were recruited through the Child Participant Pool in the Department of Psychology at Illinois State University, as well as flyer postings and recruitment fliers sent home from participating schools and community agencies. The contact information from 68 families was provided from the Child Participant Pool, and 23 mother-child dyads participated in the current study. Approximately 1,100 flyers were provided to participating schools and community agencies to distribute to families, and 57 mother-child dyads participated. Data were collected through online surveys completed one of two ways depending on the participant's preference: (1) mothers completed their survey at home and their child completed their survey at school or (2) both mother and child completed their survey in the lab, with participants being compensated for participation by funding from the Dissertation Completion Grant at Illinois State University. Forty-nine dyads participated in the lab and thirty-one dyads participated at home and in school.

The average age of children who participated in the study was 8.04 years ($SD = 1.37$). In this sample, 72.3% of mothers were Euro-American, 25.3% classified their race as other, 1.2% of mothers were African-American, and 1.2% were Hispanic/Latinx. Similarly, 65.1% of child participants were Euro-American, 26.5% classified their race as other, 7.2% were Multiracial, and 1.2% were African American. Of the total cases, 90.4% of mothers reported that they were married, 2.4% reported they were divorced, and 7.2% reported they were never married.

Furthermore, 85.5% reported that their child's biological father was their current partner/spouse, 8.4% reported that their current partner/spouse was not the biological father, and 6.0% of participants did not provide this information. Additionally, 85.5% of mothers reported that their child had two primary caregivers, 6.0% reported one primary caregiver, 6.0% reported three primary caregivers, and 1.2% reported four primary caregivers.

In this sample, 59.0% of mothers reported that their SES was Middle Class, with 20.5% reporting their SES was Middle Upper Class, 19.3% as Working Class, and 1.2% as at Poverty Level. Furthermore, 51.8% of mother's reported having a full-time job, 22.9% reported having a part-time job, 2.4% as having seasonal employment, 19.3% unemployed, and 3.6% as full-time student. Mothers reported having a variety of technology devices in the home, including smart phones (both connected to provider data and only connected to home Wi-Fi), desktop computers, laptops, tablets, TVs (both smart TVs and traditional TVs), gaming consoles (both portable and traditional devices), voice-controlled smart speakers (e.g., Amazon Echo), smart watches, radio/cd players, and Blu-ray/DVD players. In this sample, 42.5% of mothers reported having 10 or more devices within the home, and 40% of mothers reported having between 7 and 9 devices within the home.

Mothers provided information about the types of special services their children were receiving through school. A majority of mothers reported that their child was not receiving any type of special services (78.3%), 9.6% reported that their child was receiving academic interventions, 2.4% reported their child was receiving a combination of academic and social/emotional/behavioral interventions, and 10.8% reported their child was receiving social/emotional/behavioral interventions. Correlations between demographic characteristics and measures used in this study were conducted and are available in Tables 1-3.

Measures

Demographic and cultural information regarding the mother was collected, including marital status, race, SES, employment, number of people inside the home and how many are school-aged, if the mother's partner/spouse is not the child's biological father, mother's romantic attachment style, number of people who serve as the primary caregiver, and if the child was receiving special services in any of the following areas (reading, math, writing, ASD, social skills, emotional disturbance). Additional information regarding which technology devices are in the home, the frequency of parents' technology use throughout the day, and the frequency of child technology use throughout the day were also collected.

Attachment

Mothers completed the *Maternal Attachment Inventory* (MAI; Muller, 1994), a 26-item questionnaire used to measure attachment between a mother and her child. It can be used for children beginning at 4 weeks to 13 years and demonstrated reliability and high internal consistency (α = .76-.90; Perrelli, Zambaldi, Cantilino, & Sougey, 2014). In the current study, the overall Cronbach's Alpha was very good (n = 80, α = .922). Sample items include "I'm proud of my child," "I feel love for my child," and "I look forward to being with my child," which are rated on a four-point Likert scale from *almost always* to *almost never*. Items were reverse coded so that higher scores indicated more secure attachment.

The *Experiences in Close Relationships Scale-Short form* (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007) was used to measure the dimensions of mother's attachment anxiety and attachment avoidance in romantic relationships in general on a seven-point Likert scale from *strongly disagree* to *strongly agree*. This scale was used to control for mother's

attachment style to their partner when looking at their attachment to their child. In the current study, the Cronbach's Alpha was determined to be in the acceptable range ($n = 80$, $\alpha = .78$).

Children completed an adapted version of the *Security Scale* (Kerns, Aspelmeier, Gentzler, & Grabill, 2001), a 15-item self-report scale used to measure attachment between a child and the mother. This scale has been shown to effectively measure the attachment relationship between third- to sixth-grade children and their parents, but no information about the effectiveness of this scale with younger children was available prior to use in this study. Sample items include "Some kids find it easy to trust their mom but other kids are not sure if they can trust their mom," and "Some kids feel better when their mom is around but other kids do not feel better when their mom is around." Items were adapted to respond to each part of the question on a four-point Likert scale from *almost always* to *almost never*. This allowed for a more sensitive measure of the concept rather than requiring children to select which part of the question was the most true for them. In the current study ($n = 80$ children), Chronbach's Alpha was .78, which is in the acceptable range.

Maternal Insularity

The *Emotional and Social Loneliness Scale* (Russell, Cutrona, Rose, & Yurko, 1984) was used to measure maternal insularity. This is a 10-item self-report scale used to measure emotional loneliness (five items) and social loneliness (five items). Reponses are indicated using a five-point Likert scale ranging from *never* to *very often*. Items for emotional loneliness were averaged to produce an overall emotional loneliness score, and items for social loneliness were averaged to produce an overall social loneliness score, with higher scores indicating more experienced loneliness (see Appendix A). Sample items include "no one knows me well," "I feel 'in tune' with others," and "there are people I can talk to." Psychometric properties indicated

adequate reliability with alpha coefficients ranging from .78 to .92 (Russell et al., 1984). In the current study (*n* = 80 parents), Cronbach's Alpha was .93, which is in the very good range.

Technoference

Technoference was measured using the *Distraction in Social Relations and Use of Parent Technology* (DISRUPT) scale. This is an unpublished measure from McDaniel's Daily Family Life Project, and is a four-item self-report scale measuring problematic mobile phone use during time spent with one's child. Reponses are indicated using a six-point Likert scale ranging from *strongly disagree* to *strongly agree*. Items were averaged to produce an overall score, with higher scores indicating more problematic mobile phone use in the presence of one's child (see Appendix A). The measure has shown good reliability in McDaniel's Daily Family Life Project on a sample of 182 families (*n* = 358 parents) with a young child (alpha = .87) and has shown good convergent validity with other measures of technology interference in the couple relationship, parent problematic mobile phone use, and parent distraction with technology. Recent work has also utilized this measure in another sample (*n* = 527 parents) and has shown it to be statistically associated with parent self-reports of lower parenting quality (McDaniel, Everest, & White, 2018). In the current study (*n* = 80 parents), the Cronbach's Alpha was .88. The measure asks participants to specifically think about time spent with their child, and sample items include "I find myself thinking about what I could be doing on or messages/notifications I might receive on my phone or mobile device" and "I feel like I use my phone or other mobile device too much."

Social Skills

Social skills were measured using both the child-report and the parent-report version of the *Social Skills Improvement System – Rating Scales* (SSIS-RS; Gresham & Elliott, 2008) that

has been shown to be a better estimate of social and problem behaviors in elementary school-aged children when compared to other social skills measurements (Gresham, Elliott, Vance, & Cook, 2011). This is a comprehensive questionnaire used to measure cooperation, assertion, responsibility, self-control, internalizing, externalizing, hyperactivity, and total social skills and problem behaviors based on parent and child ratings. Across subscales, reliability is adequate (all above .70; Greshman et al., 2011) and test-retest scores were strong (.77-.92; Gresham et al., 2011). However, no information about the reliability of the child-report for 6- and 7-year-olds was available prior to use in this study. In the current study, the Cronbach's Alpha for all children ($n = 80$ children, $\alpha = .92$), as well as for 6- and 7-year-olds ($n = 13$ children, $\alpha = .906$) was is in the very good range. Furthermore, the Cronbach's Alpha for the parent report ($n = 80$ parents) was very good ($\alpha = .95$). Because t-scores could not be generated for 6- and 7-year-old participants, raw scores of the different areas of the SSIS-RS were used for both child and parent ratings. Sample items include ratings of how often children "talks back to adults," "asks for help from adults," and "expresses feeling when wrong."

CHAPTER IV: RESULTS

Results

In the following section, results of the current study and supplemental analyses will be discussed. Prior to data analysis, correlations between all variables were conducted to examine relations between variables (see Tables 1-3). Child gender and parent's romantic attachment style as measured by the *Experiences in Close Relationships* (ECR) were correlated with social skill ratings by mothers using the *Social Skills Improvement System* (SSIS). Child gender and parent gender were correlated with problem behavior and internalizing concern ratings by mothers using the SSIS. Child gender was correlated with externalizing concern ratings by mothers using the SSIS. Child age was found to be negatively correlated with children's ratings of problem behaviors using the SSIS, whereas the ECR was found to be positively correlated with children's ratings of problem behaviors using the SSIS. Child age was also found to be negatively correlated with children's ratings of their internalizing concerns using the SSIS, but parent gender and the ECR were found to be positively correlated with these ratings. ECR scores were correlated with children's ratings of their externalizing behaviors using the SSIS. The number of people in the home and the number of school aged people in the home was found to be correlated with the *Maternal Attachment Inventory* (MAI), whereas child age, the number of people in the home, and the ECR were found to be correlated with the Security Scale. The ECR was found to be correlated with the DISRUPT scale.

Research Question 1

To examine my first research question addressed the association between technoference and attachment, two separate linear regressions were conducted. In the first linear regression, the association between mother's ratings of technoference and their own ratings of attachment to

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their child were examined. Mother's ratings of technoference using the DISRUPT scale was not significantly associated with ratings of attachment security ($F(1,79) = 3.24$, $\beta = -.20$, $p = .08$; see Table 4). I hypothesized a negative correlation between mothers' ratings of attachment security and technoference. These results did not support my first hypothesis.

In the second linear regression, the association between mother's ratings of technoference and their children's ratings of attachment using the *Security Scale* (SS) were examined. Mother's ratings of technoference using the DISRUPT scale was significantly associated with children's ratings of attachment security ($F(1,79) = 5.40$, $\beta = -.25$, $p = .02$; see Table 5). That is, children's ratings of attachment security to their mother was significantly lower when mothers reported more technoference within their relationship. These results support my hypothesis, such that mothers who reported higher technoference behaviors with their child on the DISRUPT scale had children who reported lower levels of attachment security to their mother.

Research Question 2

To examine my second research question addressed how children's social skills are related to technoference, two separate linear regression were conducted. In the first linear regression model, the association between mother's ratings of technoference and their own ratings of their children's social skills on the SSIS were examined. Results indicated that mother's ratings of technoference using the DISRUPT scale was significantly associated with their ratings of their child's social skills ($F(1, 79) = 6.70$, $\beta = -.28$, $p = .01$, see Table 6). Specifically, higher rates of technoference were associated with lower ratings of their child's social skills. I hypothesized that mothers who reported lower technoference would report higher levels of social skills in their children than those who reported higher technoference. These

results support my hypothesis, such that mothers who reported higher technoference behaviors

with their child on the DISRUPT scale reported that their child had lower levels of social skills.

In the second linear regression, the association between mother's ratings of technoference

and their children's ratings of their own social skills on the SSIS were examined. Mother's

ratings of technoference was not significantly associated with their child's ratings of their own

social skills (F(1, 79) = .56, β = -.08, p = .46, see Table 7).

Research Question 3

To examine my third research question, which addressed the association between

maternal insularity and technoference, a linear regression was conducted. The association

between mother's ratings of insularity on the *Emotional and Social Loneliness Scale* (ESL) and

their ratings of technoference were examined. Ratings of maternal insularity were associated

with ratings of technoference on the DISRUPT scale, F(1, 79) = 6.79, p = .01; see Table 8).

Higher rates of maternal insularity were associated with lower ratings of technoference as

measured by the DISRUPT (β = -.28, p = .01). These results do not support my hypothesis, but

rather provide evidence for the opposite of what I hypothesized. That is, results indicated that

mothers who engaged in more technoference behaviors were less insular.

Research Question 4

To examine my final research question, which asked whether attachment security

moderates the relationship between technoference and children's social skills after controlling

for maternal insularity, four separate hierarchical linear regressions were conducted. I

hypothesized that having higher levels of attachment security would buffer the impact of high

rates of technoference on children's development of social skills, whereas insecure attachment

would exacerbate it.

In the first hierarchical regression, child ratings of attachment security were examined to determine the potential moderating effect of their ratings on the relation between technoference ratings by their mother and their own ratings of their social skills. Child ratings of attachment security significantly predicted child-rated social skills, whereas mother's ratings of technoference behaviors did not significantly predict child-rated social skills. Regarding moderation, adding the interaction between DISRUPT and child's ratings of attachment in the second model did not result in a significant change, $F(3, 76) = 3.97, p = .01, \Delta R^2 = .03, p = .09$, indicating there was no moderation (see Table 9).

In the second hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference ratings by their mother and their mother's ratings of their children's social skills. Mother's ratings of technoference behaviors significantly predicted child-rated social skills, whereas children's ratings of attachment did not significantly predict child-rated social skills. Regarding moderation, adding the interaction between DISRUPT and child's ratings of attachment in the second model did not result in a significant change, $F(3, 76) = 3.43, p = .02, \Delta R^2 = .00, p = .64$), indicating there was no moderation (see Table 10).

In the third hierarchical regression, mother's ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their children's ratings of their own social skills. Neither mother's ratings of attachment, nor mother's ratings of technoference behaviors significantly predicted child-rated social skills. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 1.26, p = .29, \Delta R^2 = .02, p = .19$), indicating there was no moderation (see Table 11).

In the fourth hierarchical regression, mother's ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their children's social skills. Mother's ratings of their attachment to their child significantly predicted social skills, and mother's ratings of technoference behaviors approached significance. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachments in the second model did not produce a significant change, $F(3, 76) = 8.68$, $p < .001$, $\Delta R^2 = .01$, $p = .34$) indicating there was no moderation. However, the mother's ratings of attachment to their child significantly predicted social skills after the interaction was included (see Table 12).

Supplemental Analyses

In addition to information about social skills, both the parent-report and child-report versions of the SSIS-RS provide information about problem behaviors, internalizing concerns, and externalizing concerns. In order to better understand how parent technology use may be impacting children's development, linear regression analyses were conducted examining the relation between technoference and these variables, as well as hierarchical regression analyses to examine the potential moderating effect of attachment security on these relations.

In the first linear regression, the association between mother's ratings of technoference and their own ratings of their children's problem behaviors were examined. Mother's ratings of technoference using the DISRUPT scale was significantly associated with their ratings of their child's problem behaviors ($F(1,79) = 4.97$, $\beta = .25$, $p = .03$; see Table 13). These results suggest that when there are higher technoference behaviors in the mother-child relationship, children are more likely to have parent-reported problem behaviors.

In the second linear regression, the association between mother's ratings of technoference and their child's ratings of their own problem behaviors were examined. Mother's ratings of technoference using the DISRUPT scale was significantly associated with their child's ratings of their own problem behaviors ($F(1,79) = 4.64$, $\beta = .24$, $p = .03$; see Table 14). These results suggest that in addition to higher rates parent-reported problem behaviors, children also report higher rates of problem behaviors when there is more technoference in the mother-child relationship.

In the third linear regression, the association between mother's ratings of technoference and their own ratings of their children's internalizing concerns were examined. Mother's ratings of technoference using the DISRUPT scale was significantly associated with their own ratings of their child's internalizing problems ($F(1,79) = 5.40$, $\beta = .52$, $p = .02$; see Table 15). That is, when there are more technoference behaviors within the parent-child relationship, mothers are more likely to report their child has an internalizing concern.

In the fourth linear regression, the association between mother's ratings of technoference and their child's ratings of their own internalizing concerns were examined. Mother's ratings of technoference using the DISRUPT scale was not significantly associated with their child's ratings of their own internalizing concerns ($F(1,79) = 2.82$, $\beta = .19$, $p = .10$; see Table 16). These results suggest that although mothers report more internalizing concerns, children are not reporting internalizing concerns when there are higher rates of technoference behaviors in the parent-child relationship.

In the fifth linear regression, the association between mother's ratings of technoference and their own ratings of their child's externalizing concerns were examined. Mother's ratings of technoference using the DISRUPT scale was significantly associated with their own ratings of

their children's externalizing concerns ($F(1,79) = 5.50$, $\beta = .26$, $p = .02$; see Table 17). That is, when there is more technoference between in the parent-child relationship, there are more parent-reported externalizing concerns.

In the sixth linear regression, the association between mother's ratings of technoference and their child's ratings of their own externalizing concerns were examined. Mother's ratings of technoference using the DISRUPT scale was not significantly associated with their child's ratings of externalizing concerns ($F(1,79) = 3.51$, $\beta = .21$, $p = .07$; see Table 18).

Examining Moderation of Problem Behaviors

To examine the potential moderation of attachment security with overall problem behaviors, internalizing concerns, and externalizing concerns, hierarchical regression analyses were conducted. In the first hierarchical regression, mother's ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their child's problem behaviors. Mother's ratings of their attachment to their child significantly predicted problem behaviors, but mother's ratings of technoference behaviors approached significance. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 4.48$, $p = .01$, $\Delta R^2 = .03$, $p = .09$, indicating there was no moderation. However, mother's ratings of attachment significantly predicted problem behaviors after the interaction was added (see Table 19).

In the second hierarchical regression, mother's ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their child's ratings of their own problem behaviors. Mother's ratings of technoference did not significantly predict their child's ratings of problem behaviors. Regarding moderation,

adding the interaction between DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 1.62$, $p = .19$, $\Delta R^2 = .00$, $p = .59$, indicating there was no moderation (see Table 20).

In the third hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their mother's ratings of their problem behaviors. Child ratings of attachment significantly predicted problem behaviors, while mother's ratings of technoference did not significantly predict problem behaviors. Regarding moderation, adding the interaction between DISRUPT and child's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 3.79$, $p = .01$, $\Delta R^2 = .01$, $p = .29$, indicating there was no moderation. Furthermore, child ratings of attachment and mother's ratings of technoference did not significantly predict problem behaviors after the interaction was added (see Table 21).

In the fourth hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their problem behaviors. Child ratings of attachment significantly predicted problem behaviors, while mother's ratings of technoference did not significantly predict problem behaviors. Regarding moderation, adding the interaction between the DISRUPT scale and child ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 6.44$, $p = .00$, $\Delta R^2 = .00$, $p = .86$, indicating there was no moderation. Furthermore, once the interaction was included child's ratings of attachment and mother's ratings of technoference did not significantly predict problem behaviors (see Table 22).

Examining Moderation of Internalizing Concerns

In the fifth hierarchical regression, mother ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their child's internalizing concerns. Mother's ratings of technoference significantly predicted internalizing concerns, while mother's ratings of attachment did not significantly predict internalizing concerns. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 2.63, p = .05, \Delta R^2 = .01, p = .31$, indicating there was no moderation. Furthermore, mother's ratings of attachment and technoference did not significantly predict internalizing concerns after the interaction was included (see Table 23).

In the sixth hierarchical regression, mother ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their child's ratings of their own internalizing concerns. Mother's ratings of technoference and attachment did not significantly predict internalizing concerns. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = .926, p = .43, \Delta R^2 = .00, p = .88$. indicating there was no moderation. Furthermore, mother's ratings of attachment and technoference did not significantly predict internalizing concerns after the interaction was included (see Table 24).

In the seventh hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their mother's ratings of their internalizing concerns. Child rating of attachment significantly predicted internalizing concerns, while mother's ratings of technoference did not significantly

predict internalizing concerns. Regarding moderation, adding the interaction between the DISRUPT and child's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 4.22$, $p = .01$, $\Delta R^2 = .01$, $p = .47$, indicating there was no moderation. Furthermore, child's ratings of attachment and mother's ratings of technoference did not significantly predict internalizing concerns once the interaction was included in the model (see Table 25).

In the eighth hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their internalizing concerns. Child ratings of attachment significantly predicted internalizing concerns, while mother's ratings of technoference did not significantly predict internalizing concerns. Regarding moderation, adding the interaction between the DISRUPT scale and child ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 4.80$, $p = .01$, $\Delta R^2 = .00$, $p = .64$, indicating there was no moderation. Furthermore, child ratings of attachment and mother's ratings of technoference did not significantly predict internalizing concerns once the interaction was included in the model (see Table 26).

Examining Moderation of Externalizing Concerns

In the ninth hierarchical regression, mother's ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their ratings of their child's externalizing concerns. Mother's ratings of attachment significantly predicted externalizing concerns, while their ratings of technoference did not significantly predict externalizing concerns. Regarding moderation, adding the interaction between DISRUPT and mother's ratings of attachment in the second model did produce a

significant change, $F(3, 76) = 5.95$, $p = .001$, $\Delta R^2 = .05$, $p = .033$), indicating there was

moderation. That is, the relationship between technoference, as measured by the DISRUPT scale,

and mothers' ratings of externalizing concerns is moderated by mother's ratings of attachment.

Specifically, maternal attachment ratings strengthen the relationship between these two variables

(see Figure 5). Furthermore, mother's ratings of attachment and technoference also significantly

predicted externalizing concerns once the interaction was included (see Table 27).

Figure 5. Moderation of attachment security between level of parental technoference using the

DISRUPT scale and mother's reports of children's externalizing concerns

In the tenth hierarchical regression, mother's ratings of attachment were examined to

determine the potential moderating effect of their ratings on the relation between technoference

and their child's ratings of their own externalizing concerns. Mother's ratings of attachment and

technoference was not significantly associated with externalizing concerns. Regarding

moderation, adding the interaction between the DISRUPT and mother's ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 1.17$, $p = .33$, $\Delta R^2 = .00$, $p = .79$, indicating there was no moderation. Furthermore, mother's ratings of attachment and technoference did not significantly predict externalizing concerns once the interaction was included (see Table 28).
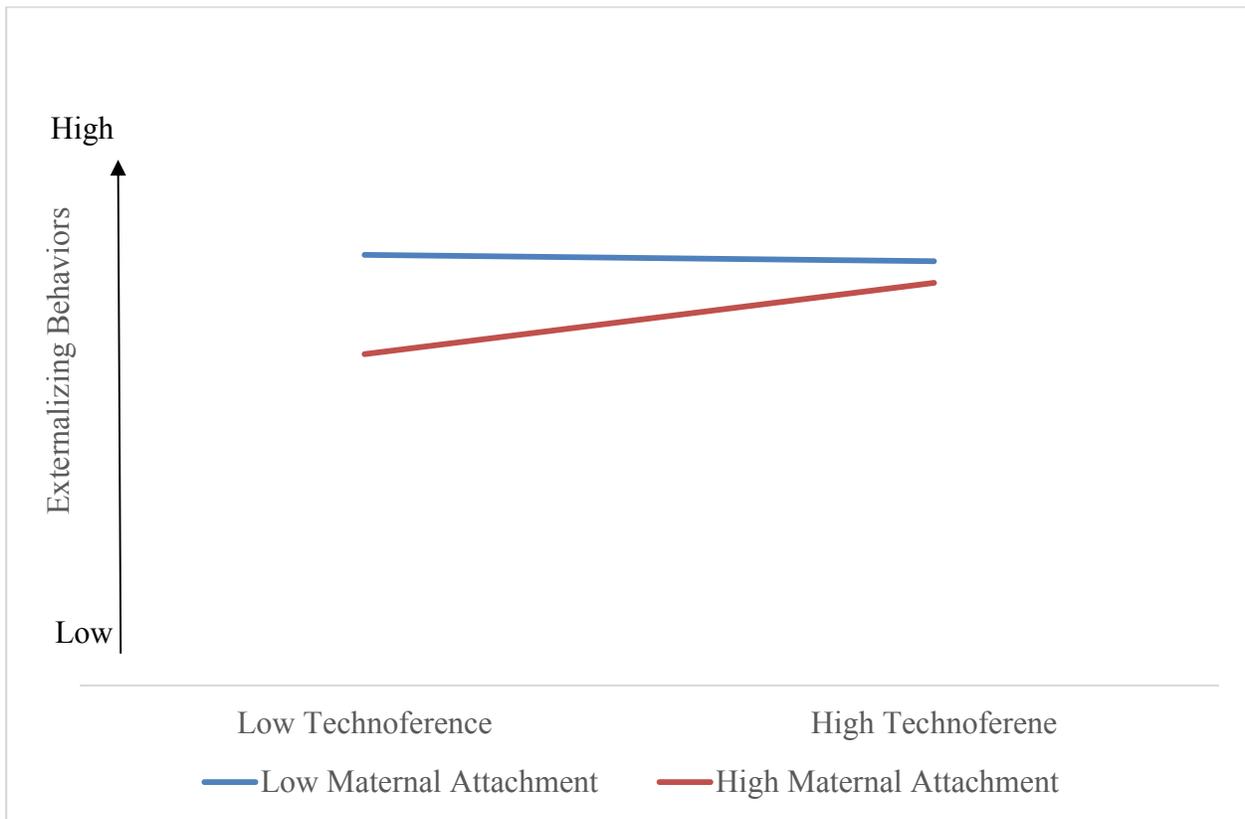
In the eleventh hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their mother's ratings of their externalizing concerns. Child ratings of attachment significantly predicted externalizing concerns, while mother's ratings of technoference did not. Regarding moderation, adding the interaction between the DISRUPT scale and child ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 3.80$, $p = .01$, $\Delta R^2 = .01$, $p = .43$, indicating there was no moderation. Additionally, child ratings of attachment and mother's ratings of technoference did not significantly predict externalizing concerns once the interaction was included (see Table 29).

In the twelfth hierarchical regression, child ratings of attachment were examined to determine the potential moderating effect of their ratings on the relation between technoference and their own ratings of their externalizing concerns. Child ratings of attachment significantly predicted externalizing concerns, while mother's ratings of technoference did not significantly predict externalizing concerns. Regarding moderation, adding the interaction between DISRUPT and child ratings of attachment in the second model did not produce a significant change, $F(3, 76) = 3.68$, $p = .02$, $\Delta R^2 = .01$, $p = .32$, indicating there was no moderation. Furthermore, after including the interaction in the model, child ratings of attachment and mothers' ratings of technoference did not significantly predict externalizing concerns (see Table 30).

CHAPTER V: DISCUSSION

Results of this study provided evidence of the relationship between technoference and (1) the attachment relationship as rated by mothers and children, (2) social skill ratings by mothers, (3) social and emotional support received by mothers, (4) problem behavior ratings by mothers and children, (5) internalizing concern ratings by mothers, and (6) externalizing concern ratings by mothers and children. Furthermore, there is evidence for the moderating effect of attachment, as rated by mothers, on the relationship between their ratings of technoference and externalizing behaviors. This study adds to the current literature by including child reports of the outcome variables, as well as examining the impact of attachment on the effects of technoference. Further, it provides supporting evidence for the current research that highlights a relation between technoference and parent-reported internalizing and externalizing concerns and expands our understanding by examining overall problem behaviors as well as social skills. In the following sections, the results of the current study will be discussed, followed by a discussion of the results of the supplemental analyses, implications and recommendations, strengths and limitations, and future research.

Technoference and Attachment Security

It was hypothesized that mothers who report higher rates of technoference will report having more insecure attachment security with their child, whereas mothers who report lower rates of technoference will report having a more secure attachment with their child. The results partially supported this hypothesis, in that ratings of technoference using the DISRUPT scale did not significantly predict having lower levels of attachment security with their child. However, the DISRUPT scale did significantly predict having lower levels of attachment security to one's mother as rated by children. The difference in these findings may be even more noteworthy than

if both findings were significant. That is, while high technoference does not significantly impact a mother's attachment to their child, it does significantly impact a child's attachment to their mother. Said another way, children's attachment to their mother is disrupted by high technoference behaviors by their mother.

The results of the current study highlight the detrimental impact that technoference can have on the attachment relationship. It is possible that technoference reduces the emotional availability of the mother and decreases their responsiveness to their child. That is, while mothers are using technology, they are so mentally and emotionally invested in their current activity (i.e., conversation with others, games, reading posts) that it detracts from their availability to their child, which in turn impacts the child's attachment security. While literature specific to technoference and attachment is limited, previous research has highlighted how parental responsiveness and emotional availability impact the attachment relationship (Aisenberg et al., 2007; Belsky & Pasco Fearon, 2002; Cowan et al., 2009; Garris et al., 2016; Grossman et al., 1985; Radke-Yarrow et al., 1985; Teti et al., 1995). Therefore, it is important that mother's recognize and monitor when they engaging in technoference behaviors around their child in order to reduce the frequency of these behaviors and develop stronger attachment security with their child.

Technoference and Social Skills

It was hypothesized that mothers who reported lower technoference would report higher levels of social skills in their children than those who reported higher technoference. My hypothesis was supported, in that the DISRUPT scale was significantly associated with mother's ratings of their child's social skills. That is, mothers who reported higher rates of technoference on the DISRUPT scale rated their child as having less developed social skills. However, child's

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ratings of their own social skills were not significantly associated with their mother's ratings of technoference using the aggregate or individual measures.

The difference between the ratings of social skills provided by the mother and the ratings provided by the child may be more telling about the impact of technoference than if both relations were significant. It is possible that children are unaware of appropriate social skills and unable to accurately rate themselves on these skills due to a lack of modeled social skills by their mothers, whereas mothers are aware of these skills and the deficits that their child may have in this area. Social Learning Theory (Bandura, 1971) highlights the importance of having appropriate social behaviors modeled in order to learn the modeled skills. As parent's use of technology in front of their child increases, the possibilities to display appropriate social skills decreases while the possibilities increase for the changes of displaying inappropriate social skills. Previous research found that high rates of parental technology use predict fewer parent-child interactions (Hiniker et al., 2015; Radesky et al., 2015). As these parent-child interactions decrease, each interaction that the parent has with the child to display appropriate social skills becomes more salient. For example, the impact of a parent modeling one inappropriate social behavior out of 50 modeled social behaviors in a day is less substantial on social skill development than the impact of a parent modeling one inappropriate social behavior out of two modeled social behaviors in a day. Furthermore, parent's social behaviors have been found to transfer to interactions that children have with their peers (Atteli, Vermigli, & Roazzi, 2010; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983). It is possible that children are less aware of expectations regarding social behaviors due to infrequent or inconsistent modeling of these skills by their parents, and in turn have lower levels of social skills than children who are exposed frequently and regularly to appropriate social skills by their parents.

Maternal Insularity and Technoference

It was hypothesized that maternal insularity would predict higher rates of technoference. This hypothesis was not supported, and the results indicated that mothers are using technology to receive social and emotional support from others in a different way. It is possible that mothers who are using technology to interact socially with others do feel supported, rather than using technology to fulfill unmet interpersonal needs. The resource that technology has provided to have and maintain social relationship with others has likely abolished feelings of insularity that were previously shown to exist throughout the process of child rearing (Russell et al., 1984). That is, mothers who are socially isolated in their day-to-day life may no longer feel isolated due to their use of technology and social media to maintain a sense of social and emotional connectedness to others that they may not have due to limited social interactions with other adults. Previous research has highlighted the importance of mothers having positive social interactions outside of the home and feeling socially and emotionally connected for the development of their child's social and behavioral outcomes (Al-Yogen, 2008; Belsky & Barends, 2002). Thus, it appears that technology use is a positive support for mothers social and emotional wellbeing that contribute to more positive social and behavioral outcomes for their child.

However, it is also possible that the mothers who use technology more frequently simply have more connection to others in general. That is, their high rates of technoference behaviors are due to more active social relationships that results in more use of texting and social media. This could also explain why mothers who reported high rates of technoference were less lonely. Nonetheless, taken together with the previous discussions of the impact that technoference has on the attachment relationship and the development of social skills, it is important to note that

these benefits for childhood outcomes drastically diminish when the technology use disrupts and detracts from mother-child interactions. As a result, it is important for mothers to separate spending time with their child and spending time on technology devices in order to receive social and emotional support.

Attachment Security, Technoference, and Social Skills

It was hypothesized that having higher levels of attachment security would buffer the impact of high rates of technoference on children's development of social skills, whereas insecure attachment would exacerbate it. My hypothesis was not supported, in that none of the moderation models produced a significant change from the initial relationship. However, the model where child ratings of their attachment to their mothers was examined to determine any moderating effects of the relation between mother's ratings of technoference and the child's ratings of their own social skills approached significance. This relationship should be examined more closely in future research with a larger sample to determine if child's attachment does moderate the relation between technoference and their ratings of their own social skills.

Previous research has highlighted the important role that attachment has for the overall social and emotional functioning of an individual (Aisenberg et al., 2007; Belsky & Pasco Fearon, 2002; Cowan et al., 2009; Grossman et al., 1985; Radke-Yarrow et al., 1985; Teti et al., 1995). Specifically, children with a secure attachment have been found to be more social and compliant to requests by others, whereas children with insecure attachment styles have been found to be more hostile, socially isolated, or withdrawn (Erickson & Crichton, 1981; Erickson et al., 1982; Pastor, 1981). However, these results suggest that this relationship does not significantly impact the relation between technoference and the development of social skills.

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That is, the negative impact that technoference has on the development of social skills appears to be more salient than the effect of the attachment relationship between a mother and her child.

<div align="center">**Problem Behaviors**</div>

Results of this study found that higher levels of technoference were associated with higher reports of problem behaviors by both mothers and children themselves. Previous research has shown links between lower levels of social skills and the development of conduct problems, which in turn have been linked to subsequent peer rejection, emotion dysregulation, and victimization (Bierman et al., 2015; Frick et al., 2014; Rose & Rudolph, 2006). When children lack the required skills to navigate their social world, they can develop their own maladaptive pattern of responding to social situations. Although technology has changed the way that children engage in social interactions with their peers, it has not eliminated face-to-face interactions. Furthermore, online conversations have been shown to impact face-to-face interactions that children have (Hinduja & Patchin, 2010; Parris et al., 2012). Engaging in problem behaviors around one's peers may isolate them from access to a positive peer group and result in friendships with like-minded youth and group homophily (Freeman et al., 2011). As a result of group homophily, children with poor social skills are likely to create peer group in which peer deviancy training can take place. This research highlights the connection between children's problem behaviors and technoference, shedding light on a simple prevention measure that parents could use to help their child develop positive social and emotional skills, positive friendships, and overall positive life-long outcomes.

Internalizing Concerns

This study found that higher levels of technoference were associated with higher reports of internalizing concerns by mothers. These results confirm and build upon the results of

McDaniel and Radesky (2018), who found that parents report their children had more internalizing concerns as technoference rates increased. The results of the current study also highlight that children do not recognize these symptoms in their own day-to-day functioning, or are not willing to report them. There is a growing body of literature that highlights the challenges that come with using high rates of technology, which includes increased reports of social and emotional difficulties, loneliness, anxiety, and depression (Engelberg & Sjoberg, 2004; Griffiths et al., 2012; Kendal et al., 2017; Twenge et al., 2018). However, these results taken with those of McDaniel and Radesky (2018) highlight the detrimental impact that technology use can have on others when it interferes with the mother-child relationship.

Externalizing Concerns

Results of this study found that higher levels of technoference, as rated by the DISRUPT scale, was associated with higher reports of externalizing concerns by mothers, but not by children. These results confirm those of McDaniel and Radesky (2018) and build on them by highlighting that children are not aware of these externalizing concerns. These results either suggest that children are unaware of their externalizing concerns, or were unwilling to admit these. While one may suspect that children would be less forthcoming regarding how frequently they engage in non-preferred behavior, it is possible that children are becoming less aware of expected behaviors all together. As previously discussed, children's ratings of their own social skills and internalizing concerns were also found to not be significantly associated with high rates of technoference while their mother's ratings were significantly associated. Taken together, these results suggest that children are less aware of their current behavior, the implications of their behavior, and the long-term negative outcomes that are associated with such behavior.

Longitudinal research has linked conduct problems, especially conduct problems early in life, to more difficulties with peers, further emotion dysregulation, and victimization by peers (Bierman et al., 2015). Further, the relationship between externalizing concerns and social skill development appears to be reciprocal. That is, research has shown that teaching children appropriate social skills can be beneficial for decreasing externalizing concerns, and that social skill deficits are linked to the development of externalizing concerns (Frick et al., 2014, Rose & Rudolph, 2006, Weisz & Kazdin, 2017). This research, in conjunction with that done by McDaniel and Radesky (2018) highlight the importance of mother-child interactions and the detrimental impact that technoference can have on this relationship and a child's overall development of externalizing concerns.

Furthermore, this study found that mother's reports of attachment moderated the relation between technoference, as measured by the DISRUPT scale, and externalizing concerns reported by mothers. When there was high technoference, there was no difference in reports of externalizing concerns regardless of mother's reports of attachment. However, when there was low technoference, higher attachment security as reported by the mother was associated with lower rates of externalizing problems compared to those with lower attachment security. That is, maternal attachment strengthens the relationship between technoference and externalizing concerns (see Figure 5). There is a large body of research that highlights the importance of the attachment relationship for positive lifelong outcomes (Aisenberg et al., 2007; Belsky & Pasco Fearon, 2002; Cowan et al., 2009; Grossman et al., 1985; Radke-Yarrow et al., 1985; Teti et al.,, 1995). Specifically, children with insecure attachment styles have been found to be more hostile, socially isolated, or withdrawn than children with secure attachment styles (Erickson & Crichton, 1981; Erickson et al., 1982; Pastor, 1981). While it is possible that these findings were simply a

result of the nature of this data set, these results suggest that more security in one's attachment, as rated by mothers, serves as a protective factor, whereas less attachment security exacerbates the effect that technoference has on externalizing behaviors.

Implications and Recommendations

Overall, these results highlight the detrimental impact that technoference in the mother-child relationship can have on the child. Specifically, technoference was found to predict lower attachment security as rated by children, lower levels of social skills as rated by mothers, and higher rates of problem behaviors, internalizing concerns, and externalizing concerns. However, these results also highlight the social and emotional support that mothers receive from using technology. Like all advances, there are always positives and negatives that result from forward progress. These results highlight some of the positive and negative impacts that parent technology use has. Specifically, it warns against allowing technology to frequently interrupt interactions and time that mothers have with their child, while it encourages mothers to continue to use technology to receive social and emotional support. Thus, it is recommended that mothers become more mindful of their use of technology and disconnect from use when they are around their child. Disconnecting from technology will continue to increase in difficulty as society becomes more and more connected. However, these results highlight the importance of setting aside the time that mothers spend with their children as protected time in order to protect against technoference.

Further, these results highlight how attachment security moderates the relation between technoference and externalizing concerns. Specifically, when there were high rates of technoference, there was not much of a difference in the reports of externalizing concerns regardless of mother's ratings of attachment. However, when there were low rates of

technoference, there was a significant difference in reports of externalizing concerns based on mother's ratings of attachment. As seen in Figure 5, when there is low attachment security, there is no difference in externalizing concerns between low technoference and high technoference. However, when there is high attachment security and low technoference, the reports of externalizing concerns are significantly lower. It is possible that these differences are more salient for externalizing concerns due to the very visible nature of these behaviors. That is, parents may recognize when their children are engaging in behaviors associated in externalizing concerns more than those associated with internalizing concerns. It is also possible that children engage in more behaviors associated with externalizing concerns in order to receive attention from their parent who engages in a high frequency of technoference behaviors. Children may feel as if they need to engage in more frequent problematic behavior in order to pull their parent's attention away from their device. Conversely, it is possible that these results are due to the combination of children having lower levels of emotion regulation, which has been found to be associated with more insecure attachment (Erickson & Crichton, 1981; Erickson et al, 1982; Pastor, 1981), and receiving fewer opportunities to see appropriately modeled social behaviors (Bandura, 1971).

These results provide implications for interventions with children who have externalizing concerns. Although many of the current interventions for externalizing concerns focus on behavior management and compliance training (Weisz & Kazdin, 2017), these results highlight the importance of providing children and with an opportunity to build a stronger relationship with their mother. By providing an opportunity to build a stronger and more trusting relationship between a child and their parent through family therapy, parent psychoeducation, and parent training, it could be possible to reduce the negative impact of technoference on the development

of externalizing concerns. Further, the current results highlight the importance of providing parents with psychoeducation regarding the negative impact of technoference and emphasizes the importance of putting aside one's mobile device and fully engaging with their child during time they spend together.

Strengths and Limitations

This study must be interpreted in the context of a relatively homogeneous sample consisting of primarily Euro-American, married, middle-class mothers and their children. Although this sample was taken from both rural and suburban communities, recruitment attempts appeared to attract a specific subpopulation from each of these communities. However, there was an equal number of boys and girls, which highlights that these results are not impacted by an overrepresentation of boys or girls. Further, the average age of participants was around eight years old. Very little research exists regarding children's perception of their own social skill development within this age range. However, the confirmatory factor analyses indicated that children within this study were accurate and valid reporters. Thus, this research provides a unique contribution to the body of literature looking at children's development of social skills.

This research was limited to a relatively modest sample size. A larger sample size would have allowed for a deeper understanding of the examined relationships, as there were several relationships that approached significance. However, due to the limited research that has been conducted regarding technoference, this study provides valuable information about the social and emotional outcomes for children who experience technoference with their mothers. Additionally, this study provides insight into the way in which mothers benefit from technology use and provides guidance for future research to form more specific questions regarding the impact of technoference.

Another limitation of the current study is that all of the surveys were presented in the same order to all participants. It is possible that the same presentation of questions resulted in the consistent fatigue for participants when responding to the final questions on the survey. This may be especially true for parents who completed questionnaires for two children within the study. However, the final section of the questionnaire was the SSIS-RS, which required mother's to switch their thinking from their own behavior to the behavior of their child, which may have provided enough of a difference from the previous questions to revive their investment in responding.

Lastly, this research was limited by necessity to use raw scores on the SSIS-RS. Although the SSIS-RS is a validated child and parent report measure of children's social skills, the current study was only able to use it to generate raw scores regarding overall social skills, problem behaviors, internalizing concerns, and externalizing concerns. Due to the age range of participants, the SSIS-RS child form was unable to be scored to provide additional information about specific skills that children had strengths and weaknesses in. Further, the overall level of social skills and problem behaviors was unable to be compared to a normative sample of same-aged peers. However, this study is the first known study to examine the relation between technoference and social skill development. Thus, this study provides useful information for future researchers to examine more closely.

Future Research

Future research could examine these phenomena within the father-child relationship. The current study examined the mother-child relationship based on literature that suggested that this relationship was a more powerful predictor of the impact of technoference (e.g., McDaniel & Radesky, 2018). However, it would be interesting to determine if these phenomena were just as

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impactful within the father-child relationship, and how these relations may be impacted by technoference within the child's relationship with both parents. It is possible that technoference and the father-child relationship results in different outcomes, and that the combination of technoference within multiple relationships may be more detrimental than the effects of technoference within only the mother-child relationship. Further, it would be interesting to examine if the impact of technoference is more strongly related to the gender of the parent or the role the parent plays within the household by looking at families with two mothers, two fathers, or non-binary parents. This may help to untangle if these effects are seen because of the biological sex of the parents or because of socialized gender constructs.

Similarly, future research could gather information about children's social skills, problem behaviors, and internalizing and externalizing concerns from teachers. Teachers have a unique perspective, in that they frequently interact with a large group of children. This type of social interaction provides them with an understanding of typical and nontypical behavior of children within a specific age group than parents who only have one child of that specific age. Furthermore, teachers see the child daily in a very different setting than parents do. The school setting imposes a higher frequency of demands throughout the day as well as a structured schedule that children at home may not typically experience. Teachers also have direct observations of children engaged in social skills behaviors with other children and adults. Thus, it would be interesting to compare teacher reports of these variables to parent reports and determine if there are any differences across reporters or settings.

Future research should examine the differences in outcomes for youth by race. Previous research highlights that the attachment relationship and social skill development is different based on one's race (Garcia Coll, 1990; Polaha et al., 2004; Spencer, 1990). It would be

interesting to examine the influence that race and cultural expectations around attachment and appropriate social skills have on the impact of technoference. This type of research would inform the literature about racial and ethnic differences within the impact of technoference on the mother-child relationship and the development of social skills.

Finally, future research could examine the specific social skills that appear to be more negatively impacted by technoference. Although the current study used the SSIS-RS, a validated tool to measure social skills, these measures could not be scored due to the age range of participants and rather raw scores were used. This measure provides information about specific skills that a child may have strengths or weaknesses in when it can be scored. This information could provide useful information to families and practitioners regarding what specific skills should be targeted in universal intervention efforts within the school setting regarding social skill development.

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APPENDIX A: STUDY MEASURES

<u>MATERNAL ATTACHMENT INVENTORY</u>

The following sentences describe thoughts, feelings, and situations mothers may experience. Circle the number under the word that applies to you.

		Almost Always	Often	Sometimes	Almost Never
1.	I feel love for my child.	1	2	3	4
2.	I feel warm and happy with my child.	1	2	3	4
3.	I want to spend special time with my child.	1	2	3	4
4.	I look forward to being with my child.	1	2	3	4
5.	Just seeing my child makes me feel good.	1	2	3	4
6.	I know my child needs me.	1	2	3	4
7.	I think my child is cute.	1	2	3	4
8.	I'm glad this child is mine.	1	2	3	4
9.	I feel special when my child smiles.	1	2	3	4
10.	I like to look into my child's eyes.	1	2	3	4
11.	I enjoy holding/hugging my child.	1	2	3	4
12.	I watch my child sleep.	1	2	3	4
13.	I want my child near me.	1	2	3	4
14.	I tell others about my child.	1	2	3	4
15.	It's fun being with my child.	1	2	3	4
16.	I enjoy having my child cuddle with me.	1	2	3	4
17.	I'm proud of my child.	1	2	3	4
18.	I like to see my child do new things.	1	2	3	4
19.	My thoughts are full of my child.	1	2	3	4
20.	I know my child's personality.	1	2	3	4
21.	I want my child to trust me.	1	2	3	4
22.	I know I am important to my child.	1	2	3	4
23.	I understand my child's signals.	1	2	3	4
24.	I give my child special attention.	1	2	3	4
25.	I comfort my child when he/she is crying.	1	2	3	4
26.	Loving my child is easy.	1	2	3	4

SECURITY SCALE

The following sentences describe thoughts, feelings, and situations children may have. Circle the letter under the word that is the most true for you.

		Almost Always	Often	Sometimes	Almost Never
1.	Some kids find it easy to trust their mom.	1	2	3	4
2.	Some kids feel like their mom butts in a lot when they are trying to do things.	1	2	3	4
3.	Some kids find it easy to count on their mom.	1	2	3	4
4.	Some kids think their mom spends enough time with them.	1	2	3	4
5.	Some kids do not really like telling their mom what they are thinking or feeling.	1	2	3	4
6.	Some kids do not really need their mom for much.	1	2	3	4
7.	Some kids wish they were closer to their mom.	1	2	3	4
8.	Some kids worry that their mom does not really love them.	1	2	3	4
9.	Some kids feel like their mom really understands them.	1	2	3	4
10.	Some kids are really sure their mom would not leave them.	1	2	3	4
11.	Some kids worry that their mom might not be there when they need her.	1	2	3	4
12.	Some kids think their mom does not listen to them.	1	2	3	4
13.	Some kids go to their mom when they are upset.	1	2	3	4
14.	Some kids wish their mom would help them more with their problems.	1	2	3	4
15.	Some kids feel better when their mom is around.	1	2	3	4

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16.	Some kids are not sure if they can trust their mom.	1	2	3	4
17.	Some kids feel like their mom lets them do things on their own.	1	2	3	4
18.	Some kids think it's hard to count on their mom.	1	2	3	4
19.	Some kids think their mom does not spend enough time with them.	1	2	3	4
20.	Some kids do like telling their mom what they are thinking or feeling.	1	2	3	4
21.	Some kids need their mom for a lot of things.	1	2	3	4
22.	Some kids are happy with how close they are to their mom.	1	2	3	4
23.	Some kids are *really* sure that their mom loves them.	1	2	3	4
24.	Some kids feel like their mom does not really understand them.	1	2	3	4
25.	Some kids sometimes wonder if their mom might leave them.	1	2	3	4
26.	Some kids are sure their mom will be there when they need her.	1	2	3	4
27.	Some kids do think their mom listens to them.	1	2	3	4
28.	Some kids do not go to their mom when they are upset.	1	2	3	4
29	Some kids think their mom helps them enough.	1	2	3	4
30.	Some kids do not feel better when their mom is around.	1	2	3	4

EMOTIONAL AND SOCIAL LONELINESS SCALE

The following sentences describe experiences some mothers have. Please circle the number under the category that applies to you.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I feel "in tune" with others	1	2	3	4	5
2.	I lack companionship	1	2	3	4	5
3.	There is no one I can turn to	1	2	3	4	5
4.	I do not feel alone	1	2	3	4	5
5.	I feel part of a group of friends	1	2	3	4	5
6.	I have a lot in common with others	1	2	3	4	5
7.	I am no longer close to anyone	1	2	3	4	5
8.	I have interest and ideas not shared by others	1	2	3	4	5
9.	I am outgoing	1	2	3	4	5
10.	There are people I feel close to	1	2	3	4	5
11.	I feel left out	1	2	3	4	5
12.	I think my social relationships are superficial	1	2	3	4	5
13.	No one knows me well	1	2	3	4	5
14.	I feel Isolated	1	2	3	4	5
15.	I know I can find companionship	1	2	3	4	5
16.	There are people who understand me	1	2	3	4	5
17.	I am unhappy being so withdrawn	1	2	3	4	5
18.	I feel as if others are around me but not with me	1	2	3	4	5
19.	There are people I can talk to	1	2	3	4	5
20.	There are people I can turn to	1	2	3	4	5

Distraction In Social Relations and Use of Parent Technology (DISRUPT)

Please rate your level of agreement with the following statements.

During time I spend with my child…

... I find myself thinking about what I could be doing on or messages/notifications I might receive on my phone or mobile device.

... I find it difficult to stay away from checking my phone or mobile device.

... I feel like I use my phone or other mobile device too much.

... there are times that I could play with or interact with my child, but I am on my phone or mobile device instead.

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6

Table 1

Correlations between demographic variables

	1	2	3	4	5	6	7	8	9	10	11
1. Child Age	1										
2. Child Gender	.066	1									
3. Marital Status	.178	-.049	1								
4. Mother Race	.203	-.192	.217*	1							
5. Child Race	.113	-.078	.184	.880**	1						
6. SES	.123	.162	.332**	-.043	-.043	1					
7. Employment Status	-.072	.038	-.123	-.091	-.091	-.131	1				
8. People in Home	-.243*	-.082	-.406**	-.044	-.044	-.181	-.030	1			
9. School Aged in Home	-.050	.024	-.224*	-.074	-.074	-.206	-.108	-.043	1		
10. Bio Father current partner	-.067	.224*	.217	-.296**	-.293**	-.293**	.198	.107	-.124	1	
11. Primary Caregivers	-.072	.058	-.460**	0.92	.145	.145	-.045	.092	.178	.083	1

Note: * *p* < .05. ** *p* < .01.

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Table 2

Correlations between demographics and study variables.

	ESL	ECR	DISR-UPT	MIA	SS_PR	PB_PR	Int_PR	Ext_PR	Secu-rity	SS_CR	PB_CR	Int_CR	Ext_CR
Child Age	0.08	-.26*	-0.11	-0.10	0.15	-0.16	-0.10	-0.21	.38**	-0.04	-.25*	-.22*	-0.20
Child Gender	0.11	-.23*	-0.13	-0.04	.33**	-.31**	-.22*	-.29**	0.14	0.00	-0.16	-0.14	-0.18
Parent Gender	0.01	-0.05	0.00	-0.08	0.16	-.26*	-.25*	-0.19	0.04	0.08	-0.17	-.24*	-0.15
Marital Status	-0.20	0.18	0.11	-0.12	-0.11	0.05	0.07	0.04	-0.05	-0.02	-0.03	-0.02	-0.03
Parent Race	0.01	-0.00	0.15	0.03	-0.00	0.04	0.03	0.02	0.09	0.16	-0.15	-0.19	-0.09
Child Race	0.04	-0.03	0.08	-0.01	0.00	0.02	0.06	-0.02	0.09	0.05	-0.16	-0.20	-0.09
SES	-0.21	-0.09	-0.02	0.03	-0.10	0.07	0.15	0.08	-0.03	-0.20	0.06	0.08	0.02
Employment	-.29**	0.10	-0.00	0.11	-0.18	0.14	0.15	0.17	0.10	0.17	0.09	0.06	0.07
People: Home	-0.04	-0.03	0.05	.26*	-0.14	0.10	0.05	0.21	-.23*	0.00	-0.02	-0.01	-0.01
SchoolAged: Home	-0.08	-0.03	0.03	.22*	-0.08	-0.01	-0.07	0.10	-0.15	-0.02	-0.13	-0.07	-0.11
Biological Dad	-0.03	0.11	-0.04	0.00	0.01	0.01	-0.01	0.01	0.00	0.01	0.00	-0.01	0.07
Primary Caregiver	0.09	-0.10	-0.07	0.19	-0.03	0.20	0.20	0.13	-0.02	0.12	0.04	0.09	0.03

Note: * $p < .05$. ** $p < .01$

Table 3

Correlations among study variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. ESL	1												
2. ECR	-.62**	1											
3. DISRUPT	-.28*	.36**	1										
4. MIA	-.25*	0.15	0.20	1									
5. SS_PR	.39**	-.27*	-.28*	-.45**	1								
6. PB_PR	-.36**	.32**	.24*	.28*	-.73**	1							
7. Int_PR	-.45**	.36**	.25*	0.17	-.62**	.87**	1						
8. Ext_PR	-.34**	.29**	.25*	.31**	-.74**	.93**	.72**	1					
9. Security	.31**	-.29**	-.25*	-0.14	.25*	-.29**	-.32**	-.28*	1				
10. SS_CR	0.02	0.04	-0.08	-0.14	.28*	-.25*	-.26*	-0.18	.31**	1			
11. PB_CR	-0.11	0.20	.23*	0.07	-.39**	.56**	.40**	.50**	-.43**	-.42**	1		
12. Int_CR	-0.19	0.19	0.18	0.04	-.33**	.51**	.39**	.43**	-.38**	-.33**	.88**	1	
13. Ext_CR	0.01	0.14	0.20	0.06	-.41**	.53**	.33**	.51**	-.32**	-.45**	.84**	.57**	1

Note: * $p < .05$. ** $p < .01$

Table 4

Mother's ratings of technoference (IV) associated with Maternal Attachment Inventory (MAI) ratings (DV).

	B	SE B	β	t	p
DISRUPT	-1.23	.68	-.20	-1.8	.08

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 5

Mother's ratings of technoference (IV) associated with Security Scale (SS) ratings (DV).

	B	SE B	β	t	p
DISRUPT	-.08	.03	-.25	-2.32	.02

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 6

Mother's ratings of technoference (IV) associated with mother's Social Skill ratings on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	-.10	.04	-.28	-2.59	.01

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 7

Mother's ratings of technoference (IV) associated with children's Social Skill ratings on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	-.03	.04	-.08	-.75	.46

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 8

Mother's ratings of technoference (IV) associated with Emotional and Social Loneliness Scale (ESL) ratings (DV).

	B	SE B	β	t	p
DISRUPT	-.15	.06	-.28	-2.61	.01

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 9

Moderation of Security Scale on mother's ratings of technoference and child's ratings of social skills on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.10	.10	
DISRUPT	-.00	-.03			.98
Security Scale	.32	2.85			.01
Step II			.14	.03	.09
DISRUPT	1.85	1.70			.09
Security Scale	1.02	2.41			.02
DISRUPT X Security Scale	-1.82	-1.72			.09

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 10

Moderation of Security Scale on mother's ratings of technoference and mother's ratings of social skills on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	-.23	-2.08			.04
Security Scale	.20	1.81			.07
Step II			.12	.00	.64
DISRUPT	.28	.26			.80
Security Scale	.39	.92			.36
DISRUPT X Security Scale	-.50	-.47			.64

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 11

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and children's ratings of social skills on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.03	.03	
DISRUPT	-.06	-.49			.62
MAI	.14	1.19			.24
Step II			.05	.02	.19
DISRUPT	-2.18	-1.36			.18
MAI	-.38	-.94			.35
DISRUPT X MAI	2.08	1.33			.19

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 12

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and mother's ratings of social skills on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.25	.25	
DISRUPT	−.20	-1.96			.05
MAI	.42	4.13			.00
Step II			.26	.01	.34
DISRUPT	1.14	.81			.42
MAI	.75	2.09			.04
DISRUPT X MAI	-1.32	-.95			.34

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 13

Mother's ratings of technoference (IV) associated with mother's ratings problem behaviors on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.09	.04	.25	2.23	.03

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 14

Mother's ratings of technoference (IV) associated with children's ratings of problem behaviors on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.10	.05	.24	2.15	.03

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 15

Mother's ratings of technoference (IV) associated with mother's ratings of internalizing concerns on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.12	.05	.25	2.32	.02

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 16

Mother's ratings of technoference (IV) associated with children's ratings of internalizing concerns on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.11	.06	.19	1.68	.10

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 17

Mother's ratings of technoference (IV) associated with mother's ratings of externalizing concerns on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.11	.05	.26	2.35	.02

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 18

Mother's ratings of technoference (IV) associated with children's ratings of externalizing concerns on the SSIS (DV).

	B	SE B	β	t	p
DISRUPT	.10	.05	.21	1.87	.07

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 19

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and mother's ratings of problem behaviors on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	.20	1.80			.08
MAI	-.25	-2.24			.03
Step II			.15	.03	.09
DISRUPT	-2.38	-1.58			.12
MAI	-.87	-2.29			.03
DISRUPT X MAI	2.53	1.71			.09

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 20

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and children's ratings of problem behaviors on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.06	.06	
DISRUPT	.23	2.06			.04
MAI	-.02	-.21			.83
Step II			.06	.00	.59
DISRUPT	1.08	.68			.50
MAI	.18	.46			.65
DISRUPT X MAI	-.84	-.54			.59

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 21

Moderation of Security Scale on mother's ratings of technoference and mother's ratings of problem behaviors on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	.18	1.64			.11
Security Scale	-.25	-2.24			.03
Step II			.13	.01	.29
DISRUPT	-.97	-.89			.38
Security Scale	-.68	-1.61			.11
DISRUPT X Security Scale	1.13	1.06			.29

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 22

Moderation of Security Scale on mother's ratings of technoference and children's ratings of problem behaviors on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.20	.20	
DISRUPT	.14	1.30			.20
Security Scale	-.40	-3.76			.00
Step II			.20	.00	.86
DISRUPT	-.05	-.05			.96
Security Scale	-.47	-1.16			.25
DISRUPT X Security Scale	.19	.18			.86

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 23

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and mother's ratings of internalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.08	.08	
DISRUPT	.23	2.05			.04
MAI	-.03	-1.19			.24
Step II			.09	.01	.31
DISRUPT	-1.36	-.88			.38
MAI	-.52	-1.32			.19
DISRUPT X MAI	1.56	1.03			.31

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 24

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and children's ratings of internalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.04	.04	
DISRUPT	.19	1.62			.11
MAI	-.01	-.07			.95
Step II			.04	.00	.88
DISRUPT	.43	.2			.79
MAI	.05	.13			.90
DISRUPT X MAI	-.24	-.16			.88

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 25

Moderation of Security Scale on mother's ratings of technoference and mother's rating of internalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	.18	1.68			.10
Security Scale	-.28	-2.54			.01
Step II			.14	.01	.47
DISRUPT	-.61	-.56			.58
Security Scale	-.57	-1.37			.18
DISRUPT X Security Scale	.78	.73			.47

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 26

Moderation of Security Scale on mother's ratings of technoference and children's ratings of internalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.16	.16	
DISRUPT	.10	.88			.38
Security Scale	-.36	-3.34			.00
Step II			.16	.00	.61
DISRUPT	-.41	-.38			.71
Security Scale	-.55	-1.32			.19
DISRUPT X Security Scale	.49	.47			.64

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 27

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and mother's ratings of externalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.14	.14	
DISRUPT	.20	1.86			.07
MAI	-.28	-2.58			.01
Step II			.19	.05	.03
DISRUPT	-2.98	-2.03			.05
MAI	-1.05	-2.83			.01
DISRUPT X MAI	3.13	2.17			.03

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 28

Moderation of Maternal Attachment Inventory (MAI) on mother's ratings of technoference and children's ratings of externalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.04	.04	
DISRUPT	.20	1.79			.08
MAI	-0.2	-.17			.87
Step II			.04	.00	.79
DISRUPT	-.22	-.14			.89
MAI	-.12	-.30			.76
DISRUPT X MAI	.42	.27			.79

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 29

Moderation of Security Scale on mother's ratings of technoference and mother's ratings of externalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	.20	1.79			.08
Security Scale	-.23	-2.08			.04
Step II			.13	.01	.32
DISRUPT	-.88	-.81			.42
Security Scale	-.64	-1.51			.13
DISRUPT X Security Scale	1.06	1.00			.32

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.

Table 30

Moderation of Security Scale on mother's ratings of technoference and children's ratings of externalizing concerns on the SSIS.

	β	t	R^2	ΔR^2	p
Step I			.12	.12	
DISRUPT	.13	1.21			.23
Security Scale	-.29	-2.65			.01
Step II			.13	.01	.43
DISRUPT	-.74	-.67			.50
Security Scale	-.62	-1.47			.15
DISRUPT X Security Scale	.85	.80			.43

Note: DISRUPT = Distraction in Social Relations and Use of Parent Technology.