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Examining the Effects of Cell Phone Use on Caregiver Supervision and Child Injury Risk

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EXAMINING THE EFFECTS OF CELL PHONE USE ON CAREGIVER SUPERVISION AND CHILD INJURY RISK

by

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Unintentional injuries are the leading killer of children in the United States. Research indicates caregiver supervision decreases child injury risk, but has not examined how different distractions may affect this relation. Specifically, research has not considered if and how caregiver cell phone use affects child injury risk. Given the prevalence and distracting effects of cell phones noted in previous studies, it is imperative to examine how caregiver cell phone use and child injury risk relate.

The present study examined how distractions influenced caregivers' ability to tend to their child and their child's engagement in risky behavior. Using a within-subjects design, fifty-one caregivers participated with their young children (ages 1-5) in three conditions: no distraction, pen-and-paper, and electronic. Sessions occurred in a pseudo hazards room and were video recorded to observe caregiver (e.g., vigilance) and child behavior (e.g., engagement with hazards) related to injury risk.

Results indicate that caregiver vigilance was highest in the no distraction condition, lower in the electronic condition, and was lowest in the pen-and-paper condition. Child engagement with hazards was highest in the pen-and-paper condition, followed by the electronic condition, and was lowest in the no distraction condition. Regardless the form, distracting tasks impacted both caregiver and child behavior associated with injury risk. Future research should examine what makes an activity distracting (e.g., cognitive demand required of the task, form of the distraction). Given the ubiquity of cell phones, research should continue comparing the effects of caregiver phone use to other daily tasks in relation to child injury risk.

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Introduction

Unintentional injuries are the most frequent cause of child death in the United States (Borse, Gilchrist, Dellinger, Rudd, Ballesteros, & Sleet, 2009). While an estimated 12,175 children die annually from unintentional injuries, there are an additional 9.2 million emergency department visits by children who sustained nonfatal unintentional injuries (Borse et al., 2009). The financial burden of unintentional injuries is substantial. Lifetime costs (e.g., medical and work loss) for children between 0 and 19 who died from unintentional injuries in 2010 was estimated at 13 million USD; for those who were simply treated and released in the emergency department, the lifetime cost was an estimated 50 million dollars (Centers for Disease Control and Prevention (CDC), 2014). Importantly, young children appear to be at high risk for unintentional injuries: children zero to four years old comprised 22% of fatal injuries between 2000 and 2005, and 25% of youth who sustained nonfatal unintentional injuries between 2001 and 2006 (Borse et al., 2009).

Clearly, it is critical to work toward preventing unintentional injuries in young children. Effective prevention includes developing an understanding of risk and protective factors associated with unintentional injuries. Research has successfully identified some child-, caregiver-, and family-level risk factors associated with increased injury risk that are described in greater detail below. One variable that appears particularly important is effective supervision. However, it is not clear what factors affect caregivers' willingness or ability to effectively supervise their children. It is therefore imperative for researchers to examine such factors so that children's overall safety and well-being can be improved.

Injury Risk Factors

As noted, certain characteristics of children and their caregivers increase children's risk for sustaining injuries. At the child level, boys and those who engage in higher levels of activity are more likely than are girls and those who are less active to sustain injuries (Borse et al., 2009; Damashek & Corlis, 2017; Damashek & Kuhn, 2013; Morrongiello, Klemencic, & Corbett, 2008; Orton, Kendrick, West, & Tata, 2012). Injury risk is also higher for younger children rather than older children, with the exception of adolescents (Schwebel & Brezausek, 2008).

At the caregiver level, research has demonstrated an association between caregiver demographic factors such as young maternal age and lower education with higher child injury risk (Jaques, Weaver, Weaver, & Willoughby, 2018; Laursen & Nielsen, 2008; Orton et al., 2012). Caregiver's developmental knowledge and beliefs about injuries are also associated with risk: children are more likely to experience injuries when caregivers lack appropriate developmental knowledge and endorse beliefs that injuries are a normal childhood experience (e.g., Jaques et al., 2018; Simpson, Turnbull, Ardagh, & Richardson, 2009). Caregiver mental health factors such as maternal depression and adult substance use are also associated with higher child injury risk (Orton et al., 2012; Phelan, Khoury, Atherton, & Kahn, 2007). Interestingly, even minimal caregiver alcohol consumption can increase child injury risk, highlighting that contextual variables may play an important role in child safety (Damashek, Williams, Sher, and Peterson, 2009).

At the family-level, living in poverty has been demonstrated as a risk factor for child injury (Orton et al., 2012; Sing & Yu, 1996; Zolotor, Burchinal, Skinner, & Rosenthal, 2008). Also, children living in single-parent households, and those living in homes with higher numbers

of children, are more likely to sustain injuries than children in two-parent households or with fewer children in the home (Damashek & Corlis, 2017; Laursen & Nielsen, 2008).

Injury Protective Factors

Despite these risk factors, certain caregiver behaviors appear to protect against injury risk and decrease the amount of injuries children sustain. For example, research has demonstrated that safety-proofing the home (e.g., adding baby gates and carbon monoxide detectors) can reduce the risk of child injury (Phelan, Khoury, Xu, Liddy, Hournung, & Lanphear, 2011). Another caregiver behavior critical to reducing child injury risk is adequate caregiver supervision. Specifically, greater levels of maternal supervision are associated with decreased injury frequency (Damashek, Williams, Sher, & Peterson, 2009; Kuhn & Damashek, 2015; Morrongiello, Corbett, McCourt, & Johnston, 2006; Morrongiello, Walpole, & McArthur, 2009). Supervision is most often coded along several dimensions, including caregiver proximity to children, caregiver ability to see their children, and caregiver ability to hear their children (Damashek & Corlis, 2017; Morrongiello & House, 2004). Several recent studies support this conceptualization of supervision. For example, Damashek and Corlis (2017) used a case crossover design to examine whether proximal caregiver supervision predicted child injury risk in a low-income sample. They conducted weekly phone interviews with caregivers of young children between the ages of one and five. Their results indicated that after controlling for child's activity level, both caregiver proximity and visual supervision predicted lower injury risk. These results highlight the importance of caregivers actively supervising their young children, specifically by maintaining visual contact and remaining within arm's reach of children.

Another case-crossover study found similar results (Schnitzer, Dowd, Kruse, & Morrongiello, 2015). Schnitzer et al. (2015) recruited caregivers of children younger than five

who had sustained injuries requiring medical attention. Caregivers then completed interviews regarding details of the injury occurrence, caregiver behavior at the time of injury, and reports of caregiver behavior one hour before the injury. Schnitzer et al. (2015) found that children's injury risk was highest when they were out of caregiver eyesight and reach. In addition to increasing injury risk, lower levels of supervision also increased the odds for children sustaining more severe injuries. These studies indicate that caregivers' active supervision is critical to child safety.

Factors Related to Caregiver Supervision

Although caregiver supervision is implicated in the safety and well-being of children, caregivers may not always be able or willing to actively supervise their children. As identified above, many caregiver factors such as poverty, low education, low maternal age, caregiver depression and/or substance use, inappropriate developmental expectations, and acceptability of injury occurrence may all increase children's likelihood for sustaining injuries. Understanding how these factors affect supervision is a requisite step to improving caregiver supervision.

Most of the research examining factors that influence caregiver supervision behavior has focused on caregiver attitudes towards and beliefs about injury. For example, Lewis, DiLillo, and Peterson (2004) surveyed mothers and fathers of young children using the Injury Attitudes Questionnaire. The questionnaire assessed whether parents believed injuries were beneficial to children (Lewis et al., 2004). The results indicated that most parents agreed that minor injuries serve as valuable learning opportunities for children. Only a minority of parents agreed that injuries "toughen kids up," with fathers being more likely than mothers to support this belief. Importantly, caregiver beliefs about injury appear to relate to their levels of supervision. In a study examining injury attitudes and caregiver supervision, Morrongiello and House (2004)

found that caregivers who reported that they believed their behaviors did not influence child injury risk also demonstrated lower levels of supervision. Conversely, caregivers' scores on subscales measuring vigilance and confidence in their ability to keep their children safe were positively correlated with higher levels of supervision. Thus, it appears that caregiver personal beliefs may influence their own supervisory behaviors.

Caregiver beliefs about appropriate supervision seem to be influenced by child characteristics and injury-related factors. Using phone interviews, researchers explored caregivers' responses to questions about child safety (Morrongiello et al., 2009). Specifically, they asked caregivers the youngest age they would leave a child unsupervised, and how often they would check on a non-continuously supervised child. Both mothers and fathers reported believing that younger girls needed more supervision than older girls, and that both needed more supervision than boys. Parents reported believing that boys needed the same level of supervision regardless of their age. Regarding their own behavior, parents indicated they actively supervise younger children more often than older children. Importantly, parents did indicate they would check their child more regularly during hypothetical scenarios that depicted hazards compared to scenarios not depicting hazards. These results indicate that caregiver supervisory behavior may be influenced by factors related to the specific scenario. Indeed, additional research supports this notion. Morrongiello and Kiriakou (2004) interviewed mothers of children to assess their home safety practices. The results of their study indicated that mothers' supervision strategies varied depending on the potential injury type. For example, for falls, cuts, and burns, safety behaviors were predicted by child and parent characteristics (e.g., child is active or parent modified the environment, respectively). On the other hand, environmental factors (e.g., avoidance of an unsafe space that cannot be modified), in addition to child and parent behaviors, predicted safety

behavior for drowning. Beliefs about injury severity also significantly predicted increased safety practices for more serious injuries (e.g., burns, suffocation, drowning; Morrongiello & Kiriakou, 2004). These results provide further evidence that caregivers' behaviors are influenced by situational factors (i.e., injury category and perceived severity, which vary by context).

In addition to beliefs about injuries, caregivers' actual experiences with unintentional injuries may further influence their prevention strategies. Using a case-control design, Morrongiello, Howard, Rothman, and Sandomierski (2009) matched children with at least one medically attended injury in the past year ("case") to an age- and sex-matched "control" child who had no history of medically-attended injuries. Through two phone interviews, caregivers responded to fall-risk scenarios, reporting their beliefs about injury risk and prevention strategies. The results suggested that case parents were more likely to expect injuries to occur, and to rate injuries as being more severe, than the controls. Additionally, case parents were significantly more likely to attribute moderate to severe injury occurrence to parental factors, whereas control parents identified bad luck as the most common cause of injury. Case parents also identified more safety prevention strategies, including closer supervision, than did control parents. Clearly, having children who have sustained a medically attended injury is a salient experience that also relates to beliefs about supervision.

Barriers to Supervision

While understanding the relation between caregiver attributes and supervision is important, considering caregivers' own self-reports of identified barriers to effective supervision may further highlight possible areas for intervention. For example, researchers conducted interviews with caregivers of young children in Ontario to assess caregiver attitudes about injury prevention. The interviews focused specifically on caregivers' opinions about children's falls

(i.e., perception of preventability and barriers to actively preventing such injuries; Morrongiello & Corbett, 2016). Interestingly, caregivers often stated that constant supervision was an "unrealistic expectation" and that home safety devices (e.g., installing stair gates) were "not effective." If caregivers endorse such beliefs, it is reasonable to posit they are unlikely to use effective injury prevention strategies in these situations.

Another study indicated that parents identified environmental factors (e.g., parent is preoccupied in a different part of the house than the child) as barriers to supervision more than any other barrier (Morrongiello, Sandomierski, Zdzieborski, & McCollam, 2012). Limited time (e.g., needing to complete a task before a deadline) and child characteristics (e.g., independent child) were reported less frequently than environmental factors, but more often than parent characteristics (e.g., too tired to check on child after they leave the room). Although the extant literature examining possible barriers to supervision is sparse, these few studies highlight that caregivers perceive constant supervision as burdensome and as being influenced by a number of contextual variables. This implicates the need for further consideration of contextual factors in relation to child injury risk.

Indeed, research indicates that supervision and injury risk may be circumstantial. Using data from a larger case-crossover design (Peterson, DiLillo, Lewis, & Sher, 2002), Kuhn and Damashek (2015) explored whether changes in children's environments were associated with child injury risk and/or changes in maternal supervision. The results of their analysis indicated that child's risk for injury was higher when mothers reported the child's situation and behavior as being "unusual" (Kuhn & Damashek, 2015). Specifically, children's risk was highest when engaging in a new activity or utilizing a new method to engage in a familiar activity (Kuhn & Damashek, 2015). Moreover, higher levels of maternal supervision predicted lower injury risk,

particularly for children engaging in unusual behaviors. Clearly, child injury risk and caregiver supervision may also be influenced by proximal circumstantial factors. However, there may be times during which caregivers become distracted by environmental factors that impair their supervision. Using naturalistic observations of caregivers' and children interactions at a playground, Morrongiello and House (2004) found a negative correlation between their ratings of distraction and caregiver supervision (i.e., visual, auditory, and proximity): the more distracted caregivers appeared, the lower their supervision scores. Other researchers have similarly found that caregiver reports of consuming even small amounts of alcohol proximally predicts increased child injuries (Damashek et al., 2009). Such research indicates that proximal, situational variables may increase child injury risk.

Although the literature includes some studies about proximal variables that may affect supervision, there is a dearth of empirical studies examining what type of specific distractions affect supervision. However, such research is critical to better understanding barriers to caregivers providing close supervision of their children. One study did empirically examine caregivers' supervision of children ages two to five under different conditions (Boles & Roberts, 2008). Researchers created a contrived hazards room by placing a variety of pseudo hazards (e.g., knife with a dulled blade) in a university clinic room. All participants first spent time in a no-planned distraction condition, followed by a planned-distraction condition, and finished with a no-planned distraction condition. The specific situation of the planned-distraction condition was randomly determined for each participant. The four possible distraction conditions included: phone, TV, computer, or no-distraction. In the phone distraction setting, parents were asked to answer a cordless phone and answer questions about their child with the researcher. The TV distraction group watched a VCR recording of a typical TV program. In the computer distraction

group, caregivers were instructed to watch a presentation regarding child patience. The results of the study revealed that close visual attention was lower in the computer distraction group than in any other group. During the phone condition, parents were furthest from their children than in any other condition. During all distraction phases, parents engaged less with their children than they did during the no distraction phases. Overall, those in the phone distraction group showed the lowest levels of engagement. While this study nicely demonstrates how everyday activities might differentially influence supervision, it has several important limitations. First, the number of participants in each group was relatively low, with only ten parent-child dyads in each group. Additionally, and of considerable importance, the study did not include one of the most recent advancements in technology that may distract caregivers: the use of a cell phone.

Caregiver Use of Cell Phones

Cell phones have quickly become a universal feature of most American's lives. According to the Pew Research Center, 95% of Americans own a cell phone (Pew Research Center, 2017). Of particular importance, caregivers are more likely than non-caregivers to own cell phones (Lenhart, 2010). There appear to be few differences between gender, race, income level, and education level with regard to who is likely to own a phone (Pew Research Center, 2017). Although younger adults are more likely to own cell phones than are older adults, research suggests that still 80% of those 65 and older own cell phones (Pew Research Center, 2017). Amazingly, most cell phone owners choose to have smart phones: in 2017, 77% of users have smart phones, which represents a 220% increase from 2011 (Pew Research Center, 2017).

Although a phone's basic function is to make and receive calls, cell phones are now most frequently used to exchange text messages. While users still make voice calls, they also now have the option to use video calling when communicating with others. Additional activities such

as basic internet browsing and email are also very popular uses of cell phones (Pew Research Center, 2017). Young cell phone users in particular are likely to use their phones to stay connected through social media, watch videos, and listen to music. Cell phones have clearly become a mainstream feature in our culture. Given their ubiquity, understanding the potential impact of cell phones on caregiver supervision is imperative. Although recent studies have focused on the ways in which cell phones may impact parent-child relationships or caregiver monitoring of adolescents (e.g., Connell, Lauricella, & Wartella, 2015; Weisskirch, 2009), no studies, to our knowledge, have examined the ways in which cell phones may impact caregiver supervision of young children.

Cell Phone Use and Impaired Attention

Although research has not examined how cell phone use might affect caregiver supervision of children, general research supports that cell phone usage is associated with impaired attention. For example, an interesting experiment tested whether college students passing through a main plaza on a large state university noticed a research assistant dressed as a clown in brightly colored clothes riding a unicycle (Hyman, Boss, Wise, McKenzie, & Caggiano, 2010). Cell-phone users were significantly less likely to report having seen anything unusual. When asked directly, only 25% of cell phone users said they saw the clown; this was significantly fewer than those individuals not using their cell phones. Limitations of this study notwithstanding, these results suggest that being engrossed with a cell phone may produce impairments in attention. This impaired attention produced by cell phones may subsequently affect performance. For example, Froese et al. (2012) instructed participants to text during one presentation, and then abstain from cell phone use during other presentations. Their results revealed that students' quiz scores were lower when they texted during the presentation

compared to when they did not text. Further research suggests that even merely receiving a cell phone notification without engaging with the cell phone impairs performance on attention-demanding tasks (Stothart, Mitchum, & Yehnert, 2015). The evidence overwhelmingly suggests that cell phone usage is associated with impairments in attention and performance.

The association between cell phone usage and impaired attention raises concern for safety. If people use phones during times when attention is critical, it is possible they may miss hazards in the environment and increase their risk for injury. Indeed, through use of a virtual environment, researchers demonstrated that pedestrians using cell phones were more likely to engage in unsafe behaviors that increased their risk of getting hit by vehicles more often than non-distracted pedestrians (Stavrinos, Byington, & Schwebel, 2011). In fact, research has found that cell phone use leads to a level of impairment similar to that of alcohol intoxication (Strayer, Drew, & Crouch, 2006). Indeed, survey research suggests a correlation between self-reports of frequency of cell phone use and motor vehicle accidents or near-accidents (Seo & Torabi, 2004). Despite the research examining how cell phone use affects one's personal safety, research has yet to examine how cell phone use by caregivers might affect the safety of those in their care.

Given the aforementioned research, it is clear that cell phone usage impairs attention. Such impairments make individuals less likely to observe hazards in their environment and inhibits their ability to respond appropriately when hazards are present. The safety hazards associated with such impairment are concerning; it is particularly concerning to consider how such impairments may affect caregivers' effective supervision of young children. Caregiver supervision relies on acuity of senses (e.g., sight, proximity). It is plausible that these senses are weakened when caregivers' attention is diverted by cell phones. This decrease in acuity may be associated with increased risk for child injury. Furthermore, it is possible that children are more

likely to engage in risky behaviors when their parents are using their cell phones. To our knowledge, no research has examined the effect of caregiver cell phone use on caregivers' supervision of their young children. Research also has not examined whether caregiver cell phone use increases child engagement in risky behavior and subsequent injury risk. Given the high frequency at which individuals utilize cell phones, and the potential seriousness associated with child injuries, exploring whether there is a relationship between these variables is critical.

The Present Study

The present study used a within-subjects design to examine whether caregiver cell phone use impacted caregivers' vigilance and use of injury prevention strategies. We also examined whether caregiver cell phone use affected child injury risk. Specifically, we observed caregiver vigilance of their child across three situations, including: texting on a cell phone, completing forms, and no distraction. First, we hypothesized that caregivers would engage in lower levels of vigilance in the electronic (i.e., texting) condition than the other two conditions. Second, we hypothesized that caregivers would engage in the highest levels of vigilance in the no distraction condition. Third, we hypothesized that children would contact more hazards in the electronic condition than the other two conditions. Fourth, we hypothesized that children would contact hazards the least frequently in the no distraction condition. We hope this research will highlight the importance of understanding the effects of phone use on caregiver and child behavior, and ultimately informs efforts to improve child health and safety.

Method

Participants

Participants were 51 caregiver-child dyads. Participants were recruited through advertisements shared in the community and electronically on Facebook. The research team and

their colleagues shared the flyer electronically through public posts from their personal Facebook accounts, and also posted the flyer electronically in local parenting groups. Caregivers were eligible to participate if they were the primary caregiver of a child between 12 and 59 months old (one year to just under five years of age). Caregivers were ineligible if they were not fluent in English, were blind, or were deaf.

Most caregivers were female (90.2%). There was roughly an even number of male (47.1%) and female (51.0%) children. Most caregivers and children were white (82.4% of caregivers; 70.6% of children). About a quarter of children identified as biracial (23.5%). The average age of children in the study was two and a half ($M = 2.52$, $SD = 0.97$). The majority of caregivers reported being married or living with their partner (76.5%), had some college and/or completed college and/or graduate school (56.9%), and were employed full time (49.1%). More than half of participants reported a gross annual income of $50,000 or higher (58.8%), with only 10% of the sample earning less than $20,000 per year. Full demographics of the sample are reported in Table 1.

Procedures

To recruit participants, we posted flyers at local stores, businesses, daycares, preschools, and on Facebook (Appendix B). Staff from the Kalamazoo YWCA childcare center also provided flyers to clients. The flyer included a Google Voice phone number and a study email address for participants to contact for more information. Once the participant and researcher made contact, the graduate research assistant read a brief description of the study to participants; if they expressed further interest in participating, the research assistant and participant scheduled the session at a mutually agreed upon time (see Appendix C for script). The researcher provided

Table 1

Participant Characteristics

Caregiver gender	Male (*n* = 5); 9.8%	Female (*n* = 46); 90.2%
Caregiver race	Caucasian (*n* =42)	82.4%
	African-American (*n* = 4)	7.8%
	Other (*n* = 5)	9.9%
Child gender	Male (*n* = 24); 47.1%	Female (*n* =26); 51.0%
Child race	Caucasian (*n* = 36)	70.6%
	Biracial (*n* = 12)	23.5%
	African-American (*n* = 3)	5.9%
Child age	*M* = 2.52	*SD* = 0.97
Caregiver marital status	Married or living with partner (*n* = 39)	76.5%
	Single, never married (*n* = 8)	15.7%
Caregiver education level	0 – 11th grade (*n* = 6)	11.8%
	High school graduate (*n* = 16)	31.4%
	Some/completed college (*n* = 15)	29.4%
	Some/completed graduate school (*n* = 14)	27.5%
Caregiver employment status	Regular full-time (*n* = 25)	49.1%
	Homemaker (*n* = 16)	31.4%
	Part-time (*n* = 7)	13.7%
	Not employed (*n* = 3)	5.9%
Gross annual income	Less than $5,000 - $19,999 (*n* = 5)	9.9%
	$20,000 - $49,999 (*n* = 16)	31.5%
	$50,000 and higher (*n* = 30)	58.8%

directions and identified a meeting place. For families referred from the YWCA, sessions were conducted in a private room at the YWCA. Due to low referral rates, we only conducted three sessions at the YWCA. The remaining 48 sessions were conducted in the waiting area of the psychology department office suite at Western Michigan University. At both locations, the laboratory room was set up as a pseudo hazards room in a similar configuration. The room contained hazardous-looking objects that were modified such that they did not pose any real threat to the participant or the child. Pseudo hazards represented several injury hazard categories, including: sharps (i.e., stapler); choke hazards (i.e., pennies, staples); poisons (i.e., carpet cleaner); medications (i.e., Tylenol); and burn (i.e., lighter, outlet plugs, coffee pot). As aforementioned, all of these objects were modified such that they were not dangerous. For example, the Tylenol bottle contained candy rather than medication. The room also included one toy and office furniture.

At the YWCA, participants checked in with the program director upon arrival, who then informed the graduate research assistant of their arrival. For those who participated at the university, participants arrived at the university's guest parking lot, where the research assistant met the participant and paid for their parking. Then, participants were brought to a private office separate from the pseudo hazards room to review the informed consent. The consent form did not reveal the researchers' interest in technology, caregiver supervision, or child injury risk. Participants were informed that the primary interest of the study was in exploring the difficulty of tending to children. If participants consented to participate, they were then taken to the pseudo hazards room where they were instructed to do a variety of tasks.

Using a within-subjects design, three conditions were counterbalanced across participants. One condition was a pen-and-paper distraction: caregivers were asked to complete a

demographic form, cell phone use survey, and the Injury Behavior Checklist form. Another condition was the cell phone distraction condition. In this condition, caregivers were told that the researchers were interested in a new method of data collection that incorporates technology into research. Participants were given the option to use a prepaid smart phone or their own personal cell phone to communicate with the interviewer, who was an undergraduate research assistant located in a separate room. Most participants chose to use their own phone (n = 36; 70.6%). The interviewer texted questions about the participant's relationship with their child, and the participant was instructed to respond via text message (Appendix D). URAs copied and pasted questions and responses from a saved document into the text message to reduce the latency text messages. The third condition was the no distraction condition. Participants were asked to sit in the pseudo hazards room so the researcher could finish preparing materials. For a full script of each condition, including a troubleshooting script, see Appendix E. Each condition lasted 7 minutes, for a total of 21 minutes. During this time, the behaviors of both the child and the caregiver were video recorded.

After the 21 minutes in the three conditions, the researcher entered the room again and debriefed the participant. The researcher explained the true purpose of the study and obtained a signature on the debriefing document. None of the participants withdrew consent after the debriefing. Then, the participant completed any remaining questionnaires from the pen-and-paper condition, as well as questionnaires about their child's injury history and caregiver beliefs about supervision and child injury risk. During this section of the study, childcare was provided by an undergraduate research assistant.

Upon completion, the participant received a $50 visa gift card. At the end of the session, participants were offered a short handout describing the importance of supervision and strategies to increase their own supervisory behaviors.

Measures

Demographics. Researchers used a Caregiver Demographic form to assess family composition, caregiver education level, caregiver employment, caregiver's partner's information, and gross annual income (Appendix F).

Child Injury Risk Behavior. The Injury Behavior Checklist (IBC; Speltz, Gonzales, Sulzbacher, & Quan, 1990) was used to assess child injury-relevant risk behavior. Caregivers responded to 24 questions on a 5-point Likert scale about the frequency of certain child behaviors over the last six months. Questions included a variety of items such as "running into the street," "standing on chairs," and "playing carelessly." The IBC has demonstrated strong reliability and convergent validity with other measures of injury risk, and also predicts injury likelihood (Speltz et al., 1989; Appendix F). The measure demonstrated good reliability in our analysis (alpha = 0.84).

Caregiver Behavior. Several measures were used to assess caregiver behavior, including cell phone related behaviors and supervisory behaviors (Appendix F).

Caregiver Cell Phone Use. We used a modified version of the Problematic Use of Mobile Phones (PUMP) scale (Merlo, Stone, & Bibbey, 2013) to assess frequency of caregiver cell phone use and impact of phone use (i.e., problems caused by phone usage). The first twelve questions of the measure assessed how often caregivers use their cell phones on an average day during various activities with their child (e.g., "during child's bath time", "when the child is playing alone", "while you're driving with your child") on a Likert scale of 0 (not at all, or

rarely) to 4 (>30 minutes at a time). These questions demonstrated strong reliability to form a Cell Phone Use composite (alpha = 0.86). The next ten questions asked caregivers to indicate how strongly they agreed or disagreed on a Likert scale of 0 (strongly disagree) to 5 (strongly agree) with beliefs about the impact of their cell phone usage. Sample questions included, "I think I might be spending too much time using my cell phone" and "My child has been injured when I have been on my cell phone." These ten questions had poor reliability together (alpha = 0.09); however, after removing one question about whether caregivers use their phone while at work, reliability of the Cell Phone Impact scale was high (alpha = 0.83).

Caregiver Supervisory Behaviors and Beliefs. To assess caregiver supervisory behaviors and beliefs about child injury prevention, caregivers completed the Parent Supervision Attributes Profile Questionnaire (PSAPQ; Morrongiello & House, 2004). The PSAPQ includes 29 questions about caregiver supervisory behaviors and beliefs (e.g., "I let him/her learn from his/her own mishaps" and "When my child gets injured it is due to bad luck"). The questions assess four domains, including caregiver protectiveness, beliefs regarding supervision, risk tolerance, and belief about the role of fate in child injury. Research indicates that there is strong construct validity for this measure (Morrongiello & Corbett, 2006). In our study, reliability of caregiver protectiveness was low (alpha = 0.42), fate was adequate (alpha = 0.67), supervision was good (alpha = 0.75), and risk tolerance was high (alpha = 0.82).

Injury assessment. The Injury History Questionnaire (Morrongiello, Ondejko, & Littlejohn, 2004) was used to measure retrospective accounts of child-sustained unintentional injuries. Caregivers reported on the number of minor and medically attended injuries the child sustained in the 6 months prior to the study and since birth (Appendix F).

Child and Caregiver Behavior. Videos were collected during the experiment for each participant to later be coded by undergraduate research assistants (URAs). URAs were first trained to reliability (alpha = 0.80) before being randomly assigned independent videos to code. URAs coded both caregiver and child behavior in the pseudo hazards room. Video coding sheets are presented in Appendix G, and operational definitions and details for coding decisions are explained in Appendix H. The coding scheme was adapted from Peterson, DiLillo, Lewis, and Sher (2002).

Caregiver Behavior. Caregiver supervision during sessions was coded on multiple domains. Caregivers received an overall vigilance rating for each condition, indicating how well they attended to their child, ranging from 1 (no attention) to 5 (highly attentive). Additionally, URAs coded the amount of time (in seconds) caregivers' eyes were on the screen of their phone, on pen-and-paper forms, or on their child. URAs also recorded times in which they were unable to code (i.e., the caregivers walked behind the camera). Finally, for every instance a child engaged with a hazard, more detailed information about the caregiver phone use, form use, and response to the child's hazard engagement was coded. URAs provided a rating for the extent of caregiver phone use and form use if applicable (0 = none to 2 = caregiver did not notice child engage hazard because of phone/form use). URAs also coded the caregiver's response to their child's hazard engagement (0 = no response; 1 = removed hazard; 2 = removed child; 3 = verbally reprimanded child; 4 = encouraged engagement with hazard; 5 = ineffective removal of hazard), and also indicated whether the response was proactive or reactive. Responses were coded as proactive if caregivers removed a hazard prior to a child showing any engagement with the hazard. Responses that occurred after a child engaged with a hazard were coded as reactive.

Child Behavior. Child behavior during sessions was coded on several domains. Children received an overall rating of their activity level during each condition, ranging from 1 (not active) to 5 (highly active). Additionally, URAs counted how many hazards children engaged with in each condition. For every instance a child engaged with a hazard, more detailed information about the hazard and type of engagement was coded. URAs coded with what hazard the child engaged (p = pennies; b = box of staples; s = stapler; c = cleaner; t = Tylenol; m = matches; o = outlet plug; cp = coffee pot). URAs also coded how the child engaged with the hazard (v = vocalization; r = reach; t = touch). Appendix H provides operational definitions the URAs used to determine which code to use for hazard engagement.

Reliability. To ensure reliability of video coding, URAs first received didactic training, and then coded participant videos with the graduate research assistant (GRA). During training, the GRA reviewed the coding sheet and operational definitions of target behaviors with URAs. The GRA also provided examples and non-examples, and answered questions from the URAs. The coders watched and coded five participant videos simultaneously with the GRA. URAs used coding sheets, a list of operational definitions, and the coding instructions during coding. The URAs then rated 15 conditions independently, and reliability was calculated on the primary outcomes. The URAs demonstrated high reliability (alpha > .80) on all primary outcomes (see Table 2 for all reliabilities).

Data Analysis Plan

We first examined the descriptive data for our primary outcome variables. Although there was some skew present in our outcome variables, it did not appear to be caused by one or two outliers. Rather, it appears that a sub-group of our sample responded differently than the other participants. Because ANOVA is robust to departures from normality, and the variances of all of

our outcome variables were similar (i.e., not more than five times the size of each other; per Huitema 2019, p.c.), we proceeded with our proposed analysis.

Table 2

Reliability of URAs on Video Coding Outcomes

Outcome	Alpha
Total proactive responses	.94
Caregiver vigilance	.95
Total hazards	.99
Child activity level	.95
Eyes on screen	.99
Eyes on form	1.00
Unable to code	.93
Total penny engagements	.94
Total box of staples engagements	.65
Total stapler engagements	.90
Total cleaner engagements	.96
Total tylenol engagements	.97
Total matches engagements	.99
Total outlet engagements	.89
Total coffee pot engagements	.98

After examining descriptive statistics, we examined bivariate relations between demographic variables, self-report scores on caregiver surveys of caregiver and child behavior (e.g., PSAPQ), and video coding scores (e.g., caregiver vigilance, total hazards engaged). Finally, we conducted repeated measures ANOVAs to examine whether there were differences between caregiver vigilance, caregiver proactive responses, child activity level, rate of caregiver

responding, and total hazards engaged across the three conditions (no distraction, electronic distraction, and pen-and-paper distraction). We did not control for between subject differences in our ANOVA analyses because we used a within-subjects design; therefore, any differences between groups would not be due to between-subjects factors.

Results

Descriptive Statistics

IBC. Reports on the Injury Behavior Checklist indicated overall low child activity levels (M = 24.92, SD = 10.82; possible range = 0-120).

IHQ. Because the number of injuries reported on the injury history questionnaire were positively skewed, medians are reported below. Most families reported their child sustained a small number of minor injuries in the six months prior to the study (Mdn = 4; range 0 -180), with a higher estimate of more minor injuries since birth (Mdn = 10; range 0 – 365). Caregivers reported few minor injuries that required home treatment in the last six months and since birth (Mdn = 1; range 0-15; Mdn = 2; range 0-30, respectively). The median number of injuries requiring a doctor's attention was zero in both the six months prior to the study (range 0-1) and since birth (range 0-4). Only five families indicated their child had ever been hospitalized due to an injury; each of these families reported only one hospitalization for the target child. Sums of different injury types in the last six months are presented in Table 3.

PSAPQ. Reports on the PSAPQ indicated most caregivers scored high on levels of supervision (M = 31.84, SD = 5.14; possible range 9-45) and protectiveness (M = 28.82, SD = 3.75; possible range 9-45), but also high on levels of risk tolerance (M = 28.04, SD = 5.02; possible range 8-40). Most caregivers scored lower on the fate domain, indicating caregivers did

not often endorse believing that fate is responsible for their child's injuries ($M = 5.53$, $SD = 1.94$; possible range 3-15).

Cell Phone Use and Impact. All of the participants in the sample reported owning smart phones (100%). Caregivers rated how much time on a typical day they spend on their cell phones

Table 3

Frequency of Child Injuries in the Past 6 Months as Reported on the IHQ

	Sum of Injuries Across Participants
Motor vehicle accident	0
Pedestrian injuries	0
Water-related injuries	3
Burns from food or liquid	6
Fire or chemical burns	0
Hot object burns	7
Falls from heights	23
Falls from moving objects	18
Cuts	315
Crushing injuries	27
Electrical injuries	2
Food poisoning	0
Chemical or drug poisoning	0
Plant poisoning	0
Choking or suffocation	5
Mouth, teeth, or tongue injuries	18
Sports-related injuries	8

during various activities with their children on a 0 (none at all) to 4 (more than 30 minutes at a time) scale. Overall reports of Cell Phone Use were low (M = 13.45, SD = 5.61; possible range 0 - 48). Most caregivers reported minimal cell phone use during child's bath time (Mode = 0), bed time (Mode = 0), meal time (Mode = 1), and when doing activities outside the home (Mode = 1). Most caregivers reported moderate phone usage during times children were playing with other adults or other siblings (Mode = 2). Most caregivers reported high levels of phone usage during their child's naptime (Mode = 4). Frequencies of cell phone use across these various activities can be seen in Table 4. Regarding the Cell Phone Impact scale, participants scored moderately high, indicating caregivers believe their cell phone use causes moderate problems in their lives (M = 24.52, SD = 6.41, possible range = 0-36).

Table 4

Frequency of Reported Phone Usage During Activities with Children

Activity Type	0	1	2	3	4
Bath time	51% (n = 0)	35.3% (n = 18)	13.7% (n = 7)	0	0
Bed time	58.8% (n = 30)	25.5% (n = 13)	7.8% (n = 4)	2% (n = 1)	5.9% (n = 3)
Mealtime	39.2% (n = 20)	45.1% (n = 23)	13.7% (n = 7)	0	2% (n = 1)
Naptime	2% (n = 1)	9.8% (n = 5)	21.6% (n = 11)	19.6% (n = 10)	45.1% (n = 23)
Family time at home	11.8% (n = 6)	37.3% (n = 19)	35.3% (n = 18)	5.9% (n = 3)	7.8% (n = 4)
Activities out of home	11.8% (n = 6)	60.8% (n = 31)	21.6% (n = 11)	3.9% (n = 2)	2% (n = 1)
Child playing alone	7.8% (n = 4)	29.4% (n = 15)	47.1% (n = 24)	11.8% (n = 6)	3.9% (n = 2)
Child playing with siblings	11.8% (n = 6)	17.6% (n = 9)	31.4% (n = 16)	3.9% (n = 2)	3.9% (n = 2)
Child playing with another adult	11.8% (n = 6)	29.4% (n = 15)	39.2% (n = 20)	15.7% (n = 8)	3.9% (n = 2)
While you're driving	72.5% (n = 37)	27.5% (n = 14)			
While taking public transportation	29.4% (n = 15)	21.6% (n = 11)	11.8% (n = 6)	3.9% (n = 2)	2% (n = 1)

Note. 0 = none at all, rarely. 1 = a couple minutes at a time. 2 = 10-20 minutes at a time. 3 = 20-30 minutes at a time. 4 = > 30 minutes at a time.

Video coding of child behavior. Video coding of child behavior in the room indicated that most children had moderate levels of activity in all 3 conditions ($M_{\text{no distraction}} = 2.37$, $SD = 1.32$; $M_{\text{electronic}} = 2.68$, $SD = 1.21$; $M_{\text{pen-and-paper}} = 2.72$, $SD = 1.37$). The modal number of times children contacted a hazard in each condition was zero; out of the entire sample, only nine children contacted zero planned pseudo hazards in any condition. The most times a child engaged with planned pseudo hazards within one condition was twelve. When considering the sum of engagements across children and across pseudo hazards, children engaged pseudo hazards more frequently in the pen-and-paper condition (sum across participants = 108), followed by the electronic condition (sum across participants = 92). The no distraction condition had the fewest hazards engaged (sum across participants = 78).

Due to high levels of elopement and "other" hazard engagement (e.g., climbing on furniture, playing with caregivers' lip balm caps), we coded instances of elopement (no distraction count across participants = 49; electronic count across participants = 75; pen-and-paper count across participants = 90) and "other" hazard engagement as well (no distraction count across participants = 9; electronic count across participants = 24; pen-and-paper count across participants = 21). To determine whether an item or behavior should be coded as "other hazard" or "elopement," URAs and GRAs collaborated to determine if the item or behavior could be classified into an injury category (e.g., choke hazard), and if it would be likely to result in injury or pain that would last more than an hour, a common definition of "injury" in the literature (e.g., Damashek & Corlis, 2017). RAs maintained a shared document indicating how they coded examples of "other" and "elopement" hazard engagements to enhance reliability. The most times a child engaged with any hazard when considering pseudo hazards with "other" and "elopement" hazards within one condition was seventeen.

The most frequently contacted hazard across conditions and children was the coffee pot (no distraction count across participants = 35; electronic count across participants= 30; pen-and-paper count across participants = 29), followed by the pennies (no distraction count across participants = 16; electronic count across participants= 15; pen-and-paper count across participants= 13). However, the jar of pennies was removed from sessions about a fifth of the way through the study due to an unexpected incident. Children engaged with the outlet the least frequently (no distraction count across participants = 1; electronic count across participants = 0; pen-and-paper count across participants = 3).

Video coding revealed that touch was the most common form of hazard engagement (rather than reaching or making vocalizations about hazards). For sums of all types of engagement across participants, see Figures 1 (pseudo hazards only) and 2 (all hazards).

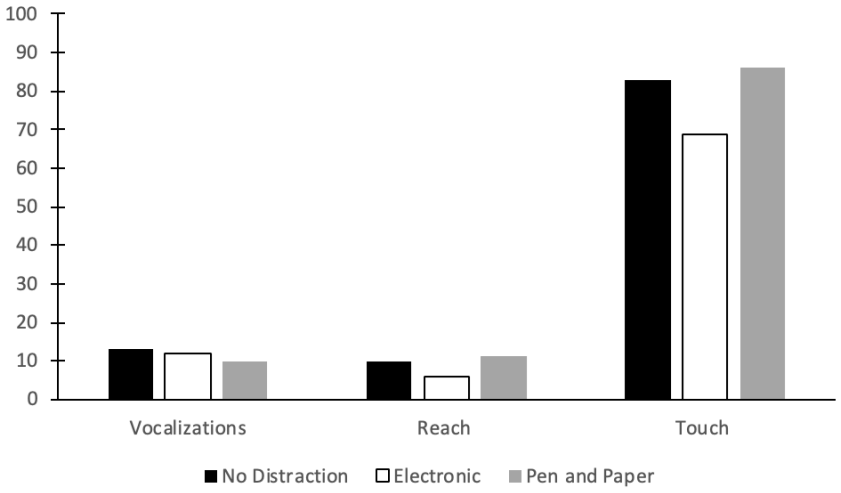

Figure 1. Sum of child hazard engagements by type across conditions and across participants, pseudo hazards only.

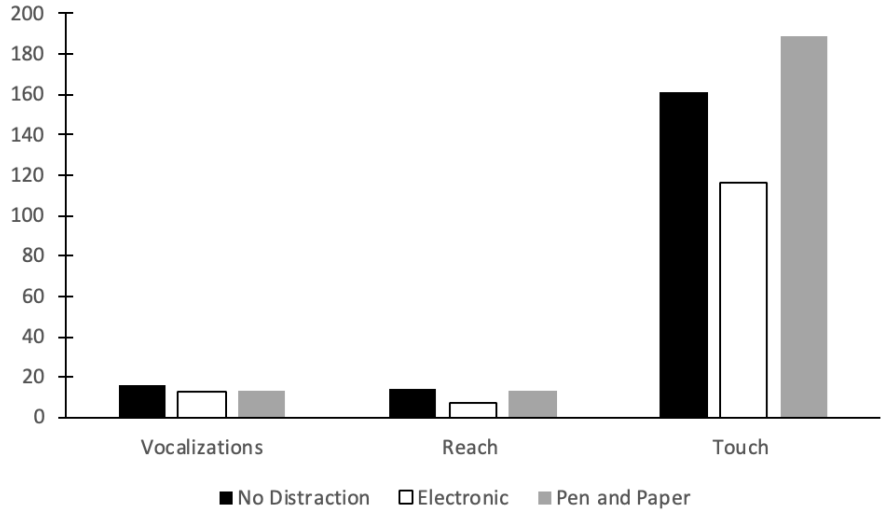

Figure 2. Sum of child hazard engagements by type across conditions and across participants, all hazards.

Video coding of caregiver behavior. With regard to caregiver behavior in the pseudo hazards room, caregivers spent the most time looking at their children during the no distraction condition ($M_{\text{second s}}$= 272.41, SD = 85.72), followed by the electronic condition (M_{seconds} = 143.15, SD = 49.76), and least during the pen-and-paper condition (M_{seconds} = 77.33, SD = 37.57), F (2, 100) = 153.60, $p < 0.001$. Caregivers spent more time looking at their forms during the pen-and-paper condition (M_{seconds} = 269.18, SD = 71.78) than they spent looking at their phones during the electronic condition (M_{seconds} = 143.15, SD = 49.76), t (50) = 8.63, $p < 0.0001$.

With regard to time looking at phones, caregivers spent more time looking at their phones during the electronic condition (M_{seconds} = 179.41, SD = 9.94) than during either of the other two conditions, F (1.26, 63.10) = 214, $p < 0.001$. The time spent looking at phones in the no distraction (M_{seconds} = 15.68, SD = 36.35) and pen-and-paper (M_{seconds} = 6.22, SD = 16.31) conditions were not significantly different. On average, there were about thirty seconds in each condition that URAs were unable to code.

Coding of caregiver phone and form use indicated that caregiver behavior was coded as "0" (indicating the caregiver was not distracted by an activity prior to child hazard engagement) most often in the pen-and-paper condition (sum across participants = 407), then the no distraction condition (sum across participants = 397), and much less frequently in the electronic and pen-and-paper conditions (sum across participants, electronic condition = 271). Caregivers had more codes of "1" in the pen-and-paper condition (sum across participants = 131) than the electronic condition (sum across participants = 85). There were few "1"s in the no distraction condition (sum across participants = 6). Caregivers had more codes of "2" (i.e., caregiver did not notice child engage hazard due to distraction) in the pen-and-paper condition (sum across

participants = 46) than the electronic condition (sum across paticipants = 31). There were no codes of "2" in the no distraction condition.

Most caregivers had high vigilance scores in the no distraction condition ($M = 4.76$, $SD = 0.47$), moderate vigilance scores in the electronic condition ($M = 3.41$, $SD = 1.00$), and the lowest vigilance scores in the pen-and-paper condition ($M = 2.71$, $SD = 0.92$). The number of caregiver proactive responses was fairly low in the electronic ($M = 0.80$, $SD = 1.56$) and no distraction ($M = 0.68$, $SD = 1.63$) conditions, and was lowest in the pen-and-paper condition ($M = 0.22$, $SD = 0.61$).

Caregiver rate of responding to child hazard engagement. To understand how often caregivers responded after their child engaged with a hazard, we calculated a caregiver rate of responding. We calculated this rate by examining how many times caregivers provided any response (whether or not it was effective) out of the number of times the child engaged with hazards. Therefore, this score reflects a ratio of caregiver responses compared to child engagement with hazards. Coding of caregiver behavior in response to a child engaging with a hazard indicated that caregivers typically provided some kind of response to the child, rather than not responding at all. The most common caregiver response to hazard engagement across conditions, regardless of whether only pseudo hazards or all hazards were considered, was to verbally reprimand the child. Sums of caregiver responses by condition are in Figures 3 (pseudo hazards) and 4 (all hazards).

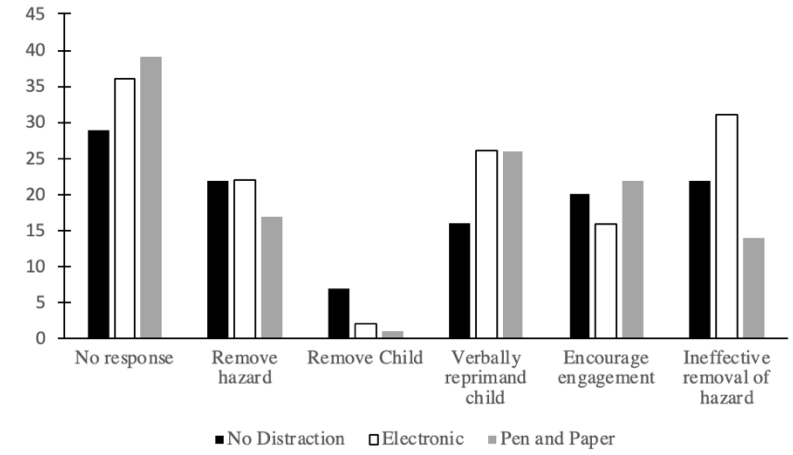

Figure 3. Sum of caregiver responses by type across conditions and across participants, pseudo hazards only

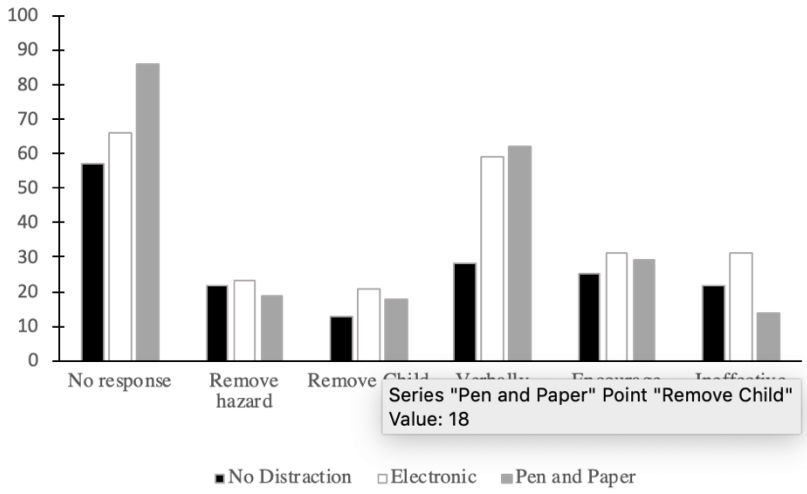

Figure 4. Sum of caregiver response by type across conditions and across participants, all hazards.

Pseudo hazards. Considering rate of caregiver responding for pseudo hazards only, rate of responding was moderate for the no distraction condition ($M = 0.65$, $SD = 0.35$) and the electronic condition ($M = 0.68$, $SD = 0.39$). Caregiver rate of responding was lower for the pen-and-paper condition ($M = 0.57$, $SD = 0.38$).

All hazards. Caregiver rate of responding to all hazards followed a similar pattern to caregiver rate of responding with pseudo hazards, though rates were slightly higher when all hazard engagement was considered. Caregiver rate of responding was moderate for the no distraction condition ($M = 0.64$, $SD = 0.39$) and the electronic condition ($M = 0.70$, $SD = 0.30$). Caregiver rate of responding was lower for the pen-and-paper condition ($M = 0.59$, $SD = 0.34$).

Bivariate Associations

We report a collection of bivariate associations below. First, we consider how our sample demographics relate to scores on self-reports of child and caregiver behavior (i.e., child injury history, IBC, PSAPQ, and caregiver cell phone use and impact) and to our video coding outcomes (i.e., caregiver vigilance, caregiver proactive responses, child activity level, total hazards engaged, and caregiver rate of responding). Then, we examine the relations among caregiver scores on self-reports of child and caregiver behavior (e.g., how child injury history relates to scores on the IBC) and video coded outcomes (e.g., how scores on the IBC relate to child activity level). Then we consider relations among caregiver video coded behavior and child video coded behavior (e.g., how caregiver vigilance relates to total hazards engaged). When considering child engagement with hazards and rate of caregiver responding, results are reported first for planned pseudo hazards, then for all hazards.

Bivariate associations between demographic variables and caregiver report measures and video coding outcomes. We first examined how demographic variables related to

caregiver self-report scores of child and caregiver behavior. Then, we examined the relation between demographic variables and video coding outcomes.

Demographic variables and scores on self-reports of child and caregiver behavior. Few demographic variables shared bivariate relations with scores on the caregiver reports of caregiver and child behavior. Being a male caregiver was associated with higher scores on the cell phone impact survey. Being a white caregiver was moderately, positively associated with higher injury behavior checklist scores and with higher risk tolerance scores on the PSAPQ. Female child gender was associated with lower scores on caregiver cell phone use. Child age was moderately, negatively associated with caregiver supervision on the PSAPQ and with caregiver reports of cell phone impact. Relations between all demographic variables and self-reports of child and caregiver behavior can be seen in Table 5.

Demographic variables and video coding outcomes. Caregiver gender (i.e., being female) was associated with lower rates of responding in the electronic condition when all hazards were considered. Caregiver race (i.e., being white) was moderately, positively correlated with child activity level in the electronic condition and pen-and-paper condition. Caregiver education shared a small, negative correlation with hazards engaged in the electronic condition for pseudo hazards only. Caregiver education shared a strong, negative correlation with hazards engaged in the pen-and-paper condition for both pseudo hazards and all hazards.

Being a female child was associated with lower rates of caregiver responding in the electronic condition when all hazards were considered. Child race (being white) was positively correlated with caregiver vigilance in the electronic condition. Being a white child was also associated with higher rates of caregiver responding in the no distraction condition when all hazards were considered. Child age was negatively associated with child activity level in the no

Table 5

Correlations between Demographic Variables and Reports of Parent and Child Behaviors

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. P gender	.214	.193	.221	-.507**	-.307*	.374**	.055	.110	-.084	-.071	-.193	-.049	-.024	-.115	.332*	-.220
2. C gender		.071	-.064	-.084	-.109	.114	-.231	.130	-.261	-.178	.100	.060	.149	.011	.190	-.306*
3. P race			.717**	-.127	-.316*	.027	.091	.126	.009	.308*	-.244	-.257	.335*	.020	.202	.197
4. C race				-.029	-.263	.038	.218	.186	.102	.006	-.193	-.274	.195	-.158	.232	.088
5. C age					.048	.036	-.087	.117	.118	-.102	-.065	-.322*	.241	.247	-.342*	-.086
6. #Children						-.201	.039	-.200	-.201	-.026	.019	.036	-.145	-.005	-.117	-.184
7. Parent ed							.272	.036	.162	-.038	-.120	-.257	-.038	-.006	.076	-.039
8. Income								.085	.051	.129	.060	.123	-.027	-.275	-.046	-.168
9. #MinInj									-.061	-.057	.045	-.088	.117	-.026	-.086	.015
10. #DocInj										.128	.017	-.264	-.015	.311*	.018	.009
11. IBC											-.287*	-.215	.335*	.412**	.327*	.175
12. Protect												.665*	-.140	-.196	-.234	-.284*
13. Super													-.296*	-.172	-.252	-.314*
14. Risk														.283*	.266	.391**
15. Fate															.112	.315*
16. CPI																.704***

Note. P = parent. C = child. #Children = number of children living in the home. Parent ed = parent eduation level. #MinInj = number of minor injuries in the past 6 months. #DocInj = number of injuries requiring a doctor's visit in the past 6 months. IBC = injury behavior checklist. Protect = Protectiveness subscale on the PSAPQ. Super = Supervision subscale on the PSAPQ. Risk = Risk tolerance subscale on the PSAPQ. CPI = Cell Phone Impact. 17 = Cell Phone Use
* $p < .05$. ** $p < .001$. *** $p < .0001$.

distraction condition and pen-and-paper condition. Child age shared a moderate, negative correlation with hazards engaged in the pen-and-paper condition when considering both pseudo hazards and all hazards; this relation was also observed, though weaker, when considering all hazards in the no distraction condition.

Family-level factors shared few relations with video coding outcomes. The number of children in the home shared a small, negative correlation with vigilance scores in the electronic condition. Household income shared a moderate, positive relation with rate of responding when considering all hazards in the no distraction condition only.

Bivariate associations among caregiver self-report scores on reports of child and caregiver behavior. We next examined whether any of the caregiver self-report measures, including the IHQ, IBC, PSAPQ, cell phone impact, and cell phone use shared any bivariate relations with each other.

IHQ. Number of childhood injuries requiring visits to the doctor in the past six months was positively associated with higher scores on the fate subscale of the PSAPQ.

IBC. Scores on the IBC shared a small, negative association with scores on protectiveness on the PSAPQ. IBC scores positively correlated with risk tolerance and fate on the PSAPQ. IBC scores also correlated moderately and positively with caregiver reports of cell phone impact.

PSAPQ. Protectiveness and supervision on the PSAPQ were strongly, positively correlated. Supervision and risk tolerance on the PSAPQ shared a moderate, negative relation with each other. Risk tolerance and fate on the were moderately, positively correlated. Risk tolerance and fate were correlated moderately and positively with cell phone usage, while supervision and protectiveness were correlated moderately and negatively with cell phone usage.

Cell phone impact. Cell phone impact correlated positively and strongly with cell phone use.

Bivariate associations among video coding outcomes. We next examined whether our video coding outcomes shared any significant relations with each other. We examined relations between vigilance, caregiver proactive responses, child activity level, caregiver rate of responding, and hazard engagement. Because caregiver rate of responding and child hazard engagement differed between pseudo hazards and all hazards, results for both are reported below. Relations among video coding outcomes are reported in Table 6 for pseudo hazards only and in Table 7 for all hazards.

Vigilance. Vigilance scores across conditions were correlated moderately and positively with each other. Vigilance scores in the no distraction condition were moderately, negatively correlated with child activity level in the no distraction condition.

Pseudo hazards. When considering only pseudo hazards, vigilance scores did not relate to other video coding outcomes.

All hazards. When considering all hazards, vigilance shared moderate, negative relations with total hazards engaged in the no distraction condition only. Moderate, positive relations were observed between vigilance and caregiver rate of responding in the electronic condition.

Caregiver Proactive Responses. Proactive responses across conditions did not share any relation with each other. Proactive responses did not relate to other video coding outcomes within each condition for pseudo hazards or all hazards.

Child activity level. Child activity level scores across conditions were moderately and positively correlated with each other.

Table 6

Correlations between Video Coding Outcomes, Pseudo Hazards Only

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Vigilance N	.110	-.304*	-.268	-.070	.335*	.045	-.237	.122	.128	.342*	-.029	-.194	.064	.459*
2. Proactive N		.148	.134	.080	.154	.227	.061	-.177	-.003	.190	-.071	.050	-.203	.298
3. Activity N			.320*	.143	-.057	-0.090	.474**	.129	-.116	-.137	.022	.453**	-.038	.049
4. Hazards N				.086	-.151	-.058	.181	.048	-.118	-.273	-.057	.112	.017	-.076
5. Rate N					-.001	.203	-.075	.343	.495	-.228	-.217	-.270	-.294	.198
6. Vigilance E						.053	.109	-.016	.195	.371**	.081	.156	-.010	.235
7. Proact E							-.001	-.184	.100	-.041	-.164	-.175	-.348*	-.122
8. Activity E								.244	.130	-.013	.012	.454**	-.115	-.171
9. Hazards E									.019	-.026	.141	.192	.192	-.184
10. Rate E										.002	.034	-.140	-.075	.605**
11. Vigilance P											.221	.156	.260	.414*
12. Proact P												.144	.189	-.089
13. Activity P													.355*	-.108
14. Hazards P														-.266

Note. N = no distraction condition. E = electronic condition. P = pen-and-paper condition. Proactive = Number of proactive responses. Rate = Caregiver rate of responding. 15 = Ratio pen-and-paper condition.
* $p < .05$. ** $p < .001$. *** $p < .0001$.

Table 7

Correlations between Video Coding Outcomes, All Hazards

	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Vigilance N	.110	-.304*	-.394**	.049	.335*	.045	-.237	.253	.131	.342*	-.029	-.194	-.160	.170
2. Proact N		.148	.158	.067	.154	.227	.061	-.044	.078	.190	-.071	.050	-.062	.344*
3. Activity N			.559**	-.053	-.057	-.090	.474**	-.052	-.067	-.137	.022	.453*	.279*	.078
4. Hazards N				-.184	-.165	-.011	.393**	-.028	-.263	-.224	.006	.378**	.339*	-.078
5. Rate N					.091	.177	-.033	.017	.403*	.016	.036	-.160	-.144	.458*
6. Vigilance E						.053	.109	.051	.356*	.371**	.081	.156	-.031	-.009
7. Proact E							-.001	-.132	.035	-.041	-.164	-.175	-.183	.114
8. Activity E								.392**	.133	-.013	.012	.454**	.196	-.197
9. Hazards E									.057	-.066	-.010	.126	.078	-.455**
10. Rate E										.351*	.119	.109	-.025	.364
11. Vigilance P											.221	.156	.077	.337*
12. Proact P												.144	.147	.214
13. Activity P													.692**	-.043
14. Hazards P														.808

Note. Ratio = Rate of responding.
* $p < .05$. ** $p < .001$. *** $p < .0001$.

Pseudo hazards. Child activity and total hazards engaged shared moderate, positive relations in the no distraction and pen-and-paper conditions.

All hazards. The relations observed between child activity and hazards engaged were stronger when considering all hazards compared to pseudo hazards only. When considering all hazards, a significant relation also emerged between child activity level and hazards engaged in the electronic condition.

Caregiver Rate of Responding. *Pseudo hazards*. Caregiver rate of responding in the electronic condition shared a strong, positive correlation with caregiver rate of responding in the pen-and-paper condition.

All hazards. The relation previously observed between caregiver rate of responding between electronic and pen-and-paper conditions was no longer statistically significant when considering all hazards. However, the rate of responding in the no distraction condition shared moderate, positive relations with the rate of responding in both the electronic condition and the pen-and-paper condition.

Total hazards engaged. *Pseudo hazards*. Total hazards engaged across conditions shared no relation with each other.

All hazards. When considering all hazards, total hazards engaged in the no distraction condition shared a moderate, positive relation with total hazards engaged in the pen-and-paper condition.

Bivariate relations between video coding outcomes and scores on self-reports of child and caregiver behavior. We next examined whether our video coding outcomes shared any significant relations with caregiver reports on child and caregiver behavior. Because child hazard engagement differed between pseudo hazards and all hazards, results for both are reported

below. Correlations between primary video coding outcomes with demographic and self-reports of caregiver and child behaviors are presented in Table 8 for pseudo hazards only and Table 9 for all hazards.

Vigilance. Caregiver vigilance did not share significant relations with any scores on self-reports of child and caregiver behavior.

Proactive responses. Proactive responses in the electronic condition were negatively associated with IBC scores, caregiver reports of cell phone use and impact, and the fate subscale of the PSAPQ.

Child activity level. Child activity scores in the no distraction condition shared moderate, negative correlations with the protectiveness subscale of the PSAPQ. Child activity level in the electronic condition shared a small, positive correlation with IBC scores. Child activity in the pen-and-paper condition shared moderate, positive relations with supervision scores on the PSAPQ.

Total hazards engaged. *Pseudo hazards*. Number of hazards engaged in the no distraction condition shared small, positive associations with IBC scores and the fate subscale of the PSAPQ. Total hazards engaged in the electronic condition shared a negative relation with the protectiveness subscale on the PSAPQ.

All hazards. The relation between total hazards and IBC scores remained statistically significant for the no distraction condition. However, child activity level in the electronic condition also shared a small, positive relation with IBC scores. None of the previous associations between total hazards engaged and the PSAPQ remained statistically significant when considering all hazards. However, a new relation was observed in which total hazards

Table 8

Correlations between Primary Video Outcomes with Demographic Variables and Reports of Parent and Child Behaviors, Pseudo Hazards Only

	1 N	2 N	3 N	4 N	5 N	1 E	2 E	3 E	4 E	5 E	1 P	2 P	3 P	4 P	5 P
P gender	.166	-.099	-.094	-.063	-.314	-.070	.127	-.079	-.001	-.250	.106	.210	-.225	.055	.034
C gender	-.020	-.216	.010	-.064	.210	.099	-.043	.229	.050	.275	.250	.244	-.010	-.046	.235
P race	-.013	.133	.210	-.116	-.026	.244	-.192	.395**	.005	.222	.020	-.175	.323*	.091	.131
C race	.135	.221	-.013	-.251	.254	.354*	-.026	.226	-.112	.189	.122	-.054	.155	-.093	.227
C age	.266	-.134	-.386**	-.087	-.294	-.133	.102	-.236	-.077	-.378*	.211	.008	-.486**	-.070	-.074
#Children	.003	-.065	-.082	.127	-.156	-.280*	-.159	-.205	.207	.005	-.047	.256	-.203	.236	.213
Care ed	.114	.179	.109	.125	-.085	.035	.054	-.006	-.285*	.122	-.003	-.228	-.085	-.456**	-.059
Income	.049	.153	-.008	.074	-.082	.112	.138	.066	-.156	.249	.191	.083	.015	-.123	-.123
#MinInj	-.244	.081	-.117	-.125	-.114	-.030	-.088	-.038	-.121	-.311	.035	.126	.035	.164	-.267
#DocInj	.184	-.042	-.289*	-.203	***	.216	-.111	-.108	-.209	.208	.118	-.130	-.240	-.248	.217
IBC	-.009	-.001	.156	.281*	-.379	.243	-.454**	.276*	.263	-.114	.101	.167	.226	.245	-.091
CPI	-.235	.104	.128	.097	.230	.154	-.405**	.040	.090	.111	-.054	-.019	.148	.141	-.150
CPU	-.234	.032	.079	.178	.079	-.142	-.225	-.131	.063	-.189	-.231	-.289*	-.038	.190	-.114
Protect	.044	.118	-.309*	-.275	-.158	-.097	.233	-.145	-.304*	.010	.025	-.079	.006	.007	.011
Supervision	-.073	.018	.041	-.002	.064	-.104	.156	-.008	.011	-.004	.003	.037	.323*	.088	.206
Risk	-.139	-.116	-.116	.047	-.155	.136	-.032	.114	.150	-.189	-.010	-.075	.161	.210	-.362
Fate	-.188	-.161	-.032	.299*	-.162	-.063	-.281*	.013	.073	-.343	-.045	-.166	-.117	.024	-.081

Note. CPI = Cell phone impact. CPU = Cell phone use. 1N = Caregiver vigilance score, no distraction condition. 2N = Number of proactive responses, no distraction condition. 3N = Child activity level, no distraction condition. 4N = Total number of hazards engaged, no distraction condition. 5N = Rate of responding, no distraction condition. 1E= Caregiver vigilance score, electronic condition. 2E = Number of proactive responses, electronic condition. 3E = Child activity level, electronic condition. 4E = Total number of hazards engaged, electronic condition. 5E = Rate of responding, electronic condition. 1P= Caregiver vigilance score, paper condition. 2P = Number of proactive responses, paper condition. 3P = Child activity level, paper condition. 4P = Total number of hazards engaged, paper condition. 5P = Rate of responding, paper condition.
* $p < .05$. ** $p < .001$. *** $p < .0001$.

Table 9

Correlations between Primary Video Outcomes with Demographic Variables, IHQ, IBC, PSAPQ, and Cell Phone Use, All Hazards

	1 N	2 N	3 N	4 N	5 N	1 E	2 E	3 E	4 E	5 E	1 P	2 P	3 P	4 P	5 P
P sex	.166	-.099	-.094	-.144	-.219	-.070	.127	-.079	-.045	-.350*	.106	.210	-.225	-.079	.124
C sex	-.020	-.216	.010	-.079	.226	.099	-.043	.229	-.093	.375*	.250	.244	-.010	-.133	.007
P race	-.013	.133	.210	.000	,064	.244	-.192	.395**	.139	.139	.020	-.175	.323*	.154	-.049
C race	.135	.221	-.013	-.191	.384*	.354*	-.0226	.226	.024	.274	.122	-.054	.155	-.006	.022
C age	.266	-.134	-.386**	-.292*	-.330	-.133	.102	-.236	-.096	-.238	.211	.008	-.486**	-.326*	.090
#Children	.003	-.065	-.082	-.013	.079	-.280*	-.159	-.205	.001	-.024	-.047	.256	-.203	.004	.236
Care ed	.114	.179	.109	-.009	.018	.035	.054	-.006	-.248	.070	-.003	-.228	-.085	-.506**	-.163
Income	.049	.153	-.008	.058	.373*	.112	.138	.066	-.209	.241	.191	.083	.015	-.157	.311
#MinInj	-.244	.081	-.117	-.092	-.240	-.030	-.088	-.038	-.132	.007	.035	.126	.035	.185	-.084
#DocInj	.184	-.042	-.289*	-.238	-.319	.216	-.111	-.108	-.099	.189	.118	-.130	-.240	-.290*	-.235
IBC	-.009	-.001	.156	.282*	-.315	.243	-.454**	.276*	.355*	-.158	.101	.167	.226	.163	-.239
CPI	-.235	.104	.128	.081	.091	.154	-.405**	.040	.061	-.027	-.054	-.019	.148	.156	-.243
CPU	-.234	.032	.079	.061	-.089	-.142	-.225	-.131	-.041	-.257	-.231	-.289*	-.038	.122	-.115
Protect	.044	.118	-.309*	-.278*	.091	-.097	.233	-.145	-.082	.196	.025	-.079	.006	.016	.120
Supervision	-.073	.018	.041	.174	.115	-.104	.156	-.008	.121	.175	.003	.037	.323*	.329*	.272
Risk	-.139	-.116	-.116	-.030	-.230	.136	-.032	.114	.165	-.040	-.010	-.075	.161	.165	-.242
Fate	-.188	-.161	-.032	.149	-.195	-.063	.281*	.013	.177	-.296	-.045	-.166	-.117	-.053	-.156

Note. CPI = Cell phone impact. CPU = Cell phone use. 1N = Caregiver vigilance score, no distraction condition. 2N = Number of proactive responses, no distraction condition. 3N = Child activity level, no distraction condition. 4N = Total number of hazards engaged, no distraction condition. 5N = Rate of responding, no distraction condition. 1E= Caregiver vigilance score, electronic condition. 2E = Number of proactive responses, electronic condition. 3E = Child activity level, electronic condition. 4E = Total number of hazards engaged, electronic condition. 5E = Rate of responding, electronic condition. 1P= Caregiver vigilance score, paper condition. 2P = Number of proactive responses, paper condition. 3P = Child activity level, paper condition. 4P = Total number of hazards engaged, paper condition. 5P = Rate of responding, paper condition.
* $p < .05$. ** $p < .001$. *** $p < .0001$.

engaged did share a moderate, positive relation with supervision scores on the PSAPQ in the pen-and-paper condition.

Caregiver rate of responding. Caregiver rate of responding did not share significant relations with any scores on self-reports of child and caregiver behavior.

Analysis of Variance

We first computed three ANOVA models to examine whether caregiver vigilance, caregiver proactive responses, and child activity level differed by condition. We then computed ANOVAs to examine whether total hazards engaged, rate of caregiver responding, and type of caregiver responding differed by condition. We conducted this second set of ANOVAs twice: first, to consider child engagement with pseudo hazards; next, to consider child engagement with all hazards (including elopement and "other" hazard engagement).

Most of our models did not violate the assumption of sphericity, as indicated by non-significance on Mauchly's test of sphericity. Only when examining differences in type of caregiver responding did we violate the assumption of sphericity. For these results, we applied the Greenhouse-Geisinger correction to correct for violations of sphericity. For ANOVA models that were statistically significant, we conducted post-hoc tests comparing means to determine where differences between conditions existed (Field, 2009).

Caregiver vigilance. Vigilance scores did differ by condition, $F\ (2, 100) = 117.06, p < 0.000$. Vigilance was highest in the no distraction condition ($M = 4.77, SD = 0.47$), followed by the electronic condition ($M = 3.41, SD = 1.00$), and was lowest in the pen-and-paper condition ($M = 2.71, SD = 0.92$). All these comparisons were statistically significantly different. Vigilance was higher in the no distraction condition than the pen-and-paper condition ($M_{\text{difference}} = 2.06, p < 0.000$) and was also higher than the electronic condition ($M_{\text{difference}} = 1.35, p < 0.000$). Vigilance

was higher in the electronic condition than the pen-and-paper condition ($M_{difference} = 0.71, p < 0.000$).

Caregiver proactive responses. Differences in the number of proactive responses between conditions approached significance, $F\ (2, 100) = 2.89, p = 0.06$. There were more proactive responses in the electronic condition ($M = 0.80, SD = 1.56$) than the pen-and-paper condition ($M = 0.22, SD = 0.61$; $M_{difference} = 0.59, p = .02$). There were also more proactive responses in the no distraction condition compared to the pen-and-paper condition ($M = 0.69, SD = 1.63$), though this difference was only marginally significant ($M_{difference} = 0.47, p = 0.07$).

Child activity level. Child activity level scores did not differ between conditions, $F\ (2, 100) = 2.07, p = 0.13$.

Total hazards engaged. *Pseudo hazards only.* The total number of hazards engaged did not vary by condition, $F\ (2, 100) = 0.67, p = 0.51$ when examining only the pseudo hazards.

All hazards. The total number of hazards engaged did vary by condition, $F\ (2, 100) = 3.22, p = 0.04$ when examining all hazards. Hazards were engaged most often in the pen-and-paper condition ($M = 4.29, SD = 4.61$), followed by the electronic condition ($M = 3.74, SD = 4.00$), and least in the no distraction condition ($M = 2.67, SD = 3.87$). More hazards were engaged in the pen-and-paper than the no distraction condition ($M_{difference} = 1.63, p = 0.02$). Hazards were also engaged more frequently in the electronic condition than the no distraction condition, though this difference was only marginally significant ($M_{difference} = 1.08, p = 0.09$). The difference between hazards engaged in electronic condition and pen-and-paper conditions was not statistically significant ($M_{difference} = 0.55, p = 0.40$).

Rate of responding. *Pseudo hazards only*. Caregiver rate of responding to child engagement with hazards did not differ by condition type, $F\ (2, 14) = 0.744, p = 0.49$.

All hazards. Rate of responding did not differ by condition type, $F\ (2, 40) = 1.06, p = 0.36$.

Type of responding. ***Pseudo hazards only.*** Mauchly's test indicated that the assumption of sphericity was violated, $X^2\ (2) = 38.56, p < 0.000$. We corrected degrees of freedom using Greenhouse-Geisinger estimates of sphericity. Caregivers' use of removing the child from the hazard differed by condition, $F\ (1.30, 64.73) = 5.64, p = 0.01$. Caregivers were more likely to remove their child in the no distraction condition ($M = 0.14, SD = 0.35$) than the pen-and-paper condition ($M = 0.02, SD = 0.14$; $M_{difference} = 0.12, p = 0.01$) as well as in the electronic condition ($M = 0.04, SD = 0.20$; $M_{difference} = 0.10, p = 0.02$). There were no differences between caregivers' use of removing children between the electronic and pen-and-paper conditions ($M_{difference} = 0.02, p = 0.32$). No other responses differed by condition type.

All hazards. Mauchly's test indicated that the assumption of sphericity was violated, $X^2\ (2) = 18.84, p < 0.000$. We corrected degrees of freedom using Greenhouse-Geisinger estimates of sphericity. Differences in caregivers' use of verbal reprimands across conditions approached significance, $F\ (1.52, 75.80) = 2.66, p = 0.09$. Caregivers used more verbal reprimands in the electronic condition ($M = 1.16, SD = 1.62$) than the no distraction condition ($M = 0.55, SD = 1.21$; $M_{difference} = 0.61, p = 0.021$). Verbal reprimands were also used more often in the pen-and-paper condition ($M = 1.22, SD = 2.22$) than the no distraction condition ($M_{difference} = 0.67, p = 0.025$). There were no differences in the frequency of verbal reprimands between the electronic condition and the pen-and-paper condition ($M_{difference} = -.059, p = 0.88$). No other responses differed by condition.

Discussion

The aim of this study was to investigate the possible influence of caregiver cell phone use on caregiver supervision and children's risk for unintentional injury. Although the extant literature indicates higher levels of supervision may decrease children's risk for injury (e.g., Kuhn & Damashek, 2015), the literature lacks data regarding what might impede caregivers' ability to provide adequate levels of supervision for their children. Specifically, there is a lack of data on whether cell phone use impairs caregiver supervision and/or affects whether or how children engage with potential safety hazards. As such, we designed the present study to examine how caregiver supervision of their young children, child hazard engagement, and rates of responding to children's engagement with hazards may have differed when parents were distracted by use of a cell phone. The results of this study enhance our understanding of possible barriers to effective supervision and how to promote child safety.

Discussion of Main Findings

We hypothesized that vigilance would be the highest in the no distraction condition, and this was supported. However, contrary to our second hypothesis predicting that vigilance would be lowest in the electronic condition, vigilance scores were actually lowest in the pen-and-paper condition. Vigilance, however, was still significantly lower in the electronic condition than in the no distraction condition, indicating that cell phone use may have a deleterious effect on caregivers' supervision of their children. Examining how many seconds caregivers spent looking at their children follows a similar pattern: caregivers spent the most time with eyes on their child in the no distraction condition, a moderate amount of time with eyes on child during the electronic condition, and the least amount of time during the pen-and-paper condition.

This pattern of results raises important considerations regarding vigilance and visual supervision. Both distraction conditions produced lower caregiver vigilance scores than the no distraction condition. Therefore, it appears that engaging in an activity other than caring for a child has the potential to decrease one's ability to tend to that child. This has important implications, as the distraction tasks in our pseudo hazards room are comparable to activities outside the laboratory (e.g., completing paperwork at the doctor's office, having a text conversation). Particularly given the presence of cell phones across settings in day-to-day life, it is critical caregivers and professionals be aware of the possible impairment this usage may cause.

It is possible that vigilance was lowest in the pen-and-paper task, rather than the electronic task, for several reasons. For example, it could be the case that the pen-and-paper task was more demanding than the cell phone task. Examining how much time caregivers had their eyes on their phones compared to the forms may provide evidence for the idea that caregivers spent more time engaged with forms during the pen-and-paper task than they did with phones during the phone condition. Therefore, it could be the case that simply responding to text messages in our pseudo hazards room was not as demanding as it may be in a more real-life situation. Surprisingly, caregivers did not spend a significant amount of time looking at their phones during other conditions. It seems unlikely this is reflective of caregivers' natural phone usage habits. Rather, caregiver behavior was likely influenced by the demand characteristics of the pseudo hazards room. This does increase the internal validity of our conditions (i.e., phone use predominantly occurred during the phone condition). However, it would be interesting for future research to examine caregiver phone usage in more naturalistic environments. For example, Radesky et al. (2016) observed caregiver phone use during meal times with their

children in fast food restaurants and found that many caregivers were significantly engaged with their mobile device for the duration of the meal. Such methods may render more valid results.

This finding also raises an important question about whether it matters what form the distraction takes, or if it is the impact caused by the distraction that is more suggestive of impairment. For example, it is possible that people have become so efficient with using cell phones given their ubiquity in modern day life, that they are less distracting than other tasks that are not encountered as frequently (e.g., completing paperwork). It is also possible that the cognitive demand and/or attention required from different tasks affects performance. The pen-and-paper task required caregivers to devote continuous attention to the task, as all the questions were printed on the measures they were completing. Additionally, caregivers may have felt pressured to dedicate their full attention to this task, as they knew they had limited time to complete the questionnaires. Conversely, continuous attention was not required during the texting condition, nor did caregivers know to how many questions they would need to respond. Although RAs were trained to respond to participant text messages quickly, it is impossible to eliminate the latency between text messages. This task subsequently only required intermittent attention, and therefore, parents could provide higher levels of supervision to their children. Because much of the extant literature has not compared the impairment caused by cell phones to other types of distractions that demand visual attention, more research is necessary to understand these patterns. Future research should examine how both the type and level of distraction affects caregiver vigilance. Specifically, future research should examine how an electronic device that requires continuous attention (e.g., watching a video) compares to a non-electronic task requiring continuous attention.

We did not detect differences in hazard engagement by condition when considering only pseudo hazards, therefore not fully supporting our third and fourth hypotheses. This is in contrast to Boles and Roberts' (2008) finding that risky child behaviors differed by distraction condition (though this was observed at the level of alpha = .09). Our lack of significant findings could be explained by the type of planned pseudo hazards present in our pseudo hazards room, or the layout of our pseudo hazards room. For example, the most frequently contacted hazard, the coffee pot, was located directly next to the only available chair in the pseudo hazards room. On the other hand, the least frequently contacted hazard, the outlet, was positioned on the opposite side of the chair, and blended into the wall. The room layout was similar for participants whether at the YWCA or at the university. Unfortunately, most published research examining child injuries with pseudo hazard rooms do not include detailed descriptive statistics regarding how engagement differs between hazards. Therefore, it is difficult to determine how the hazard engagement observations in our study compare to observations from other studies. It does seem consistent across research using pseudo hazards rooms, however, that engagement with hazards is low (Boles & Roberts, 2008; Morrongiello, Schell, & Keleher, 2013; Morrongiello & Dawber, 1998). Perhaps some hazards (e.g., staplers) do not appear interesting to children, therefore making it less likely the child engages with the planned pseudo hazards.

Interestingly, and unexpectedly, children often engaged with non-planned hazards in the room. For example, children ran behind the camera where caregivers could not immediately see them, tried to run out of the pseudo hazard space, climbed on furniture, and engaged with other hazards actually provided by caregivers (e.g., chapstick caps). Although not in our original plan, we coded these engagements with hazards to consider in secondary analyses. When considering elopement and other hazard engagement, more hazards were contacted in the pen-and-paper

condition compared to the no distraction condition. There were also more hazards engaged in the electronic condition than the no distraction condition, though this difference was only marginally significant. Considering these results, our third hypothesis remains unsupported that hazards would be contacted the most in the electronic condition. However, these results do provide support for our fourth hypothesis that children would engage hazards the least in the no distraction condition.

This pattern of results indicates that child engagement with hazards may be influenced by the level of distraction a task demands of children's caregivers. With regard to why this pattern was only observed when considering all hazards (i.e., with the addition of "other" hazards and elopement), it could be the case that caregivers were more likely to give their children some item to play with (e.g., their own coins) when they perceived they would be too busy to interact with their child. Or, children could be more motivated to engage in risky behaviors (e.g., climbing on furniture, running out the door) rather than with pseudo hazards (e.g., office supplies) when caregivers are distracted in an attempt to get their attention. Although child activity level in theory would also relate to rates of elopement and perhaps provide some corroboration of this theory, rates of child activity level were not statistically different between conditions.

Although we did not make clear hypotheses about caregiver rate of responding, type of response, or proactive responses, we conducted additional ANOVAs to determine whether these outcomes differed by condition, as these are important factors also related to child injury risk. Caregiver rate of responding did not differ by condition when considering only pseudo hazards or all hazards together. However, this could be due to insufficient power. Because rate of responding was calculated only when children engaged with a hazard, the overall sample size in each condition was lower due to the low overall rates of hazard engagement. Therefore, it is

possible our sample size was too low to detect any significant differences. However, both caregiver type of response and proactive responses demonstrated interesting patterns of differences, which are discussed below.

Although most caregivers tended to provide some type of response when their child engaged with a hazard rather than no response, coding indicated that the most common responses included verbal reprimands, encouraged engagement with a hazard, and ineffective removal of hazards. Further, the type of response given differed by condition. When considering only pseudo hazards, caregivers were more likely to remove their children from the situation in the no distraction condition than the pen-and-paper and electronic conditions. When considering all hazards, caregivers were more likely to use verbal reprimands in the electronic and pen-and-paper conditions than in the no distraction conditions.

This pattern of results is concerning, as it indicates caregivers are more likely to use ineffective types of intervention (i.e., verbal reprimands) when they are distracted. While teaching children about possible hazards has the potential to be an effective intervention when done correctly (Morrongiello, McArthur, & Bell, 2014), the most effective injury reduction strategies focus on teaching caregivers to remove home hazards and increase supervision (Damashek & Peterson, 2002; Damashek & Kuhn, 2014; Morrongiello et al. 2004; Morrongiello, 2018; Phelan, Khoury, Xu, Liddy, Hornung, & Lanphear, 2011; Rostad, McFry, Self-Brown, Damashek, & Whitaker, 2017). It is critical that caregivers and professionals working with families understand that distractions may not only affect caregivers' ability to effectively supervise their child, but that distractions may also lower the frequency at which they use effective interventions to hazard engagement. This means distractions impair two key features of

caregiver behavior related to child injury risk, which further underscores the importance of promoting distraction-free parenting.

Additionally concerning, caregiver proactive responses tended to be low across conditions. While this may be due to the demand characteristics of a laboratory setting (i.e., caregivers felt unsure if they could rearrange the room), it is important for caregivers to be consistently vigilant to possible hazards in the environment and respond proactively. Although it did not quite reach statistical significance at alpha level of 0.05, the number of proactive responses between conditions did approach significance. The pattern of results indicated that caregivers demonstrated more proactive responses in the electronic condition than in the pen-and-paper condition. This is consistent with our findings indicating that caregiver vigilance was higher in the electronic condition compared to the no distraction condition. Again, understanding the level of distraction each activity demands of caregivers seems to be an important future direction. Additionally, research should continue examining the possible association between proactive responses and caregiver vigilance to enhance both of these behaviors.

In summary, it appears that caregiver vigilance, proactive responses, type of caregiver responses, and child hazard engagement varied by condition. Caregivers demonstrated higher vigilance and more frequent use of effective responses to child hazard engagement in the no distraction condition. Although vigilance scores were lowest in the pen-and-paper condition, they were still significantly lower in the electronic condition compared to the no distraction condition. Although this pattern of results highlights the need for future research to examine how much the cognitive demand of a task influences vigilance of young children, the fact that vigilance was lower when cell phones were present has important implications. Because cell phones are a ubiquitous feature in many people's lives, it is likely cell phone use could more

frequently affect supervision on a daily basis than less-frequent tasks such as completing paperwork. Additionally, children were more likely to engage with hazards (when considering all hazards) in both the distraction conditions than the no distraction condition, highlighting that children may behave differently when they see their caregiver is distracted. This is especially concerning given the lower rates of caregiver vigilance, proactive responses, and use of effective forms of responding in the distraction conditions. This pattern of results indicate that caregiver distraction can significantly impair important aspects of both caregiver behavior (e.g., vigilance) and child engagement with hazards, thus resulting in increased child injury risk.

Additional Findings

Other findings of interest were related to caregiver cell phone use. Every participant in our study reported owning a smart phone. While this finding could be explained by the high average income level of our participants, this finding is commensurate with a growing body of data indicating that the majority of Americans, and especially those who are caregivers to children, own cell phones (Pew Research Center, 2017; Lenhart 2010). The high percentage of caregivers who own cell phones further highlights the importance of understanding how cell phone use might influence child safety risk.

Caregiver responses on our modified version of the Problematic Use of Mobile Phones (PUMP) scale to create a cell phone impact scale. We modified questions from the original survey to focus specifically on caregiver-child interactions. Given the high reliability observed in the present study after removing a work-related question, it appears our cell phone impact scale may serve as a brief, reliable measure to assess the impairment caused by caregiver cell phone use. Future research should continue assessing the reliability and validity of this measure by

utilizing it in conjunction with other measures of problematic cell phone use as well (e.g., the Mobile Phone Problem Use Scale; Bianchi & Phillips, 2005).

Regarding frequency of caregiver cell phone use across activities with their children, caregivers reported using their phones minimally during only a few activities (e.g., child's bed time). Caregivers more often reported mild to moderate usage across a variety of activities (e.g., bath time). Caregivers rarely reported intensive usage during times their child was awake and in their care. However, previous research indicates that caregivers' self-report of their cell phone use is often lower than their actual behavior (Andrews, Ellis, Shaw, & Piwek, 2015). It is possible that caregivers either intentionally underreport their behavior, or are unaware of their behavior. Future research could include a measure of socially desirable responding (e.g., Marlowe-Crowne scale; Crowne & Marlowe, 1960) to determine whether caregivers are likely to purposefully under-report what they perceive to be undesirable behavior. Additionally, observations of caregiver behavior with their children in a natural setting (e.g., park) may reflect more natural, accurate representations of phone use.

Limitations and Strengths

This study is not without important limitations. First, the sample was quite homogenous. Most caregivers were married, educated, white mothers. Additionally, they all self-selected to participate after seeing flyers in town or in parenting groups on Facebook. Therefore, the results of this study cannot be generalized to more diverse samples. It is important that future research replicate this study with lower income families because low income children are at greater risk for injury (Orton et al., 2012; Schwebel, Brezausek, Ramey, & Ramey, 2004).

Second, the layout of the room may have influenced caregiver and child behavior. The pseudo hazards room was quite small, with certain hazards condensed closer to where the

caregiver and child were instructed to sit. While previous research has not reported the exact size and/or layout of their pseudo hazards rooms, most are described as offices or university clinic spaces. The space used for most of our participants was the waiting room in the psychology department; this included a small waiting area and a long hallway. Therefore, it may have been easier for caregivers to provide higher levels of vigilance because there was less space for the child to move. Although the room at the YWCA was larger, only three participants completed the study there; therefore, additional analyses comparing results between these two locations is not possible. Perhaps a different layout would differentially affect both caregiver and child video coded outcomes.

Third, although we aimed to create a naturalistic texting condition by asking what we perceived to be thought-provoking questions about parent-child relations, it is possible that the texting behavior observed in the present study is not reflective of how caregivers naturally use their phones. Although the cell phone use survey inquired about impairment caused by phone use and times caregivers were likely to use their phone, we did not inquire about what activities specifically they do on their cell phones across these settings. Therefore, it is possible that responding to text messages as they did in the present study is not indicative of typical phone use when caring for their children.

Fourth, we did not control whether participants used their own cell phones or the lab study phone. It is possible that results varied by what phone people used. For example, participants who elected to use the study phone may have had lower supervision scores because they were unfamiliar with the new phone and it demanded more of their attention. Or, it is possible some characteristic of someone who would choose to use the study phone versus their personal phone (e.g., a parent who has limited text messages on their personal phone) may also

affect study outcome scores. Because of the low sample size of individuals who elected to use the study phone, we did not analyze difference in this in the current study; however, future research should examine whether phone familiarity affects caregiver and child safety-related behaviors.

Fifth, only some of the supervision measure (the PSAPQ) subscales shared relations with each other, other caregiver reports of parent and child behavior, and video coding outcomes. This finding is consistent with previous literature indicating the subscales appear to share some, but few, relations amongst each other and with other demographic variables (Damashek & Corlis, 2017). Importantly, reliability of the PSAPQ subscales in the present study is lower than has been noted elsewhere (Morrongiello & Corbett, 2006). Therefore, the lack of significant relations observed should be interpreted with caution, as this may be explained by the low reliability of the PSAPQ subscales.

While the use of a controlled experimental design is a strength of our study, it is also possible that the demand characteristics of being video recorded and in a laboratory setting influenced caregiver and child behavior. By increasing the internal validity of our study, we simultaneously limited the external validity. Future research should continue to use both experimental and naturalistic approaches to understand caregiver behavior in relation to child safety.

Despite these limitations, there are several strengths worth noting as well. First, we used a within-subjects design to experimentally examine the effect of distractions on caregiver supervision and child behavior in a pseudo hazards room. The use of a within subject design increased our internal validity by controlling for the possible influence of confounds caused by individual differences. Second, we compared the possible distracting effect of cell phones

compared to a non-electronic distraction, which, to our knowledge, previous research has not done. The differences in findings between these two distractions highlights an area for future research to examine the level of distraction caused by the task, rather than focusing simply on the task itself. Third, this is the first study to our knowledge that has experimentally examined the possible distracting effects of cell phones in relation to child injury risk. Our results do indicate that even if cell phone use is not more distracting than filling out pen-and-paper forms, caregiver vigilance decreased and child engagement with hazards increased when caregivers were texting. This is important information to disseminate in terms of child injury prevention.

Conclusions

The results of this study largely support our hypothesis that caregiver vigilance is highest, and child engagement with hazards lowest, in the absence of distractions. Although the pen-and-paper task produced greater impairments in vigilance and was associated with higher hazard engagement, results from the electronic condition did indicate impaired caregiver vigilance and higher child engagement with hazards compared to the no distraction condition. Although cell phone use may not have been as demanding as the pen-and-paper task in the present study, it is possible caregivers' natural phone usage is more impairing. As discussed, the structure of our texting condition and caregivers' reactivity to being video recorded in a laboratory setting could explain why we failed to find more statistically significant results that fully supported our hypotheses. Particularly given the ubiquitous nature of phone use, it is likely phones are present throughout many caregiver-child interactions. Regardless the form of distraction, caregivers should be aware of anything that takes attention away from children for even short periods of time. It is important for researchers to continue examining how different levels of cell phone use might impede caregiver supervision and affect child engagement in risky behaviors. This work

should inform injury prevention by helping caregivers reduce distractions and enhance effective caregiver behaviors when caring for their children.

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Appendix A

HSIRB Approval Letter

WESTERN MICHIGAN UNIVERSITY

Human Subjects Institutional Review Board

Date: May 21, 2017

To: Amy Damashek, Principal Investigator
McKenna Corlis, Student Investigator for dissertation

From: Daryle Gardner-Bonneau, Ph.D., Vice Chair Daryle J. Gardner-Bonneau

Re: HSIRB Project Number 17-03-03

This letter will confirm that your research project titled "Examining Parent-Child Relationships in Young Children" has been **approved** under the **full** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study***)." Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: **March 14, 2018**

1903 W. Michigan Ave., Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276
CAMPUS SITE: 251 W. Walwood Hall

Appendix B

Recruitment Flyer

Dear Parent,

Do you have a child between 15 months and 59 months (less than 5 years old)? Are you interested in earning up to $50 in giftcards?

We have an opportunity for you! A graduate student at Western Michigan University (WMU) is conducting her dissertation is studying parent-child relationships and is inviting you to participate!

What are we asking you to do?

Attend a data collection session on WMU's campus with your child for one hour. We're examining the difficulty of tending to your child while you're distracted. During that time, you will be asked to complete forms about you and your child's behaviors and attitudes. You and your child will also be videotaped.

You can earn between $25-$50 in gift cards by participating.

Please call McKenna at (269) 220-0428,

or email caregiver.child.relations@gmail to learn more!

Appendix C

Recruitment Script

"Hello. My name is_____. I am calling from Western Michigan University's Department of Psychology and am returning _____'s call. Is that who I am speaking with? [if "yes"]: I recently received a call from you indicating you may be interested in participating in a research study to better understand parent-child relationships. Do you have a few minutes to discuss this study or is now not the best time?"

[If caregiver responds, "no" ask to schedule a day and time that works better for them to learn more about participating in the study].

<u>If caregiver responds, "yes":</u>

"Okay, great! First, I would like to describe who is eligible for the study. We are recruiting caregivers of children between 15 and 59 months as described on the recruitment flyer. Additionally, caregivers must be without sensory impairment and must be able to speak and read English at a 6th grade reading level. Does this describe you?

[if caregiver responds "no" to either question, explain they are ineligible and thank them for their time; if they respond "yes" to both questions, continue with recruitment script]

"Great! I'm going to start off by telling you a little about the study and why we are doing it. Caregiver-child relationships are very important to a child's development. There are many factors that may impact the caregiver-child relationship, including behaviors of children and of caregivers. The goal of the study is to explore certain behaviors that both children and caregivers engage in to understand what impacts that relationship. The ultimate goal of this study is to help improve caregiver-child relationships so young children can develop as fully and healthily as possibly.

"Involvement in the study only includes one session. If you're interested in participating, you would come to our location; I can provide parking or bus directions if necessary. I will walk you and your child to our room where the session will take place. We will review a consent document first that provides greater detail about the study. If you choose to participate, you will then complete several questionnaires about you and your child. During this session, we will also observe and audio and video record your child to assess interactions of everyday activities.

"Each individual who chooses to participate in this study will earn up to $50 in gift cards.

"Do you think you might be interested in learning more about participating in this study?"

[If "yes," schedule a day and time to complete the session]

[If "no", thank them for their time and hang up]

<u>If someone other than caregiver answers phone:</u>

"Hello. My name is_____. I am calling from Western Michigan University's Department of Psychology and am returning _____'s call. Is that who I am speaking with? [if "no"]: When would be a good time to call back?" Thank individual for their time and discontinue conversation.

<u>If nobody answers phone:</u>

"Hello. My name is _____. I am calling from Western Michigan University's Department of Psychology and am returning _____'s call. If you are still interested in learning more about the study, please call back at (269) 220-0428. The best

times to reach me are _____. Otherwise, I will try you again in a couple of days".

Appendix D

Bank of Questions for Electronic Condition

Please add "haha", "lol", emoticons, and adjust grammar as necessary. Responses may be combined such that more than one URA response is given for a parent response. Please try to provide variability in responding (i.e., do not choose the same response for questions asked back-to-back)

1a. What are your favorite activities to do with your child?

- That/those sound(s) like fun!
- I'm sure they enjoy doing that!

1b. Follow-up: Are there any activities you spend a lot of time doing together?

- That sounds awesome!
- I'm sure that's a lot of fun.
- Those will become special memories for your child.

1c. Follow-up: So what upcoming plans with your child are you looking forward to?

- That sounds really nice/like so much fun!
- How cool!
- I'm sure they're very excited about it!

2a. What is the biggest challenge of having a child?

- That does sound really tough/challenging/hard.
- I can see how that would be tough.
- That sounds really hard but it sounds like you are doing a great job!

2b. Follow-up: With that in mind, what have you learned as a parent?

- Thank you so much for sharing.
- I'm sure others have had a similar experience.
- You should be very proud of yourself.
- That is very insightful/heartwarming

2c. Follow-up: So what advice about parenting would you give to other parents?

- That's good advice!
- That's a good point.
- I never thought about that.
- You have an interesting perspective.

3a. What do you find most rewarding about having a child?

- That sounds wonderful/great/excellent/awesome.
- Wow! I never thought about that.

3b. *Follow-up:* So what would you say is one of your favorite memories with your child?

- That sounds really memorable/that sounds really special.
- That sounds like a great memory.
- Thank you so much for sharing.
- It sounds like you and your child are really close.

3c. *Follow-up:* How about the funniest thing your child has ever said or done?

- Haha! Kids are so funny/silly.
- Oh my gosh! I can't believe that.

4a. So how would you describe your relationship with your child?

- It sounds like you two have a great/wonderful/special relationship.
- Your child is lucky to have you.
- Sure sounds like you are a great parent.
- It sounds like your child adores you.

4b. *Follow-up:* How are you and your child alike?

- That's great/How fun
- That's really special
- Thanks so much for sharing

4c. *Follow-up:* Is your child different from you at all?

- Isn't it funny how that works?

5a. What do you miss from when your child was younger?

- That sounds like a special time.
- Thank you for reflecting back on that.
- Sounds like your child had a wonderful childhood

5b. Follow-up: And what are you looking forward to as your child grows older?

- I'm sure that will be amazing to see.
- That sounds exciting and will be something to look forward to.
- You sound like you are very proud.
- It definitely sounds like you believe in your child.

Appendix E

Script by Condition

1. **<u>Phone; Pen-and-Paper; No Distraction.</u>**

Phone. "There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

Pen-and-paper. "Thank you for helping us with that! Now I have some pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

No-distraction. "Thank you for completing these surveys. I have some more materials to prepare, so if you can please wait here with your child, I will be back shortly."

2. **<u>Phone; No Distraction; Pen-and-Paper</u>**

Phone. "There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

No-distraction. "Thank you for helping us with that. I have some materials to prepare, so if you can please wait here with your child, I will be back shortly."

Pen-and-paper. "Thank you for waiting! Now I have some pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

3. **<u>Pen-and-Paper; No Distraction; Phone</u>**

Pen-and-paper. "I have some pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

No-distraction. "Thank you for completing these surveys. I have some more materials to prepare, so if you can please wait here with your child, I will be back shortly."

Phone. "Thanks for waiting! There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

4. **Pen-and-Paper; Phone; No Distraction**

Pen-and-paper. "I have some pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

Phone. "Thanks for filling those out! There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

No-distraction. "Thank you for helping us with that. I have some more materials to prepare, so if you can please wait here with your child, I will be back shortly."

5. **No Distraction; Pen-and-Paper; Phone**

No-distraction. "Thank you for being here. I have some materials to finish preparing, so if you can please wait here with your child, I will be back shortly."

Pen-and-paper. "Thank you for waiting! I have some pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

Phone. "Thanks for filling those out! There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

6. **No Distraction; Phone; Pen-and-Paper**

No-distraction. "Thank you for being here. I have some materials to finish preparing, so if you can please wait here with your child, I will be back shortly."

Phone. "Thanks for waiting! There are some questions we want to ask you about your relationship with your child. We're trying this new method of incorporating technology into research so we can upload your response verbatim into software. We want to do this electronically so we can get your responses exactly how you want it recorded. Please use this iPod to respond to messages you receive from a research assistant. I'll be back once she is done asking her questions".

Pen-and-paper. "Thank you for helping us with that! Now I have some regular pencil-and-paper measures for you to complete. Please complete these forms. I'll be in the room next door and I will come back in about seven minutes."

Troubleshooting Script

1. **If a caregiver asks:** *"This looks dangerous, can you please remove it from the room?"*

   Response: *"That has actually been modified such that it's not actually dangerous. Please treat it as if it's a real hazard, though."*

2. **If a caregiver asks:** *"This looks dangerous, can I move it?"*

   Response: *"You may move the object anywhere in the room you see fit."*

   If caregiver persists they would like it removed from the room: *"That has actually been modified such that it's not actually dangerous. Please treat it as if it's a real hazard, though."*

3. **If a caregiver says:** *"I'm upset about these procedures and that you put us in a room with dangerous things."*
   Response: "*I am sincerely sorry for any stress this caused you. These objects are actually pseudo hazards – they have been changed so that they are not actually dangerous. For example, this bottle of Tylenol only has candy in it. Your continued participation is optional. Would you still like to continue with participation or would you like to withdraw from the study at this time?"*

   Wait for caregiver's response

   If caregiver wants to withdraw: *"I understand and again apologize for any distress we caused. Here are several resources you may choose to utilize if you would like. Here is a list that has contact information for local counseling services. We've also included the number to the principle investigator and to the Human Subjects Institutional Review Board, if you would like to file a formal complaint about this procedure. We will also shred your consent form and data now. Thank you for your time"*

   Shred any collected data

   If caregiver wishes to continue: *"Thank you so much for being understanding. Now you know these objects are not hazardous, but we would like you to treat them as if they are. At the end, we will review the rationale for this, and provide you with resources to utilize if you wish".*

Appendix F

Participant Forms

Family ID#: _____ Date of Session: _____/_____/_____

1. With which gender identity do you most identify?: (*Please circle one*)

   1 = Male
   2 = Female
   3 = Transgender female
   4 = Transgender male
   5 = Gender variant/non-conforming
   6 = Other: _____

2. How do you describe yourself?: (*Please circle one*)

   1 = Caucasian
   2 = African-American
   3 = Asian-American
   4 = Hispanic
   5 = Biracial
   6 = Other: _____

3. What is your marital status: (*Please circle one*)

   1 = Married
   2 = Living with partner
   3 = Divorced/annulled
   4 = Separated
   5 = Single (Never married)
   6 = Widowed

4. Describe your child that is in the study:

   Gender: _____ Age:_____
   Race: _____ Date of Birth:_____/_____/_____

5. Please describe other members (adults and children) of your household (include yourself and live-in partner, if applicable, please). Please include all members living in your house at least 50% of the time.

REALTION TO CHILD IN STUDY (e.g., mother, half-brother, father)	GENDER	AGE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. Please describe your relationship to the child in the study (e.g., mother, father, guardian):

   _____

7. What is your education level? (*Please circle one*)

   1 = Grade school
   2 = Some high school
   5 = College graduate
   6 = Post undergraduate education

3 = High school graduate
4 = Some college
7 = Other: _____

8. Do you have a live-in partner? *If yes,* what is their educational level?

1 = Grade school
2 = Some high school
3 = High school graduate
4 = Some college
5 = College graduate
6 = Post undergraduate education
7 = Other: _____
99 = N/A

9. What is your employment status?

1 = Employed full time (30+ hrs/wk)
2 = Employed part time (<30 hrs/wk)
3 = Unemployed
4 = Retired
5 = Self-employed
6 = Disabled, not employed
7 = Homemaker
8 = Student
9 = Other: _____

10. *IF EMPLOYED*: What is your job title? _____

11. How many hours per week do you work (normally)? _____

12. Approximately how many hours (on average) *per work day* is your child cared for by:

You: _____
Partner: _____
Other relatives: _____
Neighbors: _____
Daycare: _____
Babysitter: _____
Other: _____

IF APPLICABLE:

13. What is your live-in partner's employment status? (**NOTE:** If you do not have a live-in partner but receive child-care or alimony payments, please answer this section based on the person you receive payments from).

1 = Employed full time (30+ hrs/wk)
2 = Employed part time (<30 hrs/wk)
3 = Unemployed
4 = Retired
5 = Self-employed
6 = Disabled, not employed
7 = Homemaker
8 = Student
9 = Other: _____

14. *IF EMPLOYED*: What is their job title? _____

15. How many hours per week do they work (normally)? _____

16. What is your gross annual income, from all sources combined, of your household?

1 = Less than $5,000	5 = $20,000-24,999	9 = 40,000-49.999
2 = $5,000-9,999	6 = $25,000-29,999	10 = $50,000-59,999
3 = $10,000-14,999	7 = $30,000-34,999	11 = $60,000-69,999
4 = $15,000-19,999	8 = $35,000-39,000	12 = $70,000+

Date:_____ Interviewer initials:_____ OU ID#_____

Injury Behavior Checklist

I am going to read several statements about behaviors that your child may show. I will ask you to tell me how often your child may show the behaviors using a 0 to 4 scale. (*Read entire scale after first three items. Read only the underlined portion for subsequent items).*

0= <u>not at all</u> (never engages in this behavior)

1= <u>very seldom</u> engages in this behavior (1 or 2 times in all)

2= <u>sometimes</u> engages in this behavior (about once/ month)

3= <u>pretty often</u> engages in this behavior (once/ week)

4= <u>very often</u> engages in this behavior (more than once/ week)

1. Runs out into the street	0	1	2	3	4
2. Jumps off furniture or other structures	0	1	2	3	4
3. Jumps down stairs	0	1	2	3	4
4. Rides bikes in unsafe areas	0	1	2	3	4
5. Runs or bumps into things	0	1	2	3	4
6. Falls down	0	1	2	3	4
7. Plays with fire	0	1	2	3	4
8. Puts fingers or other objects near appliances or outlets	0	1	2	3	4
9. Leaves the house without permission	0	1	2	3	4
10. Refuses to use car seat (or belt) or stay seated in car	0	1	2	3	4
11. Plays with sharp objects	0	1	2	3	4
12. Pulls/pushes over furniture or heavy objects	0	1	2	3	4
13. Falls out window or down stairs	0	1	2	3	4
14. Puts objects or non food items in mouth	0	1	2	3	4
15. Gets scratches, scrapes, bruises during play	0	1	2	3	4
16. "Takes chances" on playground equipment	0	1	2	3	4
17. Tries to climb on top of furniture or cabinets	0	1	2	3	4
18. Stands on chairs	0	1	2	3	4
19. Explores places that are off limits	0	1	2	3	4
20. Gets into dangerous substances	0	1	2	3	4
21. Plays carelessly or recklessly	0	1	2	3	4
22. Comes into contact with hot objects	0	1	2	3	4
23. Behaves carelessly in or around water hazards	0	1	2	3	4
24. Teases and/or approaches unfamiliar animals	0	1	2	3	4

Participant ID: _____ Date: _____

Parental Cell Phone Use Survey

Please indicate how often you use your cell phone on an average day. Only include times during which you are taking care of the child.

	0 (not at all, or rarely)	**1** (a couple minutes at a time; e.g., just to address missed notifications or make a quick call)	**2** (10-20 minutes at a time; e.g., conversations, email, games, social media apps)	**3** (20-30 minutes at a time; e.g., longer conversation, email, social media, longer games, short videos)	**4** (> 30 minutes at a time; e.g., videos, games, email, social media, long conversations)
Child's bath time?	0	1	2	3	4
Child's meal time?	0	1	2	3	4
Child's nap time?	0	1	2	3	4
Child's bedtime routine?	0	1	2	3	4
Family time?	0	1	2	3	4
Activities outside the home with the child (e.g., at the park)?	0	1	2	3	4
When the child is playing …					
Alone?	0	1	2	3	4
With siblings?	0	1	2	3	4
With other children?	0	1	2	3	4
With another adult?	0	1	2	3	4
Transportation to/from activities with child…					
While you're driving?	0	1	2	3	4
While taking public transportation?	0	1	2	3	4

Please indicate how strongly you agree or disagree with the following statements.

	1 (strongly disagree)	2 (disagree)	3 (neither disagree nor agree)	4 (agree)	5 (strongly agree)
1. The amount of time I spend using my cell phone keeps me from doing other important work	1	2	3	4	5
2. I think I might be spending too much time using my cell phone	1	2	3	4	5
3. I have ignored the people I'm with in order to use my cell phone	1	2	3	4	5
4. I have used my cell phone when I know I should be doing work	1	2	3	4	5
5. I have used my cell phone when I know I should be supervising my child	1	2	3	4	5
6. At times, I find myself using my cell phone instead of spending time with people who are important to me and want to spend time with me	1	2	3	4	5
7. I have (or almost have) caused an accident because of my cell phone use	1	2	3	4	5
8. My child has been injured when I have been on my cell phone	1	2	3	4	5
9. My cell phone has caused me problems in my relationship with my partner	1	2	3	4	5
10. My cell phone has caused my problems in my relationship with my child	1	2	3	4	5

ID:_____ Date:_____

Parent Supervision Attributes Profile Questionnaire (PSAPQ)

Parents need to balance supervision, to assure their child=s safety, with the child's needs for growth and independence. We are trying to learn more about parents' attitudes about the supervision and protectiveness needs of their young children, particularly when at the playground. Please read each statement below and select a response to indicate how often you think each is true. There are no right or wrong answers! We simply want to know what is true for you. If you have any questions please ask the interviewer.

When you answer these questions, the child we are referring to is the child participating in this study.

RESPONSE OPTIONS:

1 = Never
2 = Some of the time
3 = 2 of the time
4 = Most of the time
5 = All of the time

1. ____ I make him/her keep away from anything that could be dangerous.
2. ____ I let him/her learn from his/her own mishaps.
3. ____ Whether or not my child gets injured is largely a matter of fate.
4. ____ I keep an eye on my child=s face to see how he/she is doing.
5. ____ I stay close enough to my child that I can get to him/her quickly.
6. ____ I let my child experience minor mishaps if what he is doing is lots of fun.
7. ____ I feel very protective of my child.
8. ____ I keep a close watch on my child.
9. ____ I wait to see if he/she can do things on his/her own before I get involved.
10. ____ I warn him/her about things that could be dangerous.
11. ____ When my child gets injured it is due to bad luck.
12. ____ I make sure I know where my child is and what he/she is doing.
13. ____ I can trust my child to play by himself/herself without constant supervision.

RESPONSE OPTIONS: **1** = Never

2 = Some of the time

3 = 2 of the time

4 = Most of the time

5 = All of the time

14. ____ I let my child take some chances in what he/she does.

15. ____ I have my child within arm=s reach at all times.

16. ____ I try things with my child before leaving him/her to do them on his/her own.

17. ____ I say to myself that I can trust him/her to play safely.

18. ____ I hover next to my child.

19. ____ I feel fearful that something might happen to my child.

20. ____ I stay within reach of my child when he/she is playing on the equipment.

21. ____ I let my child make decisions for himself/herself.

22. ____ I feel a strong sense of responsibility.

23. ____ I encourage my child to take risks if it means having fun during play.

24. ____ I think of all the dangerous things that could happen.

25. ____ I let my child do things for him/herself.

26. ____ I know exactly what my child is doing.

27. ____ I encourage my child to try new things.

28. ____ Good fortune plays a big part in determining whether or not my child gets injured.

29. ____ I keep my child from playing rough games or doing things where he/she might get hurt.

ID:_____ Date:_____

Injury History Questionnaire (IHQ)

This questionnaire asks you about the **number of injuries** your child has had. Some children get into things and experience many injuries and some seldom get hurt. Just tell us what is true for your child.

Count as an 'injury' those times when there was *visible sign of tissue damage* (e.g., red mark, bump, scrape, etc) and this lasted for at least ***one hour***.

1. How many injuries has your child had that were minor (i.e., no treatment was needed or only minor treatment, like a band aid was needed):

In the last 6 months, my child has had...

_____ minor injuries (enter the number of injuries. If none, enter a 0)

Since birth, my child has had....

_____ minor injuries (enter the number of injuries. If none, enter a 0)

2. How many injuries has your child had, that required some type of *home treatment* (e.g., an ice pack or to clean a wound)? The types of injuries listed in question 4 on the next page may help you to remember these.

In the last 6 months, my child has had...

_____ injuries that required *home treatment*

Since birth, my child has had....

_____ injuries that required *home treatment*

3. How many injuries had your child had that required a *doctor=s attention* (e.g., a trip to the doctor=s office, clinic, or hospital emergency room) or a visit to a dentist? The types of injuries listed in question 4 may help you to remember these events.

In the last 6 months, my child has had...

_____ injuries that required a doctor's or dentist's attention

Since birth, my child has had...

_____ injuries that required a doctor's or dentist's attention

ID:_____ Date:_____

4. Please indicate which of the following types of injuries your child has **ever** had in the **last 6 months** and how many s/he has had **since birth**, regardless of whether or not you sought medical attention. Write in how many times the injury has occurred.

	How many times?	
	In the last 6 months	**Since birth**
Motor vehicle accident - injury as a passenger.....	_____	_____
Motor vehicle accident - injury as a pedestrian.....	_____	_____
Water-related (e.g., fall in tub).....	_____	_____
Burn - hot liquids or food.....	_____	_____
Burn - chemical or fire.....	_____	_____
Burn - hot object (e.g., stove, heater).....	_____	_____
Fall - from heights (e.g., down stairs).....	_____	_____
Fall - from moving object (e.g., bike, swing).....	_____	_____
Cut of any kind (e.g., scrape, puncture).....	_____	_____
Crushing injury (e.g., slamming door on hand).....	_____	_____
Electrical injury (e.g., electric shock).....	_____	_____
Poisoning – chemical/drugs.....	_____	_____
Poisoning – food.....	_____	_____
Poisoning – plants.....	_____	_____
Choking or suffocation.....	_____	_____
Injury to mouth, teeth, or tongue.....	_____	_____
Sports-related injury of any kind.....	_____	_____

5. Has your child **ever** been hospitalized because of an injury?

_____ YES _____ NO

If YES, how many times has your child been hospitalized because of injuries?_____

Appendix G

Video Coding Sheet

Participant ID: _____ Observer: _____ Date: _____

CONDITION (circle one): No distraction Pen & Paper Technology

CAREGIVER BEHAVIOR
Caregiver Attention Vigilance: No attention Highly Attentive 1 2 3 4 5 *Eyes on Child*: _____seconds *Eyes on Screen:* _____seconds *Eyes on Form:*_____ seconds *Unable to Code:* _____seconds *Total Proactive Responses*: _____

CHILD BEHAVIOR
Child Activity Level: Not Active Highly Active 1 2 3 4 5 *Total Hazards Contacted:* _____

IN-SESSION BEHAVIOR							
Interval	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Interval (sec)							
Child engaged hazard (Y/N)*							
Caregiver proactive response (Y/N)*							

*If Y, complete hazard follow-up form below for **each** hazard engaged with

Hazard Type: P = pennies | **B** = box of staples | **S** =stapler | **C** = Cleaner | **T** =Tylenol | **M** =matches | **O** = Outlet plug | **Cp** =coffee pot | **X** = Other (please specify)

Hazard Engagement: V = vocalization | **R** = reach | **T** = touch. **NOTE**: If engagement continues into the next interval, code the hazard engagement AND "C" to indicate "continued"

Caregiver Phone: 0 = none | **1** = immediately preceding | **2** = caregiver did not notice child touch hazard because s/he was using phone

Caregiver Form: 0 = none | **1** = immediately preceding | **2** = caregiver did not notice child touch hazard because s/he was completing forms

Caregiver Response: 0 = no response | **1** = remove hazard | **2** = remove child | **3** = verbally reprimand child | **4** = encourage engagement | **5** = ineffective removal of hazard | **AND**: **P** = proactive or **R** = reactive

Caregiver Proactive Response: At times, caregivers might move hazards without a child previously engaging with them. These instanced should still be recorded. In this event, still complete the interval, identify the hazard, indicate NO for hazard engagement, complete the form appropriately, and identify the appropriate caregiver response. All of these would be considered proactive responses.

HAZARD FOLLOW-UP					
Interval:	**Hazard Type:**	**Hazard Engagement:**	**Caregiver phone:**	**Caregiver form:**	**Caregiver response:**
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R
					P/R

IN-SESSION BEHAVIOR					
Interval	**Interval (sec)**	**Caregiver eyes on child (sec)**	**Caregiver eyes on screen (sec)**	**Caregiver eyes on form (sec)**	**Unable to code behavior (sec)**
1					
2					
3					
4					
5					
6					
7					
TOTAL:					

Appendix H

Video Coding Definitions and Instructions

Eyes on child: Total amount of time caregivers' eyes were on their child during the duration of the session. This should be reported in _____seconds and should be for the entire duration of the condition. Any instance in which the caregiver's head and/or eyes are directed toward the child should be counted. Note that a caregiver's head may be faced away from their child but still move their eyes to focus on their child; if you can see the caregivers' eyes, this should be coded. Quick glances to the child between other activities should also be coded.

Eyes on screen: Total amount of time caregivers' eyes were on their phone during the duration of the session. This should be reported in _____seconds and should be for the entire duration of the condition. Any instance in which the caregivers head and/or eyes are directed toward the phone should be counted. Note that a caregiver's head may be faced toward their phone but they still focus their eyes on their child; this should not be coded as eyes on screen. Quick glances to the phone between other activities should also be coded.

Unable to code: At times, it may be impossible to tell what the caregivers' eyes are looking at. If their back is to the camera, face is out of view of the camera, or you cannot reasonably determine what the caregiver is looking at, you should count it as unable to code.

Total Proactive Responses: Using the hazard follow-up form, a total count should be given for the number of proactive responses a caregiver made. **Only include proactive responses where child hazard engagement was "NO".**

Total hazards contacted: Using the hazard follow-up, a total count should be given for the amount of hazards the child contacted or approached during the condition. **NOTE:** "continued" engagement with hazards should be included here.

Engagement type: Child engagement with hazard is coded on three dimensions, including: vocalization, touches, and reaching.

Vocalization: Code if the child vocally expresses interest in the hazard. Examples of vocalizations may be "what's this" or "matches burn" etc. or any other vocalization specific to a hazard(s). If the child vocalizes about a hazard, write a "V" under "hazard engagement". Use a five second rule to determine if a second vocalization has occurred. Specifically, five seconds must have passed between the first vocalization and any subsequent vocalizations about the same hazard in order for the second vocalization to be coded as a new hazard. If the child is still vocalizing about the hazard as the next minute begins, **code the same way as if a new contact had occurred.**

NOTE: this code is only appropriate for the child's spontaneous questions or comments about the hazards. It would not be appropriate to code if the caregiver asks the child for the name of the hazard or if caregiver and child are engaged in conversation about the hazard.

Reaching: Code if the child reaches for any hazard(s) during the minute segment. To code it must be clear that the child is intending to touch or grab the hazard. It should be coded as an "R" under the hazard engagement category. Note this code is for failed attempted physical contacts. If the child does physically contact a hazard, you would code 'TOUCHES' rather than 'REACHING'.

Touch: Code if the child touches or picks up the hazard. If the child touches a hazard, write a "T" under hazard engagement. Subsequent touches should only be counted if the child's hand came off the object between touches. **Continuous holding would only count as one touch.** Use a five second rule to determine if a second touch has occurred. Specifically, five seconds must have passed between the first touch and any subsequent touch about the same hazard in order for the second touch to be coded. **If the child's touch occurs as the next minute begins, code the same way as if a new contact had occurred.**

Caregiver phone: Code caregivers' use of phone at time of child engagement with hazard. If parents are not engaged with their phones, code a "0". If caregivers were using their phone within 5 seconds preceding the engagement, code a "1". If caregivers did not notice the child engage with the hazard because s/he was using his/her phone, code a "2".

Caregiver response: Code caregivers' response to the child's engagement with the hazard.

- If caregivers **removed the hazard** (e.g., placed it out of child's reach, asked the RA to remove it) code "1".
- If the caregivers **removed the child** (e.g., physically moved child away from hazard), code "2".
- If the caregiver gave a **verbal reprimand** (e.g., "don't touch that!"), code a "3".
- If the caregiver **encourages engagement** (e.g., "you can play with that" or "what is that?"), code a "4"
- If the caregiver moves a hazard but it is still within reach of the child, this is an **ineffective removal of the hazard**; code a "5"
- If the caregiver **did not respond** to the child's engagement with the hazard, code a "0".

- If the child has a vocalization about a hazard and the caregiver responds (e.g., child asks, "what is this?" and caregiver says, "matches"), they should receive a 0 – this response does not prevent or deter future engagement with the hazard

- URAs should also determine whether caregivers' responses were proactive (P) or reactive (R) (see below) and circle the appropriate code on the coding sheet.

  Proactive interventions: Proactive interventions occur PRIOR to the child physically contacting the hazard. Therefore, any action the caregiver takes to protect the child from the hazards, BEFORE the child has actually touched the hazard, would be considered proactive. Caregiver responses to child vocalizations about hazards, reaching, or pointing would be considered proactive. Although in each of the above situations, the child is at potential risk of being injured, there is still time and actions that may be taken to prevent an actual contact with the hazard(s).

  Reactive interventions: Reactive interventions occur AFTER the child has physically contacted the hazard(s). Therefore, any action the caregiver takes after the child has touched a hazard would be considered a reactive intervention. Reactive interventions are NOT coded if the child reached for, or vocalized about, or pointed to a hazard since these actions still leave time for the caregiver to intervene and remove the danger. Reactive interventions are restricted to child physical contact with the hazard(s) because in this situation, the child is at highest risk of being injured.

Caregiver attention vigilance: This score represents the amount of attention the caregiver is paying to the child in terms of watching the child's behavior and generally maintaining awareness of the child's behaviors and whereabouts. Attention is considered verbal conversation, play activities, as well as visual attention. If the child is seated next to the caregiver and is not walking around the room or doing activities requiring the caregiver's attention, then coders should still take into account the visual references or verbalizations. Keep in mind, the number of times and length of time that the caregiver was attending to the child or child's activities over the course of the session. Use the following guidelines to aid your decision.

1 =Lack of attention. A '1' should be coded if the caregiver rarely or does not visually or verbally reference her child. They may be very involved in attending to other things such as a book, magazine, or questionnaire or may only respond to child's requests for attention. Code if the caregiver attends to the child less than 20% of the condition.

2 = Little attention. A '2' generally represents a caregiver who makes infrequent contact with the child or responds only if the child is requesting the caregiver's attention. In general, the caregiver will attend to the child only 20-40% of the condition.

3 = Moderate attention. A 3 would represent a caregiver who watches or maintains verbal contact with the child between 40-60% of the condition.

4 = Diligent attending. The caregiver should be demonstrating awareness of the child between 70-90% of the condition.

5 = Very diligent attending. This would include caregivers who make constant visual references and show awareness of the child. The caregiver should be overtly maintaining awareness or be engaged with the child 90-100% of the condition.

Note, if the caregiver does not at least look at the child when the child is calling their name, making loud sounds, or doing activities that should elicit the attention of the caregiver, you should consider this as lack of attention and lower the rating. For example, if the caregiver references the child and is moderately responsive such that you judge her attention as a 3, but several times during the session, the child called their name, crawled under the table or stood on a chair and the caregiver did not pay attention or respond, you should drop the code from a '3' to a '2'. If coders believe the appropriate rating is between two numbers, code the higher number.

Child activity level: This score represents the level of physical activity the child engaged in during the session. Consider how frequently the child walked around the room, climbed on furniture, or demonstrated restless activities such as jumping or kicking feet. Use the following guidelines to inform your decision:

1 = negligible activity occurring for less than 20% of the condition. A '1' should be assigned to a child who sits quietly on the couch, floor, or chair for the duration of the condition. A one may also include a child who stands in place for the majority of time as well.

2 = minimal activity that may include some minor and/or infrequent physical activity. Typically a 2 would indicate the child was physically active approximately 20-30% of the condition.

3 = moderate activity that would include some walking around or other general activity but did not occur throughout the condition or was very mild behavior (e.g., slow paced walking). A '3' would include a child who was physically active for approximately 40-60% of the condition.

4= an active child who was engaged in physical activity approximately 60-80% of the condition.

5 = a very active child who was constantly engaged in some physical activity such as walking around the room, running, climbing on furniture etc. The child should be engaged in physical activity for approximately 80-100% of the condition.

Note that jumping, climbing on furniture, running, or constantly changing activities would increase activity level ratings. For example, if a child would receive a '2' because the duration of the physical activity, but ran across the room, the rating should be increased to a '3'. If coders feel that the appropriate code representing activity level is between two numbers (e.g., between a 2 and a 3) then code the higher number.

Coding Instructions

1. For each participant, you will need: the definitions; 1 Video Coding Sheet; 1 Hazard Follow-Up Form, 1 In-session Overtime Form; 1 Caregiver In-Session Behavior Form
2. Complete the top portion of each coding sheet, indicating your name, participant ID, the date, and what condition this video represents.
3. Begin with the Video Coding Sheet. Watch the entire video and code behaviors in 1-minute intervals. During this, remember you are coding two behaviors:
    a. Whether children engaged any hazards or not during the minute interval
    b. Whether the caregiver made any proactive responses to a hazard without the child engaging a hazard
4. If children did not engage any hazards during the minute interval but caregivers engage in a proactive response, complete the hazard follow-up form.

a. Indicate in what interval the hazard engagement occurred using the interval row from the "In-Session Behavior" table.
b. Identify "NO" for what hazard the child engaged. Use the key below the table to code appropriately.
c. Then, code caregiver phone use using the operational definitions document. Caregivers will receive a score between 0-2 to indicate phone use.
d. Finally, code caregiver response to the hazard. You may have to un-pause the video, allowing it a few seconds to play such that you can observe the caregiver's response. You should re-pause the video once you've determined the caregiver's response. Caregivers receive a score between 0-2 to indicate their response. Additionally, be sure to indicate that the caregivers' responses was "proactive" (p).

5. If the child did engage any hazard during the minute interval, pause the video immediately after the engagement. Then, complete the "Hazard Follow-Up" section using the guidelines below.
    a. Indicate in what interval the hazard engagement occurred using the interval row from the "In-Session Behavior" table.
    b. Then, identify with what hazard the child engaged. Use the key below the table to code the hazard appropriately.
    c. Next, code the hazard engagement type. Refer to the document with operational definitions to indicate whether the child made a vocalization, pointed, was in proximity, or touched a hazard.

d. Then, code caregiver phone use using the operational definitions document. Caregivers will receive a score between 0-2 to indicate phone use.

e. Finally, code caregiver response to child's engagement with the hazard. You may have to un-pause the video, allowing it a few seconds to play such that you can observe the caregiver's response. You should re-pause the video once you've determined the caregiver's response. Caregivers receive a score between 0-2 to indicate their response. Additionally, be sure to circle whether caregivers' responses were "proactive" (p) or "reactive" (r).

6. Upon completion of the "Hazard Follow-Up" data recording, un-pause the video and continue. If a child engages multiple, hazards in the same interval, hazard follow-up coding should be provided for each hazard. If a child contacts one hazard, a second hazard, then returns to the first hazard, all three should be coded as separate incidents. **NOTE**: There may be some intervals in which children do not contact any hazards. In this case, it is not necessary to complete any follow-up hazard information.
7. If children <u>did not</u> engage any hazards during the minute interval, and <u>caregivers did not engage in a proactive response</u>, proceed to the next interval.
8. Upon completion of the video, use the operational definitions document to provide ratings of caregiver attention vigilance and child activity level
9. Count total amount of hazards the child engaged with during the entire session, and record this number under child behavior. **NOTE:** If the child contacted zero hazards during the condition, it is important to record "0" on the data recording sheet.
10. Re-watch the video using the Caregiver In-Session Behavior. Count the total number of seconds caregivers' eyes are on the child, and eyes are on their screen for each interval.

Use the definition sheet to help. Add the total number of seconds caregivers had their eyes on the child; record this number under caregiver behavior on the Video Coding Sheet. Add the total number of seconds caregivers had their eyes on the screen and record this number under caregiver behavior on the Video Coding Sheet.