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Using iPhones to Enhance and Reduce Face-to-Face Home Safety Sessions

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ABSTRACT

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Using iPhones to Enhance and Reduce Face-to-Face Home Safety Sessions
(Under the direction of John R. Lutzker, PhD)

Innovative handheld technologies are changing the possibilities for delivering public health interventions. The present research describes a preliminary examination of the effects of iPhone™ both as an assessment tool for data collection and as an enhancement to an in-home child safety intervention. Three families with children under age seven were trained to use an iPhone to video targeted rooms in their homes following SafeCare® safety module intervention implementation during which rooms were secured for accessible safety and health hazards. The iPhone was used to communicate feedback, logistical information, and clarification of safety content. The effectiveness of iPhone and iPhone video was examined using a multiple baseline design across settings replicated across families. All rooms across subjects demonstrated significant decreases in home hazards. Face-to-face (F2F), in-home time of the home visitor was progressively reduced and replaced by video data collection over the course of the intervention. These data suggest that handheld technology tools are a promising means of data collection for in situ safety interventions and for augmenting interaction during intervention. Implications of these findings for reducing costs of F2F intervention as high-quality handheld video capabilities become increasingly ubiquitous and for engaging and retaining participants are discussed.

INDEX WORDS: child maltreatment; child neglect; technology; safety—home, child; SafeCare®

Using iPhones™ to Enhance and Reduce Face-to-Face Home Safety Sessions

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USING iPHONES™ TO ENHANCE AND REDUCE FACE-TO-FACE HOME SAFETY SESSIONS

by

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TABLE OF CONTENTS

CHAPTER I

LITERATURE REVIEW

Maltreatment treatment of children comes in many forms and has both immediate and long-term consequences. Child maltreatment includes physical, sexual and emotional abuse, as well as neglect. Headline cases of extreme physical and sexual abuse obscure the far more prevalent danger of child neglect, which can be defined as "a type of maltreatment that refers to the failure by the caregiver to provide needed, age-appropriate care although financially able to do so or offered financial or other means to do so" (DHHS, 2009). National and state data chronicle the statistical impact of child maltreatment via sentinel reports cross-referenced with official data, but the resulting numbers may belie reality: as is the case with many public health issues, child maltreatment data may suggest an iceberg effect, as self-report studies often reveal vastly different statistics (Wulczyn, 2009).

State child protective services agencies in the United States report that 3.2 million referrals for child abuse and neglect were made in 2007, equating to 5.8 million children. Nearly 800,000 children were found to be victims of maltreatment—the large majority of those (59%) suffered from neglect, and it is even higher when it is considered that 13.1% of cases are "multiple maltreatments." An estimated 1760 children died due to child maltreatment, with 34% of those deaths attributed to neglect alone (DHHS, 2009). Children who suffer from neglect have long-term negative health sequelae, including substantial and persistent loss in quality of life indicators (Corso, Edwards, Fang, & Mercy, 2008) and increased likelihood for violence later in life (Chapple, Tyler, & Bersani, 2005). Kelley, Thornberry, and Smith (1997) speculate that the cost of neglect and abuse is likely understated due to underreporting and invisibility of more

benign, milder indicators, yet Wang and Holton (2007) estimated a conservative figure of $103.8 billion annually.

White children represent the largest group of victims, though African-American children have the highest rate of reported maltreatment, 16.7 per 1000, followed closely by American Indian and Alaskan Native youth—14.2 and 14 per 1000, respectively (DHHS, 2009). These disparities are explained, at least in part, by disproportionate numbers of African-American female heads of households living in poverty, a risk factor for child maltreatment (Schuck, 2005). And while single heads of household are at greater risk for living in poverty, living with a biologic parent alone does not increase the risk of child neglect. According to recent data from Schnitzer and Ewigman(2008), household composition consisting of single-parent families is not a risk factor for increased unintentional injury, though residential arrangements with non-biologic adults, including step-parents, foster parents, or other adult relatives, is. Further, several studies support the claims of the most recent National Incidence Study (NIS-3; Sedlak & Broadhurst, 1996) that race is not a factor in child maltreatment; rather, links to community dynamics, such as the social context of where people live, influence incidence rates of child maltreatment (Coulton & Korbin, 1995; Molnar, Buka, Brennan, Holton, & Earls, 2003).

Perhaps no single factor influences who is susceptible to child maltreatment as unambiguously as age: infants suffer the highest rate of victimization, and young children under four-years-old, including infants, account for approximately 32% of all victims of maltreatment. Additionally, children four to seven years of age represent nearly 24% of all victims, making primary-school-age and younger children especially vulnerable. While sexual and physical abuse rates have seen declines in the past two decades, child neglect has remained relatively steady. Of

the 1760 child maltreatment fatalities in 2007, over one-third (34.1%) were due to neglect alone (DHHS, 2009).

Yet, child neglect is often disregarded in comparison to other forms of child maltreatment. Lack of cohesive definition and agreement have hindered more substantive progress in understanding neglect (DHHS, 2009; Dubowitz, 2007; Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Lezin & Long, 2002; McSherry, 2007) though concerted efforts to appreciate the antecedents and pathways to harmful sequelae are being supported through a consortium of research studies known as LONGSCAN (Longitudinal Studies of Child Abuse and Neglect). LONGSCAN research has suggested that early aggressive behaviors are more prevalent in children neglected between the ages of 0-2 years (Kotch, Lewis, Hussey, English, Thompson, Litrownik, et al., 2008) and that pre-school-age behavior problems, both internalized and externalized, emanate from neglect occurring by age three (Dubowitz, Papas, Black, & Starr, Jr., 2002).

The toll on the quality of life of the individual suffering from child neglect typically does not end when the abuse ends. Adolescents experiencing adverse childhood experiences (ACEs) initiate alcohol use earlier (Dube, Miller, Brown, Giles, Felitti, Dong, et al., 2006); poorer school performance (Kelley et al., 1997) , higher rates of teen pregnancy (Anda, Chapman, Felitti, Edwards, Williamson, Croft, et al., 2002); have higher drug use; and increased risk of antisocial behavior and depression (Schilling, Aseltine Jr., & Gore, 2007). Research suggests that adolescents neglected as children have difficulty in forming positive peer relationships, which leads to future violence, even in milder, more seemingly benign cases of child neglect (Chapple et al., 2005). They are also more likely to have had significantly more frequent encounters with law enforcement, including violent delinquency (Kelley et al.).

As adults, victims of child maltreatment continue to face challenges with integration into society, with higher rates of violent crime, drug abuse, and health problems, including mental and emotional disorders and chronic illness. Being abused as a child has been found to represent a 30% higher likelihood of being arrested as an adult for a violent crime. As adults, maltreated children begin criminal activity earlier, perpetrate nearly two times the number of crimes, and are arrested more frequently than non-abused peers (Widom & Maxfield, 2001). Revictimization of maltreated children as adults is an observed phenomenon, with higher risk of sexual and physical abuse, kidnapping/stalking, and association with friends or family members who are murdered or commit suicide (Widom, Czaja, & Dutton, 2008). Children who are maltreated also have a higher rate of depression as adults, and this condition is associated with high-risk behaviors, challenges in personal relationships, and low self-efficacy. These factors, in turn, are linked to negative physical health outcomes, such as heart disease, cancer, stroke, diabetes, obesity, and other chronic diseases (Kendall-Tackett, 2002).

Lifetime indirect health-related costs of child maltreatment are significant. So, too, are the immediate, direct costs associated with hospital and emergency room visits, with Medicaid as the primary payer two-thirds of the time. Children admitted to the hospital due to maltreatment remain in the hospital longer, are diagnosed with multiple diagnoses, and incur significantly greater expenses than children hospitalized for other reasons. Nearly 5000 children whose hospital admissions were coded with abuse or neglect spent $10,000 more on average per visit than non- abused or non-neglected children, for an annual 1999 aggregate of $92 million. Tragically, the number of deaths is also greater: children hospitalized for abuse or neglect versus those with hospital stays for other reasons are nine times more likely to die (Rovi, Chen, & Johnson, 2004).

Clearly, direct and indirect costs of child neglect represent an extensive public health problem. Mitigating these costs through prevention is possible, particularly in the area of child safety. Federal policy has yielded substantial gains in injury reduction over the past several decades through the creation of the Consumer Product Safety Commission (CPSC), the National Highway Traffic Safety Administration (NHTSA), and the Food and Drug Administration, among others. The CPSC, for example, with its mandate to protect children and adults from unreasonable risk of injury and death due to unsafe consumer products, recalled over 60 million items in 2008, included 780,000 hazardous cribs. Large-scale public campaigns to improve child safety complement policy efforts, such as the NHTSA's Child Passenger Safety Week, during which proper child safety seat installation was verified by certified technicians across the United States during September 2009.

Preventable, unintentional injury persists, however, and mostly in the home. The majority of infant drowning accidents in 1995, for example, happened in the home: 78% overall, with 71% occurring in bathtubs and 16% occurring in buckets (Brenner, Trumble, Smith, Kessler, & Overpeck, 2001). Over 13,500 children aged 4 or under were involved in non-fatal choking episodes in 2001, accounting for over 82% of all such incidents in children aged 14 or under; nonfood items, such as coins, were involved in roughly one-third of these events (CDC, 2002). Nearly 90% of calls to poison control centers took place from the home in 2003: 52% of all calls involved children under age 6, and 61% of those cases represent unintentional exposure to a poison. Among the top culprits in this age group: cosmetics and personal care products (13.4%); cleaning substances (9.7%); and pain remedies (7.8%; Watson, Litovitz, Klein-Schwartz, Rodgers, Youniss, Reid, et al., 2004).

Interventions specifically focused on hazard reduction and education help balance policy, regulation, and public awareness campaign efforts and decreasing unintentional harm to children. In-home interventions focusing on skills training for parents to ensure child safety have met with sustained success and reduced recidivism (Harder, 2005; Gershater-Molko, Lutzker, & Wesch, 2002). Interventions with behavioral components require time investment, and efficacy of such programs relies upon engagement throughout and completion of a program.

Development of evidence-based programs to reduce child maltreatment requires not only time, but also research. Myriad factors may negatively influence likelihood of participation in research, including socioeconomic status, ethnic dissimilarity between researcher and participant, societal marginalization, lack of research focused on the ethnic group, harmful research to the ethnic group, and racism and discrimination (Armistead, Clark, Barber, Dorsey, Hughley, et al., 2004). Yet engagement of at-risk and marginalized groups is critical (DePanfilis, & Zuravin, 2002), as evidence-based interventions can only achieve effect when families participate in and finish programs.

Interventions that take advantage of handheld technologies, similar to the iPhone, have revealed encouraging results for engagement and program completion. SafeCare®, an ecobehavioral parent-training program for reducing child abuse and neglect, is being tested in a randomized control trial for effects of a cell phone enhancement. Preliminary results show that mothers in the program who were given cell phones have demonstrated greater engagement and significantly lower attrition rates than the control group (Bigelow, Carta, & Lefever, 2008). To the degree that other devices like the handheld technologies proposed by Bigelow et al. can be considered, iPhone-integrated interventions have high probability of similarly appealing to participants.

Recent high-profile cases of child abuse and neglect have increased the scrutiny under which child protective services agencies operate. Caseloads are heavy. To the extent that case managers carry out interventions with families at risk of child maltreatment, finding a means to maintain or increase the dosage of interaction between caseworker and parents while reducing the face-to-face contact between them may result in more efficient service and outcomes. New technologies are being explored as part of public health interventions with positive results, including research that may help overcome barriers to efficacious delivery of in-home interventions.

The highly sophisticated technology that delivers health care in the United States, making it among the most advanced treatment centers in the world, is yet underutilized in other areas of health and social systems. Specifically, use of technology in broad-based public health interventions and as a tool for public health program implementation is in a nascent stage. Accelerated integration of digital communication devices and other technologies could mitigate many of the obstacles standing in the way of health care cost containment, quality of care and adherence, equity of access, and a shift toward preventive care, all of which contribute to decreasing the impact of child maltreatment on individuals and on society.

Reasons for utilizing technological tools and strategies to allay obstacles to health care are emerging in both intervention and implementation literature. The potential for improved outcomes through increased compliance is being studied via short message service (SMS, aka "texting"), video broadcast via television signals and digital video via the Internet. These somewhat novel means of enhancing interventions are innovative and cost effective, demonstrating great potential for public health.

Integration of technology in public health interventions is being used for increasing compliance, communication, and intervention. In the United Kingdom, nurses are encouraging women to set the alarm on their cell phone as a reminder to take birth control pills and report increased compliance ("Mobile Alarms Aid Pill Compliance," 2004). In another randomized controlled trial, text messaging is being used to communicate with and support low SES mothers in breastfeeding (www.clinicaltrial.gov). Wireless handheld computers of college students are being sent text messages to study the impact on diminishing incidents related to alcohol use and feasibility. The randomized controlled trial revealed feasibility and a positive association between tailored messages about alcohol and related behaviors and attitudes (Weitzel, Bernhardt, Usdan, Mays, & Glanz, 2007).

Clearly the breadth of these studies indicates promising potential of SMS for intervention quality, feasibility, participant retention and engagement. Interest in text messaging as a public health intervention tool is so great that the Centers for Disease Control and Prevention hosted the first Texting4Health Conference in April 2008, to bring together health experts in SMS. The director of the Health Marketing Center at the CDC, Bernhardt, characterizes the possibilities as follows: "Mobile phones and integrated wireless devices will revolutionize the practice of public health and touch billions of lives around the world" (2008, ¶ 1).

Texting via cellular phones is being tested as a means to improve child neglect intervention quality by increasing dosage, improving compliance, and enhancing participant satisfaction and retention. A component of SafeCare is currently being tested with the use of cell phones in a randomized clinical trial, with promising preliminary results (Bigelow et al., 2008). One module of the SafeCare intervention, Planned Activities Training (PAT), involves teaching parents to engage their children in daily activities in order to reduce challenging behavior and

improve parent-child interactions. Cell phones are being used to increase communication between home visitors and mothers via weekly PAT-related conversations and improve PAT compliance via daily SMS. With any child maltreatment intervention, participant retention is among the more challenging impediments to success. Early indicators are that the test group using cell phones has improved attendance and retention, greater parent satisfaction, and improved parenting behaviors. Cost analyses are in progress.

Other cell phone research describes assessment of the feasibility of cell phones for child maltreatment prevention. Cell phone and landline interviews were conducted and tested against traditional paper-and-pencil for reliability and validity. The validated Parent-Child Activities interview (PCA) protocols were then used to communicate via cell phone with study groups of at-risk, teenage mothers—who typically encounter more external (such as financial practicalities) and internal (emotional and cognitive factors, for example) difficulties while performing already complex parenting tasks. These inherent difficulties put children in more vulnerable positions for abuse and neglect. The use of cell phones represented a less costly and less obtrusive means of gaining entry into the lives of these young parents than typical at-home interviews. Further, cell phone use allowed broader access to the mothers by virtue of their portability (Lefever, Howard, Lanzi, Borkowski, Atwater, Guest, et al., 2008).

Other uses of technology are also manifesting in child and youth issues. Self-Brown and Whitaker categorize technology applications in child maltreatment prevention as useful for identification of abuse and neglect, program administration, and program implementation (2008). These categorizations are useful in framing discussions of child and youth issues in general. As an example, screening adolescents 11-20 years old in their primary care setting for high-risk behaviors yielded an immediate report for physician review and alerted specialized teams when

warranted (e.g. suicidal indications). The identification of problems came from a touch screen displaying a web-based application through which the adolescents answered questions (Julian, Kelleher, Julian, & Chisolm, 2007). Implementation of a specific training intervention via DVD for foster parents which addresses problem behaviors often displayed by neglected or abused children holds promise as a cost-effective means to augment parenting skills. Such self-regulated programs can also be categorized as administratively sound, as they serve to eliminate barriers such as costs, transportation, geographic distance, time, and child care needs (Pacifici, Delaney, White, Cummings, & Nelson, 2005). Another example of combining technological solutions to overcome dissemination and administration impediments is creation of virtual online worlds. Such solutions can support at-risk youth and teach life skills via a medium familiar, appealing, and accessible to them are being developed and show potential for increasing productive participation as newly-independent citizens no longer under the auspices of CPS (Pacifici, White, Cummings, & Nelson, 2005).

Progressive, technology-based enhancements to interventions such as those offered through SafeCare® and other programs must be explored cautiously as some devices that may one day become ubiquitous are yet costly. Appropriately, research design models that balance inquiry with innovation and yield responsible financial stewardship of resources can lay the foundation for larger-scale investigation. Single-case design allows examination of behavior change at the individual level, which is important to understand if the ultimate interest is changing behaviors of larger numbers of people (Kazdin, 1982). While pilot research conducted with single-case designs obliges replications to ensure external validity, it is a legitimate initial design for behavioral interventions. Replications determine generality and allow for evaluation of the intervention or enhancements to the intervention.

SafeCare is evidenced-based program with genesis and early beginnings as Project 12-Ways. It offers a model for an ecological, upstream approach to the serious public health problem of child neglect by combining the collective wisdom of multiple disciplines and years of clinical and field research. Grounded in the tradition of applied behavior analysis, three skill-based training modules addressing areas of concern in households at risk of maltreatment comprise the ecobehavioral model: bonding skills training, health care skills training, and home safety skills training; integrated throughout the three modules are problem-solving and counseling. Depending on the needs and progress of the family, each module lasts a specific number of sessions, typically six, with the first session consisting of data collection for baseline information. As the program is behavioral in nature, all skills are modeled by a home visitor and practiced by the parent, with coaching and positive feedback; demonstration of mastery is required before moving forward to the next lesson or module.

Bonding skills training occurs in situ, taking one of two formats depending on the age of the child. For infants, parents are taught specific ways to build positive connections with their child through talk, play and bonding interactions. For children who are past infancy, the parents are taught Planned Activities Training (PAT), during which a series of parenting skills are modeled and then practiced around common activities, such as bedtime, meals, and play. It focuses on coaching for positive interactions, building self-control in the child through positive reinforcement, and fostering success by setting expectations and adhering to them via affirmative response (Lutzker & Bigelow, 2002; Whitaker, Lutzker, Self-Brown, & Edwards, 2008).

The module dealing with health skills is designed to help parents ably assess illness and emergencies, as well as to handle subsequent phone calls or visits to a health care professional. This is scaffolded by print protocols for reference and practiced through situational learning

during which the parent must role play his/her actions when faced with various health situations. Each component must be mastered by the parent before moving to the next task (Lutzker & Bigelow, 2002; Whitaker et al., 2008).

The safety module of SafeCare systematically addresses hazards found throughout the home, on a room-by-room basis, based on 10 categories outlined on the Home Accident Prevention Inventory-Revised (HAPI-R). Often beginning in the room where many hazards are found, the home visitor and parents methodically identify and remove hazards such as poisons, electrical hazards, choking and suffocation hazards, and others. Following the initial assessment, parents are supported by the home visitor as they gradually take control of securing rooms from hazards (Lutzker & Bigelow, 2002; Whitaker et al., 2008).

The safety module of SafeCare emanated from Project 12-Ways parallel to the development and validation of its core assessment tool, the Home Accident Prevention Inventory (HAPI), based on the need to improve safety conditions in the homes of children at risk of abuse or neglect (Tertinger, Greene, & Lutzker, 1984). This tool provided a systematic means of measuring multiple categories of hazards and its associated rules provided guidelines for eliminating the hazards. Because intensive training was required of in-home counselors, or home visitors, technology solutions were sought early on to streamline the safety program. Specifically, audio-slide shows were developed to assist parents in identifying safety hazards by the categories that existed on the HAPI at that time and to make determinations as to what hazards were accessible. While this technology enhancement to the intervention did not supplant the home visitor, it did reduce the amount of time required for home visitor training and time in situ (Barone, Greene, & Lutzker, 1986).

As Project 12-Ways morphed for an urban implementation, so, too, did the HAPI. The HAPI-Revised (HAPI-R) was augment through addition of two new categories of hazards; it was re-validated by four safety experts and socially validated for an urban setting (Lutzker, Bigelow, Doctor, & Kessler, 1998; Metchikian, Mink, Bigelow, Lutzker, & Doctor, 1999). Solutions to the delivery of the safety module continued, again via technology. Mandel, Bigelow, and Lutzker (1998) developed a series of four video tapes, approximately 10 minutes each, to deliver hazard identification and securing instruction. As with the Barone et al. (1986) research, the tapes did not remove the home visitor from the delivery model, but reduced home visitor training requirements and allowed for other positive feedback from participating families concerning the medium.

Efforts to make the SafeCare safety intervention more efficient and to maximize its efficacy with families at risk of child neglect are ongoing, particularly as innovative tools with sophisticated capabilities emerge. Thus, the purpose of this research was to determine the effect of iPhone enhancement to the safety module of SafeCare, both as intervention enrichment and as data collection tool, using a multiple baseline design across household rooms replicated across families.

CHAPTER II

METHODS

Participants

Three families living in metro Atlanta neighborhoods participated in the iSafety pilot research. Each of the families was a participant in Building Strong Families (BSF), a program designed to strengthen relationships between low-income, unwed parents. A list of nine families was generated by the BSF program director that consisted of participants with perfect attendance in the BSF intervention. In consultation with the program director, it was agreed that families with 100% attendance throughout the BSF intervention would be ideal candidates for the iSafety pilot research and would lower the chance of attrition in this research. The BSF program director's designee made initial telephone contact with the families in order to obtain verbal consent for subsequent contact for participation in the iSafety pilot research. From the resulting list of nine families, each was called by the experimenter until four families met the following selection criteria: have at least one child age 5 or younger; consent to participate in the iSafety project; and state a desire for a safer home. One family agreed to participate, but then was not at home for the first meeting or reachable by telephone in subsequent attempts to contact them. They were consequently not part of the research, and three families constituted the study population.

Setting

The iSafety research took place in the homes of participants who lived in Atlanta metro-area neighborhoods. Family A lived in a rented duplex in a high-poverty, deteriorating neighborhood with houses built primarily in the 1960s or earlier. The home had a severe roach infestation and was extremely crowded with boxes, excess furniture, and people. There were

multiple family units within the household, two with infants, as well as a daily daycare service for three toddlers. Family B lived in a new single-family structure, which they owned, in a moderate-income subdivision. The two-story home had been newly furnished when they purchased the home two years prior and was very well maintained. Family C lived in a rented home built in the 1950s or 60s that was well-kept albeit in need of minor repairs. Some roach infestation was apparent. Table 1 provides descriptive information about each family.

Observation System: The Home Accident Prevention Inventory-Revised (HAPI-R)

The iSafety intervention is based on a single assessment tool, the HAPI-R. This tool was originally developed for counting the accessible safety and cleanliness hazards in homes and tested in a rural setting (Tertinger et al., 1984). It was later revised and validated for an urban setting (Lutzker et al., 1998). The HAPI-R was used to record hazards in 10 categories: poisonous solids and liquids; fire and electrical hazards; mechanical object; small objects and choking hazards; sharp objects; firearms; falling, tripping and activity restriction hazards; crush hazards; drowning hazards; and organic matter and allergens. Some categories were further subdivided into smaller units; for example, the category of mechanical objects is segregated into two subcategories: crib cords and plastics. There are 28 subcategories. The HAPI-R and the HAPI-R Definitions-Home Visitor Version can be found in Appendixes A and B, respectively.

To be counted on the HAPI-R during an observation, hazards had to be both accessible and unsecured. Accessible hazards are defined as those within reach and unsecured for the referent child, that is, oldest child in the home up to age seven. Reach was derived by measuring the distance from the floor to the referent child's outstretched fingertips while standing on tiptoes. The child was assumed to have the ability to climb on any surface at or below eye level. For households with infants or children not yet walking, 33" was used as the measure for eye

level and 45” was used for reach. Unsecured was defined as any item not in intact childproof containers or locked. A separate HAPI-R was used for each room observed.

Every hazardous item is tallied as a single safety concern in the corresponding category on the HAPI-R. Certain situations make it impractical to count individual items. For instance, a pile of pennies on the floor represents a choke hazard, and counting each penny is not only unfeasible, but also counterproductive in that all of the pennies must be removed to secure the hazard. Further, grossly elevated numbers of hazards might undermine the rapport between the home visitor and participant and make the task of securing the home appear impossibly overwhelming. To mitigate all of these factors, when items such as a pile of like items are found, they are counted on the HAPI-R as 10+. Another circumstance to which the “10+ rule” applies is when there are 10 or more like and accessible hazards that can be secured with a single effort. For example, when scoring accessible beauty products behind a cabinet door, the 10+ rule is applied once the count reaches 11. That is, the observer stops counting individual beauty products and records 10+ on the HAPI-R for that location, as a single cabinet lock would secure all of those hazards.

Safety Module Training

Experimenter training. The experimenter attended face-to-face (F2F) home visitor training in a small group setting conducted by a certified trainer from the National SafeCare® Training and Research Center (NSTRC). Participants in the training were provided with a Safety Module notebook consisting of written material about safety delivered via a PowerPoint presentation, an outline for home visitation sessions, forms used during the intervention (HAPI-R, HAPI-R Definitions-Home Visitor Version, HAPI-R Definitions-Parent Visitor Version, and Home Assessment Consent). Other written materials included a worksheet and quiz, Poisonous

Plant Guide-Georgia version, and Traveling Safely Guide. Copies of the HAPI-R Definitions-Parent Version and Home Assessment Consent can be found in Appendixes C and D.

Classroom training was conducted in a small-group setting by a certified trainer from the NSTRC. During an interactive presentation, home visitor trainees were exposed to background information on safety and child maltreatment and taught to use the HAPI-R. Following the presentation, trainees independently completed a worksheet requiring identification and count of a list of 25 items as belonging to a subcategory on the HAPI-R or not. The worksheet was discussed and participants were encouraged to use the HAPI-R definitions to locate specific references where there was disagreement.

Using a staged room at the training center, trainees practiced using the HAPI-R to complete an observation. A discussion lead by the NSTRC trainer followed, and home visitor trainees were again encouraged to use the HAPI-R definitions to support or correct their answers.

Under the guidance of the NSTRC trainer, home visitor trainees read and discussed details outlining the procedures for each of the different types of visits that comprise the SafeCare safety module: baseline, training, and follow-up. Video clips of staged home interventions were viewed and discussed. Trainees were paired with one another to role play conversations between home visitors and parents; and feedback on fidelity to the model, interaction with the “parent,” use of terminology, and use of active listening and summarizing statements was provided by an NSTRC trainer.

SafeCare home visitor classroom training ended with a quiz which assessed accuracy of use of the HAPI-R. A score of 85% was required, as determined by the NSTRC trainer; the experimenter achieved a passing score.

To complete home visitor training, the experimenter shadowed a trained home visitor into the home of a family receiving the full SafeCare intervention on two occasions: to observe a baseline data collection visit and an intervention visit of the safety module.

Observer training. Observers were graduate students enrolled in the Master of Public Health degree program at Georgia State University and graduate research assistants at the Center for Healthy Development. During training, observers were provided with written material about the SafeCare Safety Module consisting of copies of the slides used during the presentation, HAPI-R, and HAPI-R Definitions-Home Visitor Version. The observer training sessions focused on use of the HAPI-R. The experimenter attended both observer training sessions. The observers, the experimenter and the NSTRC trainer assessment a staged room independently as part of the training, and a discussion ensued in order to clarify application of the HAPI-R definitions. A quiz on accuracy of HAPI-R use was administered to both observers and each achieved a minimum of 85%, as determined by an NSRTC trainer.

Reliability

Reliability training. The experimenter and observers practiced F2F reliability during in situ and staged training over several weeks, which consisted of repeated observations in non-target homes and kitchens and bathrooms around the University. Specifically, the experimenter and the observers each scored the same room using the HAPI-R independently of one another and without conversation during the scoring. Following each observation, the experimenter led a discussion of HAPI-R identification and counts to refine common application of the tool. This continued in non-target homes until each observer and the experimenter achieved increasingly accurate reliability ratings consistently.

Reliability with iPhone video was practiced with actual iPhone video footage from participant homes. Videotaped rooms that were not part of randomly selected reliability sessions were viewed by observers and discussed subsequent to actual scoring of the room by the experimenter. Discussions of discrepancies and nuances of video assessment followed. Practice reliability scores with video were consistent with F2F reliability scores.

Types of reliability. Two types of reliability were assessed during the iSafety pilot: between experimenter and observer and between experimenter and video. Interobserver reliability was measured for each family during three of five visits required to complete the intervention. Reliability for each initial baseline data collection was calculated, and then two additional baseline or training visits were randomly assigned per family for reliability measures, for a total of three visits out of five. During reliability sessions, the experimenter and an observer used the HAPI-R to assess hazards in each of the three rooms per family that were part of the pilot research. If one of the randomly assigned visits consisted of video assessment, the experimenter and the observer used iPhone video emailed by the family to assess the room or rooms. Rules that had been established based on empirical evidence were applied to each observer's HAPI-R and a percentage of agreement was calculated.

Three rules were used to determine yes-no reliability within each of the 28 HAPI-R subcategories of hazards where either observer scored an item:

1) Subcategories with 10 or more hazards required agreement between observers within 4 items to be scored a *yes* for reliability.
2) Subcategories with between 3 and 9 hazards required agreement between observers within 2 items to be scored a *yes* for reliability.

3) Subcategories with 1 or 2 hazards required perfect agreement between observers to be scored a *yes* for reliability.

Due to the number of hazards in a room and the complex manner in which hazards are stored along with other hazards, these rules developed out of empirical observations and necessity. Without these rules, high observer reliability would have been rendered impossible. All subcategories where either a *yes* or a *no* was obtained were entered into the following formula to derive an interobserver reliability score:

$$\frac{Agreements}{Agreements + Disagreements} * 100$$

The mean and range of agreement percentages for each observer per family is reported in Table 2. Subcategories where no hazards were recorded by either the experimenter or the observer were not included in the reliability calculation, thus creating conservative reliability assessments.

A second type of "reliability," or "accuracy checks" were assessed between experimenter observations and video observations (E-V). Because the iPhone was used at once as a tool for the intervention and assessment during the posttreatment phase, E-V accuracy checks were not necessary during baseline. Thus, E-V accuracy checks were only calculated beginning with posttreatment visits for Family A. In this case, the family was asked to film the room that had received intervention while the experimenter was on site. This provided identical, undisturbed conditions in the measured room between the video and experimenter's F2F observations. The same logic and rules described for interobserver reliability were applied to calculate E-V accuracy checks. Once consistent E-V accuracy was achieved, the practice was discontinued. The same formula used for interobserver reliability was used for E-V calculations.

Materials

An iPhone 3GS was provided to each family. This model is the first in the smartphone class to offer video capture, high-speed Internet access and a 3.5” viewing screen. This combination of features enabled room observations to be videoed by participants and sent via email to the experimenter with relative ease and quality sufficient to maintain high E-V accuracy. In addition to its use as an assessment device, the iPhone was also used to provide specific feedback and praise related to removing or securing household hazards to pilot families, as well as to facilitate logistical communications via phone, voicemail, texting and email.

Printed materials were provided to each family. A list of abbreviated HAPI-R definitions, photocopies of pictures of poisonous house plants common in Georgia, and a handout for travel safety was provided to each family.

All families were provided with home safety device kits, and two families also received toilet lid locks. The home safety device kits consisted of latches to secure drawers and cabinets, door knob covers and plug protectors. Additional items needed to secure specific safety and cleanliness hazards were provided on an as-needed basis and included switch plates, screen door latches, window locks, electrical tape, caulk, magnetized cabinet door hardware, a can of expandable foam insulation and Damp Rid®. Upon written request, a local-area Target store contributed a $50.00 gift card to the iSafety pilot, which enabled the purchase of all safety kits and toilet lid locks, as well as other certain miscellaneous supplies required by individual households.

Experimental Procedure

Orientation and baseline. During the first visit to the home by the experimenter, the iSafety project was discussed in broad terms of childproofing the home and creating a healthy environment. It was explained that the intervention generally required six visits and that the

focus would be on securing and making safe and healthy the three rooms in the home most used by the child. The experimenter's iPhone was used to briefly demonstrate how the participant family would video and email their progress in securing safer, healthier rooms, and the participant was told that she would likely receive her iPhone during the second visit. Informed consent was obtained and the Home Assessment Consent form, which allows or denies access to specific rooms within the home and spaces within each room, was explained and signed. Institutional Review Board approval was granted by Georgia State University.

The referent child was measured for eye level and for reach. Unless immediately threatening conditions were discovered during baseline (broken glass, medication open and accessible in a child's play area, a knife in reach of the child, etc.), no changes were made in the home during baseline data collection.

The experimenter conducted a baseline assessment in three different rooms using the HAPI-R. The participants were invited to follow if desired, though it was explained that the experimenter was simply looking for hazards from the point of view of a child to inform the next visit during which they would work together to secure the home. Before leaving, the experimenter summarized what had taken place, asked if there were questions, briefly covered the purpose of the next session and confirmed a date and meeting time.

The second visit began with a brief overview about the purpose of the session, and baseline data were collected by the experimenter in the three predetermined rooms. Data from each of the three rooms were examined to determine the room in which the data had the greatest stability. That is, the room in which the number of hazards either remained the same or increased. While all data were relatively stable across participant families throughout the

baseline collection phase, the room in which the number of hazards increased the most was the room targeted for intervention.

Implementation. Once the target room was selected, parent training on each of the 10 categories of hazards and ways to secure or remove the hazards took place via conversation, demonstration, and practice. The parent was given and invited to use her printed materials (HAPI-R Definitions-Parent Visitor Version and Poisonous Plant Guide-Georgia version) as a reference throughout. The interactions focused on identifying specific hazards according to the previously collected baseline data, identifying similar items throughout the house that might also present danger to the child, and understanding why items were hazardous. Supervision was stressed as key to the safety of children during the entire session. Active listening strategies (a variety of questioning techniques, positive body language, encouraging responses, summarizing statements, etc.) were used by the experimenter to engage and involve the participant, and positive and corrective feedback was provided to support integration of and flexibility with the intervention objectives.

The experimenter explained that a single room was the focus of that visit. Several of the hazards in the focal room were removed or secured systematically as a team, and several items were left as "homework" for the parent, based on readiness. If appropriate for the focal room, the parent was presented with a home safety device kit, and the devices were either installed by the experimenter and participant, or the experimenter showed the participant how to install the devices and verified that the required tools were available.

The parent was given the iPhone during the first intervention visit. Basic iPhone functions were shown, including the video feature and email. A Gmail™ account had been established for the purposes of the study using the participant-chosen pseudonym, which had

been preset prior to the meeting by the experimenter. The experimenter and participant practiced filming and emailing video clips to the experimenter; additional practice and instruction was individualized to the needs of the parent. No parents had difficulty adapting to use of the video, email, calling or short message service (SMS) features. The parent was asked to finish removing or securing hazards in the room, film the progress, and email the information to the experimenter by a mutually agreed-upon date prior to the next scheduled visit. The experimenter's email address and phone number had been pre-programmed into the phone. The session ended with a summary of how hazards had been removed and secured, a question and answer session about hazards, a supervision reminder, review of the homework assignment, a brief preview of the next session, and confirmation of the next date and meeting time. A reminder alarm with the logistics of the next meeting was entered into the iPhone. There was no attrition or missed visits once the iPhone was given to participating families.

Between the first and second intervention visit, the iPhone was used to receive assessment data on the first room. The experimenter also communicated with the participant, providing specific praise and coaching, using the iPhone. While the goal was to remove all hazards, significant reductions diminishing hazards in a room was deemed acceptable for continuation to another room.

The third and fourth home visits continued until intervention occurred in all three rooms and hazards reduced to near zero. Face-to-face data were collected in each room until the intervention took place, and then iPhone video data collection supplanted F2F once the intervention occurred, significantly shortening the duration of each successive visit. All F2F and iPhone data collection was recorded on the HAPI-R.

Experimenter-video reliability was established with Family A. Interobserver reliability measures continued with each family during randomly selected visits throughout the research via a combination of iPhone video and F2F data collection, depending whether the intervention had taken place in a particular room. That is, once the safety intervention had taken place in a room, all subsequent data collection occurred via iPhone video.

The intervention visits took the same general format, with parents identifying hazards increasingly independently and problem-solving solutions, either by removing the hazard or by securing it. Typically, this required three intervention visits beyond the first baseline-orientation visit. A fifth visit was made to share information about topics such as travel safety, food storage and preparation safety, lead poisoning, and fire safety and smoke detectors; to review home safety information; and to stress the importance of supervision and evolving adjustments as children's abilities changed. A summary of the intervention can be found in Table 3.

Experimental Design

A multiple baseline design across household rooms replicated across families was used to evaluate the effect of the intervention. Data were collected F2F via the HAPI-R during each visit in each room until baseline stability was established and one room was selected to initialize the intervention. The data collection then moved to video, each time via the HAPI-R, subsequent to the intervention.

Consumer Evaluation

Upon completion of the intervention, families completed the Parent Satisfaction Survey designed to measure the parent's perception of the program's utility in terms of safety and ease of use in terms of the iPhone. The survey consisted of 10 sentences that the parent finished by

selecting a Likert-scale type ending. Additional space was provided for comments. A copy of the Parent Satisfaction Survey can be found in Appendix E.

CHAPTER III

RESULTS

Two types of reliability measures were calculated. Graduate research assistants and the experimenter had practiced observer reliability in staged rooms and rooms in homes of the graduate students until consistently accurate ratings were achieved. Three independent observations were made by the experimenter and a graduate research assistant in all treatment rooms across families, with at least one observation occurring during the baseline condition and the other two occurring during the baseline or training condition, depending on random selection. Interobserver reliability rating means for each family during baseline were 60%, 94%, and 76%. All baseline reliability measures were based on F2F data collection. Subsequent reliability observations were made during treatment and were based on iPhone video data collection and F2F data collection. Interobserver reliability rating means for each family during the training condition were as follows: 86%, 100%, and 88%.

A second type of reliability was calculated between the experimenter and iPhone video and was executed with Family A only until consistently accurate measures were achieved. E-V accuracy ranged from 75% to 88%, with an average of 83%.

The effects of the safety module intervention and iPhone enhancement on the total number of hazards per room per family are shown in Figures 1-3. Receipt of the safety intervention with iPhone enhancement dramatically reduced the number of hazards in each room for all three families. Baseline data show average hazards ranging from 43 to 81 per room for Family A, 28 to 116 for Family B, and 11 to 121 for Family C. During the training condition, a significant decrease in the range of average hazards per room was demonstrated across families: 10-17 for Family A, 1-5 for Family B, and 0-9 for Family C. This represents an average

reduction in household hazards of 74%, 93%, and 97% for Families A, B, and C, respectively, indicating the number of hazards diminished considerably as a result of the safety intervention with iPhone enhancement.

Further, there are indications that reductions continued to occur in certain cases in rooms that had already been treated, as training and conversations about hazard reduction progressed. For Family A, the first intervention room was the living room. Hazards were immediately reduced, then stabilized over the next two data collection points, and then dropped yet lower as the training continued. This indicates that more possibilities became apparent to the family as time passed and that the families had generalized their safety skills. Specifically, once a bathroom closet was secured, the father decided to move hazardous items from the living room into that locked closet; that, among other efforts, reduced hazards from eight, immediately after intervention in the den, to six by the next data collection point.

Communication via the iPhone was categorized into one of three groups: logistical, content question (initiated by the participant), or feedback (initiated by the experimenter). The greatest percentage of communications was delivered by SMS (86%). Tables 5 and 6 detail the types of communication and content of the communication across participants and shows that logistical messages were the largest percentage of messages communicated during the intervention between the experimenter and the families (65%, 63%, and 53% across families).

A consumer satisfaction survey was completed by all families and results were generally positive. Parent reactions to the program and the iPhone enhancement were wholly positive. Parents considered their homes safer and expressed confidence in recognizing and removing or securing hazards. The amount of time required to make their homes safer was not perceived as

burdensome by any of the families, nor were the communications via SMS and email. Compete results are shown in Table 4.

CHAPTER IV

DISCUSSION

The SafeCare® safety module enhanced by an iPhone yielded significant reduction in household hazards in all rooms across all participants in this preliminary research. The iPhone was used at once as intervention and as a data collection tool, and its addition to the intervention paralleled previous studies in which the HAPI or HAPI-R was a pivotal component (Tertinger et al., 1984; see also Barone et al., 1986; Mandel et al., 1998; Metchikian et al., 1999). This suggests promise in achieving a yet more efficacious household hazard reduction intervention in several ways.

Implementation costs for F2F interventions such as SafeCare® by any home visitor are considerable. By using the video capabilities on the iPhone for data collection, the number of F2F visits for this intervention can possibly be reduced. While the human component in delivering the information about home safety and then in working side-by-side with families as they gain competence in recognizing hazards and securing or removing them is critical, the current protocol does call for increasing independence by the participants. By increasing their independence in these skills, the physical presence of the home visitor may become nearly superfluous over time. The interactivity and exchanges can be maintained digitally. Cost analyses currently underway with a randomized controlled trial by Bigelow et al. (2008) may confirm the savings the current research suggests through reduced F2F visits.

Home visitation and in particular, home visitation during which drawers, cabinets, and personal space are scrutinized for hazards may be implicated in high attrition rates common to child maltreatment interventions or low participation rates (Sangvai, Cipriani, Colborn, & Wald, 2007). During the current study, Family A’s home had clearly been “cleaned up” before the

second visit in the intervention. While this effort resulted in little decrease in actual hazards, comments made by the participant indicated that the matriarch/grandmother was uncomfortable with how “messy” the home had been during the first visit by “strangers.” As further evidence of how invasive home visitation for safety can be, the matriarch of the same household nearly derailed participation of the family more than halfway through the study, stating that the house did not need baby-proofing. The young mother participating in the study explained that her grandmother was “set in her ways” and was not accustomed to anyone “coming into her house.” Finally, another matriarchal figure in the same household, an aunt, was not supportive of the intervention and even counterproductive to securing and cleaning the home. During two visits, she refused to allow certain changes to be made or use of plentiful household items to secure or clean the home. Specifically, when the young mother asked on one occasion to use a single plastic tie from a bag full of ties to bundle cords, the aunt refused. She also had the young father participant remove latches in the bathroom, as she considered this restriction unnecessary and a nuisance. Reduction in F2F visits and increased control on the part of participants via video data collection has the potential to mitigate this invasive sentiment expressed by participants.

It is noteworthy that the large, abrupt decreases in hazards in certain rooms that occurred following the intervention were a function of securing a single cabinet with childproofing devices and in some cases consolidating items into one cabinet to which the device had been applied. For example, with Family C, the average number of hazards in the bathroom during baseline was 121. By organizing items in a cabinet with six drawers, combining all hazardous items into a single drawer, and then securing that drawer, the number of hazards was immediately and drastically reduced. That notwithstanding, singular hazards also were secured

or removed in all rooms across households, thus allowing the appreciable improved levels of security shown by the data.

The drop in the number of hazards in a household in this research are consistent with earlier SafeCare® studies specifically focused on the safety module (Barone et al., 1986; Mandel et al., 1998; Metchikian et al., 1999; Tertinger et al., 1984). That is, previous studies show a significant reduction in hazards during the training condition as compared to baseline. Thus in this research it appears that use of the iPhone as a data collection tool yields results as would be expected during F2F data collection.

As an enhancement tool, the iPhone provided opportunity for communication between the experimenter and the participants between visits through texting, email, and phone or voicemail messages. Logistical communication opportunities are particularly germane to the population that receives the SafeCare intervention or participates in other maltreatment prevention or intercession programs, which suffer from high attrition rates (Bigelow et al., 2008). With this effort, iPhone communication between the experimenter and participants took the form of either SMS, telephone calls/voicemail messages, or email messages. Interestingly, there were no missed appointments and all families completed the pilot program. Use of such technology in reducing attrition and increasing compliance is being explored in numerous public health interventions and shows potential from this intervention as well.

In addition to the iPhone enhancement potential, this study serves as further validation of the HAPI-R, albeit under a different protocol. When Tertinger et al. (1984) initially developed the HAPI as a systematic tool for inventorying household hazards, the validation was conducted categorically across the five groups of hazards that comprised the original tool: fire and electric; suffocation by ingested objects; suffocation by mechanical means; firearms; and poisonous

solids and liquids. The application of the intervention, that is, the parental training of how to secure a home from hazards, occurred via the HAPI throughout the entire home by category. Thus, all hazards in the category of suffocation by mechanical means, for example, would have been identified across rooms and then secured or removed. This same categorical protocol for intervention implementation was repeated in Barone et al. (1986).

As the SafeCare® program evolved from Project 12-Ways, shifting implementation from a rural to urban environment, the HAPI was revised for that setting (Lutzker at al., 1998). Use of the HAPI-R was subsequently represented in the literature more holistically; specifically, it transformed into a whole-room approach versus a categorical one. This was also done with the logic that in order to promote scale up and dissemination of SafeCare, HAPI-R assessments would need to be less cumbersome. This integrated approach was applied alongside a video training enhancement (Mandel et al., 1998). This effort represents the second study to follow this implementation methodology, and the results positively support the earlier findings.

According to the Parent Satisfaction Survey, the program and the iPhone enhancement were beneficial and did not represent an onerous burden in terms of time or learning obstacles. All three sets of parents felt their home was safer having completed the program. When asked about how confident they felt about identifying and securing hazards, all responded that they felt either very sure of themselves (66%) or sure of themselves (33%). Pertinent to the overall results of the questionnaire, parents made anecdotal comments expressing general appreciation regarding their newly acquired knowledge about child safety and having assistance in securing their homes. Two families indicated on more than one occasion that they were not familiar with certain facts about household safety shared during the training and that they were not aware of some of the safety devices prior to the intervention.

A number of limitations to this seminal research must be noted. While the cost savings suggested by reduction in F2F visits is promising, these economies obviously depend on the ubiquity of handheld devices with high-quality video capacity and hi-speed wireless connectivity, such as the latest iteration of the iPhone. Conversely, there were anecdotal comments by participants indicating excitement about having access to an iPhone. One mother texted the following response to the experimenter's feedback following her first video: "Thank you [,] and we love the iPhone we haven't put it down since...rock on." While the feasibility of this type of tool as part of an intervention to reduce child neglect depends on its prevalence in the population, the novelty that may have been responsible in this study for some of the high engagement would be negated by its very universality. How much this novelty contributed to the intervention effects merits further study.

While the technology represented by the latest model of the iPhone is state-of-the-art, some limitations for this type of data collection and intervention were apparent. Specifically, the lack of back lighting made it extremely difficult to read the video in at least one room of those treated in this pilot. Additionally, shooting useable video under beds and in closets, both places where children have access and where small, ingestible objects had been found, was challenging.

The restrictions in terms of the video size were also a hindrance. An average of four video clips per room was required to film slowly enough to be functional. By the end of the intervention when all data collection was taking place via iPhone, this meant possibly sending up to 12 video clips, each which then had to be emailed individually to the experimenter, a tedious task albeit a speedy one as long as hi-speed wireless networks were in range, which was not the case in any of the three pilot households. On the Parent Satisfaction Survey, however, all parents responded that they found using the iPhone to communicate with the home visitor and to video

rooms helpful or very helpful. They also found the iPhone comfortable or very comfortable to use. Written comments on the survey indicated no dissatisfaction with upload speed or the number of videos required for data collection. Two families included a comment about enjoying and having fun with the iPhone. Whether or not these were issues in the current study, technologies continue to evolve, and it is probable that both the problem of lighting and file size limitations for email will be alleviated in the future.

Related to the limitations of the technology may be the limitations of individuals to film in such a manner as to be useable. One family, despite repeated instructions, required consistent redirection for video filming. The video footage was either too fast or too dark, or it failed to capture a room completely. For example, during the training in the bathroom, a pedestal sink which had presented a crush hazard was secured with caulk at the base and by tightening screws between the base and basin. This represented a significant improvement in safety given the prior instability of the sink. However, in filming the room, the father was so eager to showcase the security of the sink and other closet latches he had installed, other critical areas were omitted from the video. The base with the caulk was featured for several seconds, but the sink area itself was never shown. A great deal of back and forth communication was required to secure useable video in this case, which was increasingly an issue for all families as the study neared an end. As was noted earlier, by this point all three rooms were being videoed and a large number of files were being sent one-by-one via slower speed due to lack of high-speed wireless connectivity in these areas. Study fatigue may have also been a factor. How significant this type of limitation might be on a large scale is worth further consideration.

Related to the limitations of the video is how critical it was for the experimenter to be familiar with the home and the layout of the rooms. Only because of the baseline condition over

time followed by direct work alongside the participant in securing a room from hazards did the video footage afford a sense of dimension and allow assessment. Further, familiarity with the types of hazards that had been present over time alerted the experimenter to possible hazards that might be seen in the video. Clearly, iPhone video will not soon fully eclipse the human element, but it does hold considerable promise for reducing the number of home visits.

As is the case with single-case research design, reactive assessment risks polluting effects (Kazdin, 1982). Whether the same outcomes would be observed minus the external presence of an observer and knowledge of assessment is difficult to determine. Earlier safety research by Tertinger et al. (1984) and Barone et al. (1986) demonstrated that in many cases, surprise follow-up assessment revealed appreciable and durable maintenance, suggesting mitigation of reactivity to external validity. Participants in those studies had been adjudicated for child neglect or abuse and were receiving mandated services or had been referred for home safety services to Project 12-Ways. There was a compelling and authorized basis for unannounced follow-up assessments that was not present in this research, making surprise visits inappropriate and the consequential threat to external validity defensible.

Finally, relevant to child safety interventions in general is the suggestion that by supplying childproofing devices and assisting in the installation of the devices, this research introduces a possible effect that would not occur naturally in homes. Randomized controlled studies occurring over decades have demonstrated that provision alone of child-proofing devices during child safety interventions is not sufficient to show an effect and have suggested more intensive intervention was in order (Babul, Olsen, Janssen, McIntee, & Raina, 2007; Dershewitz & Williamson, 1977). Parents who received the devices gratis often did not install them. In the present research, the devices were not only supplied, but the experimenter teamed with the parent

to install them. However, this remains a common role for home visitors using the SafeCare model. Use of the devices was critical in reducing the quantity of accessible hazards. Any decrease in direct assistance consequential to reduced F2F time may also diminish this intervention effects.

The time commitment of families for this research was significant and could also be considered a limitation of the study. Family A, which has been anecdotally described in terms of matriarchal dissension, was the most challenging, perhaps partially because the participants were not heads of household. This complicated initial safety and cleanliness efforts, but also likely played a role in maintenance. With multiple family units living in the home, the couple's efforts at participation and maintenance were often thwarted by others less vested in the program. It was difficult to compel all household members to keep the toilet locked, to keep latches on the bathroom closets closed and to practice safe cooking behaviors, such as removing in knives from countertops and heating oil on rear burners. For this reason, the final visit during the training condition required some remediation.

For the remediation visit, the iPhone was used to contact the family about increasing hazards evident in videos that normally would have constituted the final data collection. The mother was specifically praised for certain previous safety efforts and discussion about why maintenance was a challenge ensued. While lack of control appeared to be the main obstacle to upkeep, the mother was encouraged to do her best at securing the home again with all of the changes that had been made before the final training condition visit. During that visit, F2F data collection via the HAPI-R took place, followed by further remediation with the mother and father in the form of problem solving specific maintenance challenges. The F2F data collection explains at least partially the spike in hazards. For example, with live cockroaches crawling on

the walls, in cabinets, on the floors, and on countertops, video often missed these events. Five of the 20 hazards in the kitchen during the final F2F data collection were a result of these exact observations.

The spike in hazards, however, was not completely attributable to observations difficult to see on video. In general, this couple's life was chaotic. While they maintained all appointments, they were not always in control. One home visit appointment was kept by the father while the mother scrambled to get herself and their infant across town via public transportation because she had been summoned by her mother just moments before the appointment. Interactions by the parents with their infant, on other occasions, indicated that the grandmother and mother's older sister had significant sway in determining when the infant was to be held and by whom. Yet, it is this type of family that is perhaps most in need of child neglect interventions. Not only does Family A's household composition represent a greater threat of maltreatment to children in the home (Schnitzer & Ewigman, 2008), but also their level of control over their own lives clearly suggested the need for greater support.

That Family A persevered through a five-week program is a testimony to their own tenacity and, based on their comments, their excitement at having an iPhone. Certainly the reduction in hazards in the three treated rooms, while not reduced to zero, is commendable. In the living room, there was an 81% average reduction in hazards; in the kitchen, 80%; and in the bathroom, 74%. It is worth mention that the final bathroom assessment included nine small hair rubber bands, which had not previously been present. Without those items, the average reduction in the bathroom hazards would have been on par with the other rooms (84%). In addition, several more egregious hazards were eliminated, such as securing the extremely heavy and unstable pedestal sink.

Family B's situation was notably different. Economically, their status allowed for purchase of their own home and complete autonomy over cleanliness and safety issues. Before the final visit during the training condition, the mother texted to ask for more cabinet locks. She planned to install them in another kitchen drawer where forks were stored, and in the child's bathroom. When asked whether the father, who had only been present during the initial visit, was inconvenienced by the cabinet locks throughout commonly used spaces, the mother quickly responded that he was a big proponent of them. While their home was new, newly furnished, and resembled a showroom, they expressed clear distress during the initial safety assessment when the experimenter and observer lifted sofa cushions and revealed multiple small choke hazards. Their freedom within their own home, however, resulted in zero such items being found subsequently on any visit, revealing a level of control that Family A did not display.

With Family B, during the training condition data in all rooms stabilized completely and remained at a low, but not 100% secured level. In the living room, the four hazards that remained posttreatment were a very heavy floor lamp and a tall freestanding speaker, both representing crush hazards. The remaining two hazards were due to the accessible staircase. The speaker and lamp and the inconvenience of stair gates, even though parents were made aware of the potential hazards, seemed to represent a lifestyle tradeoff they were not interested in making, particularly given the mother's close supervision of the only child in the home. Similarly, having hand sanitizer and hand soap on the kitchen sink, two of the six constant hazards posttreatment, is a compromise many families choose to make. It is understandable given seasonal flu and the general risk of spreading germs by small children via hand-to-mouth contact. Despite not reducing hazards to zero, a 93% average reduction in hazards across rooms between baseline and

training is impressive. Because the importance of supervision is stressed during all visits, with these remaining hazards providing specific examples that underscored this message.

Both mother and father of Family C participated actively in all visits. While their home was not new and needed minor repairs, it was very well maintained within the limits of their control. With two previously asthmatic children in the home and the infant having been born prematurely, the mother was very conscious of cleanliness and responded proactively to suggestions of needed safety measures. For instance, after the experimenter teamed with the couple to rearrange the children's bedroom and secure a cord that represented a trip hazard, the couple independently rerouted a cable in the hallway that presented a similar hazard. Following a brief explanation by the experimenter of potential health hazards of denigrated cockroach matter, particularly to children susceptible to asthma, the couple cleaned the unused upper kitchen cabinets, removing all signs of dead cockroaches and scoured the oven, removing all food remnants and leaving an oven that appear brand new. While comments about the iPhone made by the participants throughout the study suggested its strong motivational influence, this couple was clearly intrinsically inspired by their responsibility for their children and in a position to devote time and energy to home safety and cleanliness improvements.

The integration of an iPhone to enhance the SafeCare safety intervention represents a nod to the need for innovation in engaging families at risk of child neglect with respect to novelty and reduced attrition. While some external validity can be suggested due to the variety in the demographics of the participants, larger studies will be indispensable in solidifying the positive effects of reducing home hazards and maintaining participants revealed by this study, and cost analyses are surely in order. Next steps in research necessitate a moderately larger scale and higher risk participants to refine the procedures herein and validate use of video further, perhaps

examining the effects between a group receiving a condensed version of the SafeCare safety with iPhone enhancement and one receiving care as usual. Time will determine how quickly tools such as the iPhone become ubiquitous, thus making such intervention enhancements financially viable for agencies performing outreach and parent training to reduce child abuse and neglect.

In addition to the data collection and intervention enhancement represented by this study, the capacity of the iPhone in general is promising for other modules of SafeCare. In terms of safety, the video capabilities could be used to produce short "how-to" segments for installing safety locks on cabinets that parents could access at will. Videos that provide brief, engaging information about preventable accidents by age could also be useful in helping parents remain vigilant as their children's capabilities evolve. The parent activities training module may be enhanced by easily accessible, short videos on individual activities that might be done to promote interaction between parent and child. Simple audible storybooks accessible via the Internet can also be "read" together on the iPhone as a possible planned activity.

While handheld video presents exciting possibilities for child maltreatment interventions, there are also myriad applications created for the iPhone (applets) that might also enhance the program. Applets with repetitive reminders for completing intervention activities and scheduling visits can be useful in increasing participation and reducing attrition. Other applets that produce lists that participants can check off are also promising in creating greater compliance, particularly ones that can be customized to perform novel "rewards," such as playing favorite music or showing personal photos when an item on a "to do" list is completed.

For the health module of SafeCare, a health reference guide is a key component that parents are trained to utilize when their child presents certain symptoms or is injured. For low literacy parents or parents for whom English is not their primary language, an audible book

stored on the iPhone, replete with simple illustrations (Feldman, 2004) could make this tool more accessible. An iPhone applet may also serve as the record-keeping tool suggested by the health module.

In summary, despite the limitations noted, this research adds to the nascent literature on the use of everyday technology to enhance evidence-based home visiting programs. The iPhone holds promise with other SafeCare models and for other evidence-based practices.

REFERENCES

Anda, R., Chapman, D., Felitti, V., Edwards, V., Williamson, D., Croft, J., et al. (2002). Adverse childhood experiences and risk of paternity in teen pregnancy [Electronic version]. *Obstetrics And Gynecology, 100*(1), 37-45.

Armistead, L. P., Clark, H., Barber, C. N., Dorsey, S. Hughley, J., et al. (2004). Participant retention in the Parents Matter! program: Strategies and outcome [Electronic version]. *Journal of Child and Family Studies, 13*(1), p. 67-80.

Babul, S., Olsen, L., Janssen, P., McIntee, P., & Raina, P. (2007). A randomized trial to assess the effectiveness of an infant home safety programme [Electronic version]. *International Journal of Injury Control & Safety Promotion, 14*(2), 109-117.

Barone, V. J., Greene, B. F., & Lutzker, J. R. (1986). Home safety with families being treated for child abuse and neglect. *Behavior Modification, 10*(1), 93-114.

Bernhardt, J. M. (2008, February 21). Going mobile for public health. Message posted to http://www.cdc.gov/HealthMarketing/blog_022108.htm

Bigelow, K., Carta, J., & Lefever, J. (2008, November). Txt u ltr: Using cellular phone technology to enhance a parenting intervention for families at risk for neglect. *Child Maltreatment, 13*(4), 362-367. Retrieved October 31, 2008, from the Academic Search Complete database.

Brenner, R. A., Trumble, A. C., Smith, G.S., Kessler, E. P., & Overpeck, M.D. (2001). Where children drown, United States, 1995 [Electronic version]. *Pediatrics, 108*(1):85–9.

Brown, K. J., Roberts, M. C., Mayes, S., & Boles, R. E. (2005). Effects of parental viewing of children's risk behavior on home safety practices [Electronic version]. *Journal of Pediatric Psychology, 30*(7), 571-580.

Centers for Disease Control and Prevention (CDC; 2002, October 25). *MMWR weekly: Nonfatal choking-related episodes for children 0 to 14 years of age—United States, 2001*. Retrieved October 10, 2009, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5142a1.htm

Chapple, C. L., Tyler, K. A., & Bersani, B. E. (2005). Child neglect and adolescent violence: Examining the effects of self-control and peer rejection [Electronic version]. *Violence and Victims, 20*(1), 39-53.

Corso, P. S., Edwards, V. J., Fang, A., & Mercy. J. A. (2008). Health-related quality of life among adults who experienced maltreatment during childhood [Electronic version]. *American Journal of Public Health, 98*(6), 1094-100.

Coulton, C., & Korbin, J. (1995). Community level factors and child maltreatment rates. *Child Development, 66*(5), 1262-1276.

DePanfilis, D., & Zuravin, S. J. (2002). The effect of services on the recurrence of child maltreatment [Electronic version]. *Child Abuse & Neglect, 26*(2), 187-205.

Dershewitz, R., & Williamson, J. (1977). Prevention of childhood household injuries: A controlled clinical trial [Electronic version]. *American Journal of Public Health, 67*(12), 1148.

Dube, S., Miller, J., Brown, D., Giles, W., Felitti, V., Dong, M., et al. (2006). Adverse childhood experiences and the association with ever using alcohol and initiating alcohol use during adolescence [Electronic version]. *Journal of Adolescent Health, 38*(4), e1-ee10.

Dubowitz, H. (2007). Understanding and addressing the 'neglect of neglect:' Digging into the molehill [Electronic version]. *Child Abuse & Neglect, 31*(6), 603-606.

Dubowitz, H., Pitts, S., Litrownik, A., Cox, C., Runyan, D., & Black, M. (2005). Defining child neglect based on child protective services data [Electronic version]. *Child Abuse & Neglect, 29*(5), 493-511.

Dubowitz, H., Papas, M., Black, M., & Starr, R., Jr. (2002). Child neglect: Outcomes in high-risk urban preschoolers [Electronic version]. *Pediatrics, 109*(6), 1100.

English, D. J., Thompson, R., Graham, J. C., & Briggs, E. C. (2005). Toward a definition of neglect in young children [Electronic version]. *Child Maltreatment, 10*(2), 190-206.

Feldman, M. A. (2004). Self-directed learning of child-care skills by parents with intellectual disabilities [Electronic version]. *Infants and Young Children, 17*(1), 17-31.

Gershater-Molko, R., Lutzker, J., & Wesch, D. (2002). Using Recidivism to evaluate Project SafeCare: Teaching bonding, safety, and health care skills to parents [Electronic version]. *Child Maltreatment, 7*(3), 277.

Harder, J. (2005). Prevention of child abuse and neglect: An evaluation of a home visitation parent aide program using recidivism data [Electronic version]. *Research on Social Work Practice, 15*(4), 246-256.

Julian, T. W., Kelleher, K., Julian, D. A., & Chisolm, D. (2007). Using technology to enhance prevention services for children in primary care [Electronic version]. *Journal of Primary Prevention, 28,* 155-165.

Kazdin, A. E. (1982). *Single-case research designs: Methods for clinical and applied settings.* New York: Oxford University Press.

Kelley, B.T., Thornberry, T.P., & Smith, C.A. (1997). *In the wake of child maltreatment* (OJJDP Bulletin No. 165257). Washington, DC: U.S. Department of Justice, Office of Justice

Programs, Office of Juvenile Justice and Delinquency Prevention. Retrieved April 20, 2009, from http://www.ncjrs.gov/ pdffiles1/165257.pdf

Kendall-Tackett, K. (2002). The health effects of childhood abuse: Four pathways by which abuse can influence health [Electronic version]. *Child Abuse and Neglect, 26,* p. 715-729.

King, W. J., LeBlanc, J. C., Barrowman, N. J., Klassen, T. P., Bernard-Bonnin, A-C., Robitaille, Y., et al. (2005). Long term effects of a home visit to prevent childhood injury: Three year follow up of a randomized trial [Electronic version]. *Injury Prevention, 11,* 106-109.

Kotch, J. B., Lewis, T., Hussey, J. M., English, D., Thompson, R., Litrownik, A. J., et al. (2008). Importance of early neglect for childhood aggression [Electronic version]. *Pediatrics, 121*(4), 725-731.

Lefever, J. B., Howard, K. S., Lanzi, R. G., Borkowski, J. G., Atwater, J., Guest, K. C., et al. (2008). Cell phones and the measurement of child neglect [Electronic version]. *Child Maltreatment, 13*(4), 320-333

Lezin, N., & Long, K. (2002, March 29). Monitoring child neglect. *Summary of Discussions at a Meeting Co-Sponsored by the Centers for Disease Control and Prevention (CDC) and Prevent Child Abuse America (PCA AMERICA).* Retrieved October 10, 2009, from http://member.preventchildabuse.org/site/DocServer/monitoring_child_neglect.pdf

Lutzker, J. R., & Bigelow, K. M. (2002). *Reducing child maltreatment: A guidebook for parent services.* New York: Guilford Press.

Lutzker, J. R., Bigelow, K. M. Doctor, R. M., & Kessler, M. L. (1998). Safety, health care, and bonding within an ecobehavioral approach to treating and preventing child abuse and neglect [Electronic version]. *Journal of Family Violence, 13*(2), 163-185.

McSherry, D. (2007). Understanding and addressing the neglect of neglect: Why are we making a mole-hill out of a mountain? [Electronic version]. *Child Abuse & Neglect, 31*(6), 607–614.

Mandel, U., Bigelow, K., & Lutzker, J. (1998). Using video to reduce home safety hazards with parents reported for child abuse and neglect [Electronic version]. *Journal of Family Violence, 13*(2), 147-162.

Metchikian, K. L., Mink, J. M., Bigelow, K. M., Lutzker, J. R., & Doctor, R. M. (1999). Reducing home safety hazards in the homes of parents reported for neglect [Electronic version]. *Child & Family Behavior Therapy, 21*(3), 23 - 34.

Mobile alarms aid pill compliance [Electronic version]. (2004, July 21). *Nursing Standard, 18* (45), 7.

Molnar, B. E., Buka, S. L., Brennan, R. T., Holton, J. K., & Earls, F. (2003). A multilevel study of neighborhoods and parent-to-child physical aggression: Results from the project on human development in Chicago neighborhoods [Electronic version]. *Child Maltreatment, 8*(2), 84-97.

Morrongiello, B. A., Corbett, M., McCourt, M., & Johnston, N. (2006). Understanding unintentional injury-risk in young children i. The nature and scope of caregiver supervision of children at home [Electronic version]. *Journal of Pediatric Psychology, 31*(6), 529-539.

Nansel, T. R., Weaver, N., Donlin, M., Jacobsen, H., Kreuter, M. W., & Simons-Morton, B. (2002). Baby, be safe: The effect of tailored communications for pediatric injury prevention provided in a primary care setting [Electronic version]. *Patient Education and Counseling, 46*(3), 175-190.

National Highway Traffic Safety Administration (NHTSA; 2009, September 10). U.S. Transportation Secretary Ray LaHood launches Child Passenger Safety Week: Urges parents to learn how to correctly install safety seats [Press release]. Retrieved October 10, 2009, from http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem. f2217bee37fb302f6d7c121046108a0c/

Pacifici, C., Delaney, R., White, L., Cummings, K., & Nelson, C. (2005). Foster parent college: Interactive multimedia training for foster parents [Electronic version]. *Social Work Research, 29,* 243-251.

Pacifici, C. White, L., Cummings, K., & Nelson, C. (2005). Vstreet.com: A web-based community for at-risk teens [Electronic version]. *Child Welfare, 84*(1), 25-46.

Roberts, I., Kramer, M. S., & Suissa, S. (1996). Does home visiting prevent childhood injury? A systematic review of randomised controlled trials. *BMJ, 312*(7022), 29-33.

Rovi, S., Chen, P., & Johnson, M. S. (2004). The economic burden of hospitalizations associated with child abuse and neglect [Electronic version]. *American Journal of Public Health, 94*(4), 586-590.

Sangvai, S., Cipriani, L., Colborn, D., & Wald, E. (2007). Studying injury prevention: Practices, problems, and pitfalls in implementation [Electronic version]. *Clinical Pediatrics, 46*(3), 228-235.

Schilling, E., Aseltine Jr, R., & Gore, S. (2007). Adverse childhood experiences and mental health in young adults: A longitudinal survey [Electronic version]. *BMC Public Health, 7*30-10.

Schnitzer, P., & Ewigman, B. (2008). Household composition and fatal unintentional injuries related to child maltreatment [Electronic version]. *Journal of Nursing Scholarship, 40*(1), 91-97.

Schuck, A. M. (2005). Explaining black-white disparity in maltreatment: Poverty, female-headed families, and urbanization [Electronic version]. *Journal of Marriage and Family, 67*(3), 543-551.

Sedlak, A.J, & Broadhurst, D.D. (1996).*The third national incidence study of child abuse and neglect (NIS-3).* U. S. Department of Health and Human Services, Administration for Children and Families, Administration for Children, Youth, and Families, National Center on Child Abuse and Neglect. Washington, DC. Retrieved October 3, 2009, from http://www.childwelfare.gov

Self-Brown, S., & Whitaker, D. (2008). Parent-focused child maltreatment prevention: Improving assessment, intervention, and dissemination with technology [Electronic version]. *Child Maltreatment, 13*(4), 400-416.

Tertinger, D. A., Greene, B. F., & Lutzker, J, R. (1984). Home safety: Development and validation of one component of an ecobehavioral treatment program for abused and neglected children. *Journal of Applied Behavior Analysis, 17*(2), 159-174.

U. S. Consumer Product Safety Commission. (2008, November). *2008 performance and accountability report.* Retrieved October 13, 2009, from http://www.cpsc.gov/ cpscpub/pubs/reports/2008par.pdf

U.S. Department of Health and Human Services (DHHS), Administration on Children, Youth and Families. *Child Maltreatment 2007* (Washington, DC: U.S. Government Printing Office, 2009).

Wang, C. T., & Holton, J. (2007, September). Total estimated cost of child abuse and neglect in the United States—Economic impact study. *Prevent Child Abuse America.* Retrieved April 17, 2009, from http://www.preventchildabuse.org/ about_us/ media_releases/ pcaa_pew_economic_impact_study_final.pdf

Watson, W. A., Litovitz, T. L., Klein-Schwartz, W., Rodgers, G. C., Youniss, J., Reid, N., et al. (2004). 2003 annual report of the American association of poison control centers toxic exposure surveillance system [Electronic version]. *American Journal of Emergency Medicine, 22*(5), 335-404.

Weitzel, J.A., Bernhardt, J.M., Usdan, S., Mays, D., & Glanz, K. (2007, July). Using wireless handheld computers and tailored text messaging to reduce negative consequences of drinking alcohol. *Journal of Studies on Alcohol and Drugs, 68*,534-537. Abstract retrieved March 6, 2009, from http://www.jsad.com/jsad/article/Using_Wireless_ Handheld_Computers_and_Tailored_Text_Messaging_to_Reduce_Neg/2149.html

Whitaker, D. J., Lutzker, J. R., Self-Brown, S., & Edwards, A. E. (2008, Summer). Implementing and evidence-based program for the prevention of child maltreatment: The SafeCare® program. Report on Emotional & Behavioral Disorders in Youth, 8, 55-62.

Widom, C. S., & Maxfield, M. J. (2001). *An update on the "cycle of violence."* (OJJDP Belletin No. 184894). Washington, DC: U. S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention. Retrieved April 12, 2009, from http://www.ncjrs.gov/pdffiles1/nij/184894.pdf

Widom, C. S., Czaja, S. J. & Dutton, M. A. (2008). Childhood victimization and lifetime revictimization [Electronic version]. *Child Abuse & Neglect: The International Journal, 32*(8), 785-796.

Wulczyn, F. (2009). Epidemiological perspectives on maltreatment prevention [Electronic version]. *Future of Children, 19*(2), 39-66.

Table 1. Descriptive information of participants and neighborhoods

Family	Type of dwelling	Status	Condition of neighborhood	Number adults	Adult(s) receiving training	Number children (0-7 yrs)
A	duplex	Rented	Low income, many rental homes, not well maintained, some abandoned properties	7	mother and/or father	2[1]
B	single-family	owned	Moderate income, new homes in new subdivision	2	mother	1
C	single-family	rented	Low income, many rental homes, well maintained	3	mother & father	5

[1]There were also 3 other children under age 3 in the home daily for daycare services.

Table 2. Means and ranges of interobserver agreement (%) per family across three rooms

Family	Baseline	Observation 1	Observation 2
A	51 (33-70)	67 (58-78)	86 (71-100)
B	91 (83-100)	96 (89-100)	100 (100-100)
C	77 (64-100)	83 (70-100)	83 (50-100)

Table 3. Description of SafeCare safety module intervention by visit

Visit (V)	Description	Data Collection Method by Room (R)	Estimated time in home (hrs)
1	Baseline data collection in 3 rooms Orientation to program	F2F, R1-3	2.5
2	Baseline data collection in 3 rooms Training in HAPI-R categories Intervention in R1 Training on iPhone (max. 5 minutes) *Post V2, participant completed and videoed R1*	F2F, R1-3 iPhone video, R1	2.5
3	Baseline data collection in Rooms 2 & 3 Intervention in Room 2 *Post V3, participant completed R2 and videoed R1-2*	F2F, R2-3 iPhone video, R1-2	1.5
4	Baseline data collection in Room 3 Intervention in Room 3 *Post V4, participant completed R3 and*	F2F, R3 iPhone video, R1-3	1.0

	videoed R1-3		
5	Discussion of other safety hazards *Post V5, participant videoed R1-3*	iPhone video, R1-3	0.5

Table 4. Parent Satisfaction Survey Results for All Families

1. Since I finished the iSafety program, my home is			
much safer 3/3	safe	the same	less safe
2. When I think about what I know now about finding unsafe areas or things in my home, I feel			
very sure of myself 2/3	sure of myself 1/3	a little unsure	very unsure
3. When I think about getting rid of unsafe things or areas in my home, I feel			
very sure of myself 2/3	sure of myself 1/3	a little unsure	very unsure
4. When the home visitor explained the information about keeping my home safe, I			
understood well 2/3	understood 1/3	was a little confused	was very confused
5. The amount of time it took to make my home safer was			
too long	long	just about right 2/3	a short time 1/3
6. When I think about using the iPhone, I think the iPhone was			
very easy 3/3	easy	a little tricky at times	difficult
7. When the home visitor explained the information about how to use the iPhone, I			
understood well 2/3	understood 1/3	was a little confused	was very confused
8. When I had to use the iPhone to video rooms I made safer, I felt…			
very uncomfortable	uncomfortable	comfortable 1/3	very comfortable 2/3
9. When I think about how helpful the iPhone was in communicating with the home visitor about making my home safer, I think the iPhone was			
unnecessary	only a little helpful	helpful 1/3	very helpful 2/3
10. When I think about how many texts and emails I got from the home visitor, I think it was			
too many	the right amount 3/3	a little too many	way too many

Table 5. Number of communications by type by family (percent of total)

Family	Logistical	Feedback	Content
A	11 (65)	5 (29)	1 (6)
B	10 (63)	5 (25)	2 (13)
C	8 (53)	4 (33)	2 (13)

Table 6. Number of individual communication by means by family (percent of total)

Family	SMS	Email	Phone/VMX
A	33 (85)	2 (5)	4 (10)
B	38 (95)	1 (3)	1 (3)
C	29 (78)	8 (22)	0

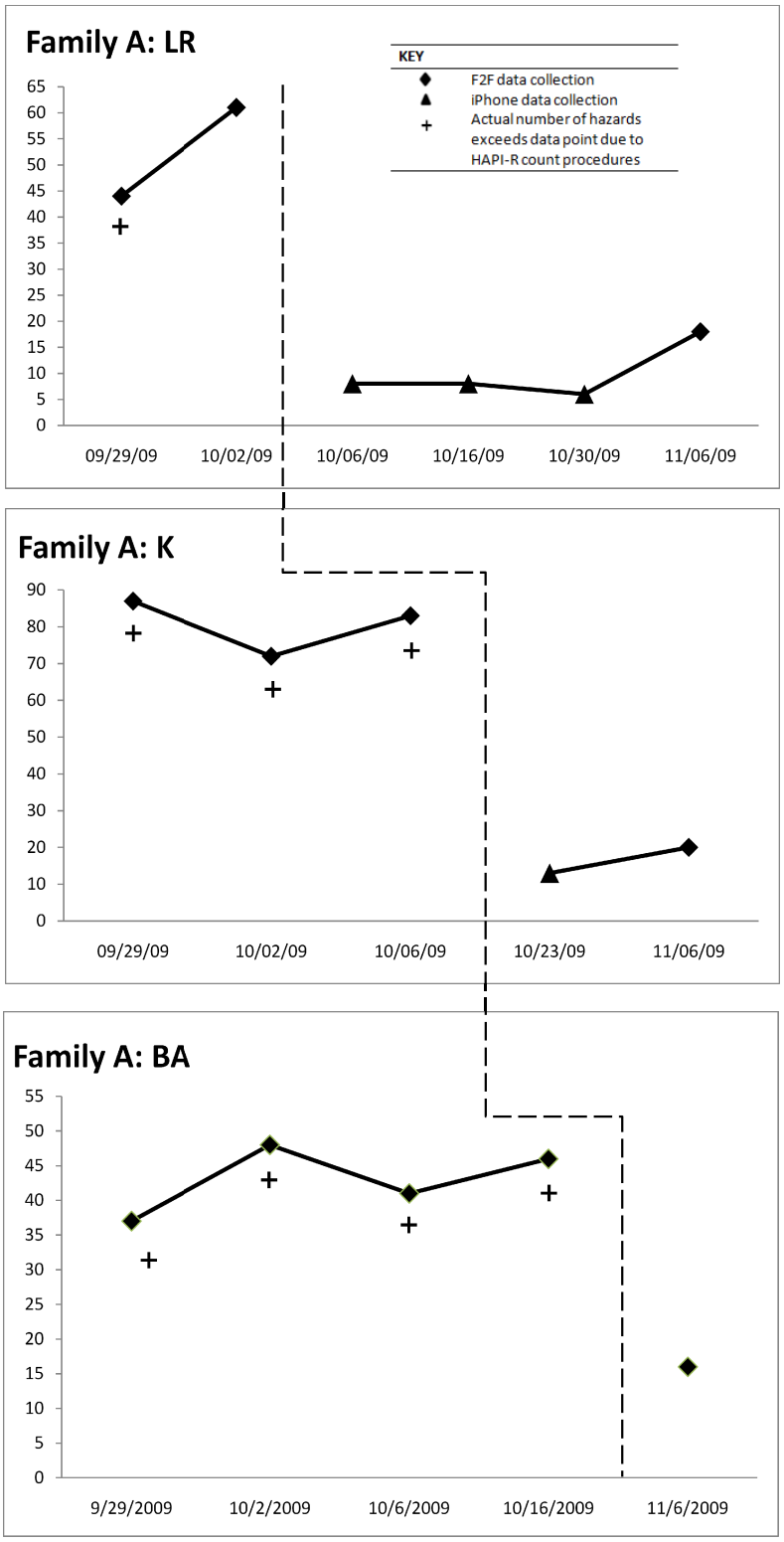

Figure 1. Total hazards per room for Family A. The following abbreviations are used: LR for living room, K for kitchen, and BA for bathroom. Data points to the left of the dotted line reflect the baseline condition. To the right of the dotted line represents the training condition.

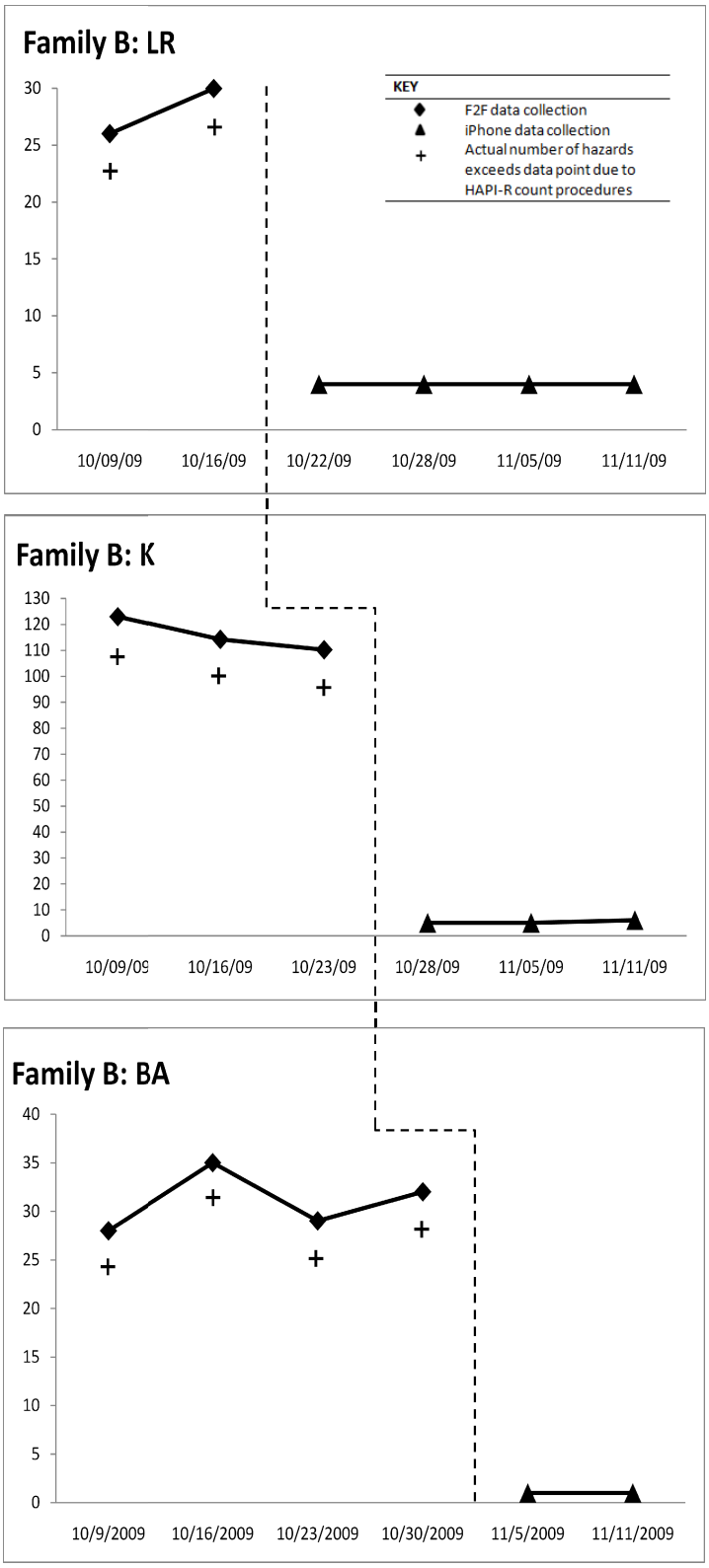

Figure 2. Total hazards per room for Family B. The same conventions noted for Figure 1 apply to Figure 2.

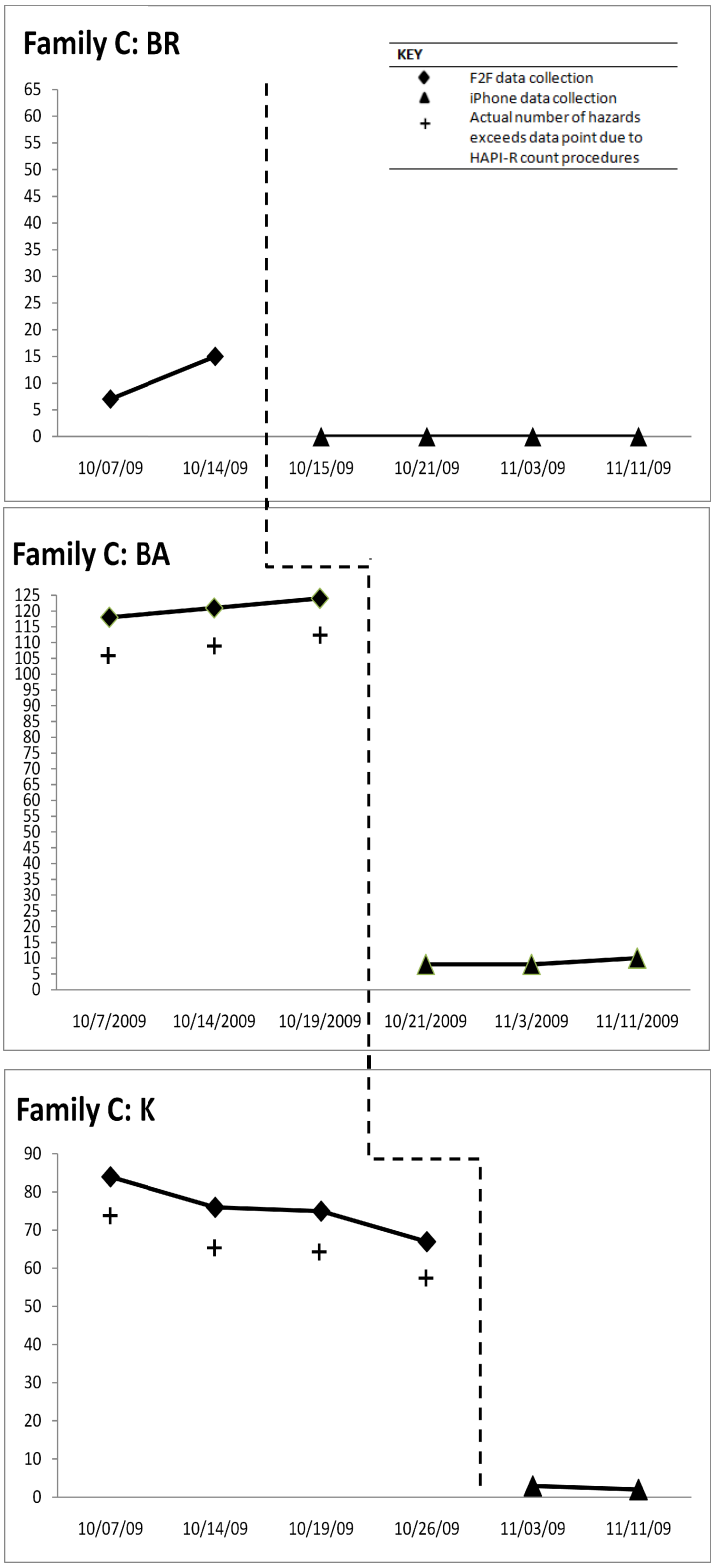

Figure 3. Total hazards per room for Family C. The abbreviation BR represents bedroom. Other conventions noted for Figure 1 apply to Figure 3.

APPENDIX A. Home Accident Prevention Inventory (HAPI-R)

Home Accident Prevention Inventory (HAPI)-R

Family: _____ Child: _____ Date: _____

Home Visitor: _____ Timing: ☐ Baseline ☐ Training ☐ Follow-up

Room: _____ Eye-level Height: _____ Reach Height: _____

Hazard	No. of Hazards	Comments
POISONOUS SOLIDS AND LIQUIDS		
1. Medications		
2. Cleaning products		
3. Alcoholic beverages		
4. Beauty products		
5. Pesticides, herbicides, etc.		
6. Paints, solvents, etc.		
7. Poisonous plants		
FIRE AND ELECTRICAL HAZARDS		
8. Combustibles		
9. Fireplaces w/o screens		
10. Outlets/switches w/o plates		
11. Appliances w/o covers		
12. Electrical cords/plugs		
MECHANICAL OBJECTS THAT CAN SUFFOCATE		
13. Crib cords		
14. Plastics		
15. SMALL OBJECTS/ CHOKING HAZARDS		
16. SHARP OBJECTS		
17. ACCESSIBLE FIREARMS		
FALLING, TRIP AND ACTIVITY RESTRICTION HAZARDS		
18. Balconies		
19. Steps		
20. Windows		
21. Objects in walkway		
22. Activity restrictions		
23. CRUSH HAZARDS		
DROWNING HAZARDS		
24. Standing water in basins		
25. Unsecured toilet		
ORGANIC MATTER AND ALLERGENS		
26. Decaying food/dirty dishes		
27. Excess dust, dirt, animal hair & other allergens		
28. Evidence of insect/rodent infestation		

APPENDIX B. HAPI-R Definitions-Home Visitor Version

HAPI-R DEFINITIONS

HOME VISITOR VERSION

TABLE OF CONTENTS

WHAT IS "ACCESSIBLE" AND "REACHABLE"?

For a hazard to be **accessible**, it must be

- reachable and
- not secured.

Reachable means within arm's reach of any child, 0 to 7 years old,

- as he or she stands on tiptoes on the floor.
- when he or she climbs onto ***nearby*** objects.
    - A child can climb onto any surface **below** eye level while he/she stands on his tiptoes.
    - A child can climb or step up onto progressively higher surfaces if they are arranged in a stair-step fashion and each is lower than the child's eye level when the child climbs on the preceding surface.

> NOTE: *For infants/children not yet walking, use 45" reach and 33" eye level.*

Not secured means item is

- in an open (unlocked) container or space.
- in a broken, cracked, or open childproof cap or lock

HOW CAN HAZARDS BE MADE *INACCESSIBLE*?

Hazards may be reduced/made inaccessible by

- Using childproof latches and locks;
- Placing hazards out of reach;
- Cleaning (e.g., vacuuming, wiping down surfaces) to remove allergens, dirty dishes, and spills; and/or
- Getting rid of insects and other pests.

HOW ARE HAZARDS SCORED?

Score all hazards accessible via stair-step surfaces that you see and measure during the observation. **Do not score surfaces as accessible if the child would have to move an object to step up to that surface.**

10+ RULE

In order to count items as 10+, they must be

- **like** objects NOT contained (such as a pile of pennies on the floor)

-OR-

- objects that can be secured in one effort (such as a single cabinet with a door that has at least 11 accessible medications)

> *Stop counting at 11th object that meets 10+ Rule; note "10+" on HAPI-R*

SHOEBOX RULE

For moveable containers, count only 1 in the category where most objects would be counted. If you cannot count items (for privacy reasons) or if there are the same number of certain types of items, default to ***one*** category, in this order:

1) small objects/choking hazards
2) sharp objects
3) medications (poisonous solids/liquids)

DEFINITIONS AND SCORING RULES FOR SAFETY HAZARDS

POISONOUS SOLIDS AND LIQUIDS

This category contains many hazards that may cause accidents resulting in illness, poisoning, burns or skin damage either due to swallowing, mishandling, or inhaling toxic substances.

MEDICATIONS

	PILL	LIQUID	TUBE	JAR	INHALER
DEFINITION	Bottle/box with pills, capsules, tablets, including meds in foil, paper or plastic wrap	Any container of medicinal fluid	Collapsible cylinder of metal or plastic with one sealed end and a capped opening	broad-mouthed, usually cylindrical glass or plastic containers with gel meds	cylindrical-shaped devices, usually plastic, used to administer inhaled medicinal vapors
EXAMPLES	• aspirin • throat lozenges • suppositories	• hand sanitizer • cough medicine • droppers • eye drops • sprays and aerosols • mouthwash • hydrogen peroxide • iodine • rubbing alcohol	• acne meds • anti-itch creams • petroleum jelly for lips	• Vicks Vaporub • Vaseline petroleum jelly • medicated lip products	
EXCLUDE	items in closed, child-proof packaging		• toothpaste • empty tubes		• bottled liquid medications

CLEANING PRODUCTS

	DETERGENTS/CLEANSERS	DEODORIZERS	POLISHES & WAXES
DEFINITION	any substance used for cleaning household surfaces or areas in powders, sprays, liquids, or aerosols form	any substance that is used for removing unwanted smells from living spaces or items in solid or spray form.	any substance used to polish, wax, or oil a household surface or personal clothing in paste, polish, wax, spray, or oil form
EXAMPLES	• dish detergent • anti-bacterial liquid hand soap • fabric treatment agents • tablet cleansers • soap pads • degreasers • rug shampoo • bleaches • fabric softeners • auto cleansers • jewelry cleanser	• deodorizers for car, diaper pail, toilet* or closet • baking soda • scented candles ***OR*** those marked KEEP OUT OF REACH OF CHILDREN	• shoe polish • furniture polish • appliance polish • auto polish/wax • leather cleaners • floor cleaners • "no-wax" furniture polishes • used shoe polish applicators
EXCLUDE	• bars of facial or bath soaps • liquid hand soap ***UNLESS*** labeled anti-bacterial	• solid deodorizers hanging in *inaccessible* toilet tanks* • ***un***scented candles	

BEAUTY PRODUCTS

DEFINITION	any item used for facial or body cosmetic purposes	
EXAMPLES	• fingernail polish ***OR*** remover • cuticle cream/cuticle remover, • cologne/perfume/toilet water • deodorant/feminine deodorant • hair bleach/hair dye/hair neutralizer • hair rinse/shampoo/conditioner • hair setting/hair spray • hair straightener/permanent wave solution • hair tint/hair tonic • shaving lotions/shaving powder • bleach cream/hair remover products	• facial makeup • lipstick • eye makeup • contact lens preparations • astringent lotions • bath oil/bath powder/bath salts • cosmetic creams • skin creams • suntan preparations • bubble bath • baby products • wipes
EXCLUDE	• toothpaste • tooth powders	• contact lens cases • contact lenses in original packaging

ALCOHOLIC BEVERAGES

DEFINITION	any ingestible distilled fruit or grain spirit
EXAMPLES	• "hard" alcohol • wine/wine coolers • cordials • beer • liquors • champagnes
NOTE	An intact 6-/12-pack or case of alcoholic beverages is scored as one hazard ***even if opened***.

PESTICIDES, HERBICIDES, AND FERTILIZERS

	PESTICIDES	HERBICIDES AND FERTILIZERS
DEFINITION	any substance used to repel, deter, or poison insects and/or animals	any substance used in the upkeep of household or garden plants
EXAMPLES	• insect repellents • small and large animal repellents • flea dips/shampoos • flea collars • fly strips • mothballs • rat poison • insecticide towelettes	• herbicides • fertilizers • plant food
EXCLUDE	collars on pets	

PAINTS AND STAINS, SOLVENTS AND THINNERS, PETROLEUM PRODUCTS, AND GLUES AND ADHESIVES.

	PAINTS AND STAINS	SOLVENTS AND THINNERS	PETROLEUM PRODUCTS	GLUES AND ADHESIVES
DEFINITION	any substance used to preserve, treat, or seal surfaces or used artistically	any chemical substance used to dissolve, remove or thin	any substance with a petroleum base that may be flammable	any substance used to bond two surfaces together
EXAMPLES	• paint cans • stain cans • spray paints ***even if the lids are tightly fitted*** • ink ***OR*** re-inker for ink pad	• paint thinners • stain removers • paint strippers • antifreeze • windshield wiper fluid/de-icers, • record/tape/CD head cleaners • correction fluid • alcohol-based dry cleaning fluid	• gasoline • kerosene • lighter fluids • charcoal products • lubricants • motor oil • WD-40 • sternos	• household glue • auto seal • glass seal • patching plaster • caulking • hair bonding • carpet adhesive • rubber cement
EXCLUDE	magic markers		Vaseline (see Meds)	• nontoxic tapes • nontoxic glues

POISONOUS PLANTS.

Plant: Oleander **Description:** tall shrub with lance-shaped leaves that are leathery, sharp-pointed, and appear in whorls of three. Fruits are long and slender and seeds are hairy. Oleanders are commonly used as ornamental potted plants **Toxic part(s):** Entire plant, especially the leaves	
Plant: Dieffenbachia (dumb cane) **Description:** tall shrubby plants that can reach 6 feet in height. The leaves are large, oblong, and entirely green or mottled white and green. Plants have a skunk-like odor when bruised. Dumb canes are very common ornamentals **Toxic part(s):** Entire plants, especially the stems	
Plant: Narcissus (paper white) **Description:** spring-flowering bulbous herb with long, narrow leaves with parallel veins. White or yellow flowers occur four to eight on a stalk. Narcissus may be grown indoors or outdoors. **Toxic part(s):** Bulbs. Eating even a small amount of the bulb may cause poisoning. The plants may also cause contact dermatitis in sensitive individuals.	

Plant: Caladium Description: stemless plant with large, varicolored heart-shaped leaves and tuberous roots. Caladium is a common houseplant Toxic part(s): All parts, especially the leaves and tubers. Chewed or eaten parts will result in tissue paralysis, burning, and swelling.	
Plant: Hyacinths Description: bulbous herbs with long, narrow leaves. Flowers are white, yellow, pink, red, or blue in a cluster at the end of the stalk. Plants are commonly grown in pots and gardens. Toxic part(s): Bulbs. Eating a small amount of the bulbs may cause poisoning. The plants may also cause contact dermatitis in sensitive individuals.	
Plant: Solanum (Christmas or Jerusalem cherry) Description: smooth erect shrub with oblong, pointed, glossy, and wavy leaves. Flowers are white and fruits are round berries, either bright red or orange. The plants are typically shown at Christmas time for their showy berries Toxic part(s): Entire plant, especially the leaves and unripened berries. Unripened berries are extremely toxic, and small amounts can be deadly, though ripe berries are relatively nontoxic	

Plant: Mistletoe

Description: green or white, oblong; leathery leaves. Flowers are small and usually embedded in a stalk. Fruits are small white berries. Mistletoe is a commonly displayed ornamental during the Christmas season

Toxic part(s): All parts, especially the berries. Persons can be poisoned by eating or making tea with the berries

SMALL OBJECTS/CHOKING HAZARDS

DEFINITION	Any ingestible small objects that put child at risk of suffocation. When a child tries to swallow these objects, sometimes they can "go down the wrong way" and potentially block the airway.
EXAMPLES	• small toys • uncooked beans and pasta • staples/pins/needles • toothpicks • small magnets on a refrigerator • potpourri • nails/hooks/screws • AA/AAA batteries
NOTES	• if an item is both small and sharp, count as small • if small objects are in a bag or container that would hold the items if tilted, count as 1 item

MECHANICAL OBJECTS THAT CAN SUFFOCATE

	CRIB CORDS	PLASTICS
DEFINITION	a string or small rope consisting of several woven strands of rope, string, plastics, wires, and so forth	any plastic bags or thin plastic material that is large enough to cover both the mouth and the nose at the same time
EXAMPLES	• easily accessible hanging telephone or appliance cords that could strangle • blind cords that form a loop	count a roll of bags not in original container as 1
EXCLUDE	• cords lying on the floor • inaccessible cords, e.g. behind furniture • cords not in designated sleep or play areas	• plastics stored in their original container • plastic bags used for storage of other items

CRUSH HAZARDS

DEFINITION	items that the child call pull onto him or herself and can potentially harm the child
EXAMPLES	• unsecured bookcases • heavy appliances near countertop edges • heavy boxes near tabletop edges • unstable, top-heavy tables
NOTES	• The following 3 criteria must be met to qualify an item as a crush hazard: 1. They are within the child's reach. 2. They are at or above shoulder height. 3. They weigh approximately 10 or more pounds (weight can be estimated by looking at the object). • A stack of boxes is counted a one hazard.

ORGANIC MATTER AND ALLERGENS

Special Notes:

- If there is STRONG evidence of roach infestation (i.e. roaches crawling in lit rooms with people present), default to Evidence of Insect/Rodent Infestation where there is more than one type of matter on a surface.
- In the absence of STRONG infestation, categorize what is observed most, and do ***not*** double count a surface.

	DECAYING FOOD/DIRTY DISHES	EXCESS DUST, DIRT, ANIMAL HAIR, AND OTHER ALLERGENS	EVIDENCE OF INSECT/RODENT INFESTATION
DEFINITION	any item or surface area with food that covers an area of more than one square inch ***and*** does not belong where it is found that provides a breeding site for bacteria and mold and/or attracts pests	any combination of dust, dirt, and/or hair that is sufficient to make a ball	any signs of insect or rodent infestation that is at least 1" square on any given surface
EXAMPLES	• dirty dishes/cutlery • dirty dishes piled in the sink higher than counter level • perishable food sitting out • wet pet food		• roach/rodent droppings • dead insects • roach eggs
EXCLUDE	• splashed water around the sink unless it contains food particles • dishes and utensils on the table, stove, and/or sink if observed around mealtime • bread in a breadbox or bag • unused fruit stored on kitchen counters	• small amounts of mold in wet areas like showers • very thin layers of dust	
NOTE	• A surface area is any area with distinct boundaries, such as a shelf, a countertop, a floor, etc.		

SHARP OBJECTS

DEFINITION	any item with sharpened edges or points that could cause minor or severe cuts, abrasions, or punctures	
EXAMPLES	• knives • scissors • ice picks/awls • corkscrews • vegetable peelers • razors/eyebrow razors	• nails/screws/hooks • fireplace pokers • metal skewers/corn ear holders • unraveled metal coat hangers • broken glass/mirror/hard plastic
EXCLUDE	• pencils/pens	
NOTES	• If several sharp objects are consolidated in one cabinet or drawer without being contained in a tray, count each individually. • If an item could be categorized as "small" ***and*** "sharp," categorize as "small."	

DROWNING HAZARDS

	STANDING WATER IN BASINS	UNSECURED TOILETS
DEFINITION	Any vessel containing water	any functional toilet containing water that does not have a locked lid
EXAMPLES	bathtubs, sinks, buckets, and wading pools with at least ½ inch of water or liquid	
EXCLUDE		Unsecured toilets if all children in the household are under 3 years old

FIRE AND ELECTRICAL HAZARDS

	COMBUS-TIBLES	FIREPLACES WITHOUT SCREENS	ELECTRICAL OUTLETS OR SWITCHES W/O PLATES	APPLIANCES WITHOUT PROTECTIVE COVERS	HAZARDOUS ELECTRICAL CORDS OR PLUGS
DEFINITION	Exposed electrical items or items that could create fire or explode, resulting in minor or severe burns, shocks, and/or death by electrocution				
EXAMPLES	• lighters • book/box of matches • fireworks • ammuni-tion • fireplace additives	• fireplaces w/o protective guard or screen • wood-burning stoves, furnaces, and space heaters w/o fire doors or protective screens • space heaters (portable and built-in) with wire covers too wide to prevent a child from putting his or her hand	electrical outlets and/or switches with missing or improperly installed plates (that is, plates that do not come in contact with the wall surface, leaving a gap > ¼")	• operational appliances (that is, plugged in) w/broken or missing covers, incl. small appliances currently unplugged but used frequently	• damaged appliance cords/plugs (cracked, frayed, have exposed wires or missing pins) • damaged extension cords
EXCLUDE	airgun ammo, like BBs and pellets				• repaired cords or plugs • stereo speaker, cable TV or telephone wire

FIREARMS

DEFINITION	Any weapon capable of firing a projectile
EXAMPLES	• guns • rifles • BB pistols • air-pump BB guns • machine guns
NOTE	Do not handle any firearm to determine if it is loaded or locked.

FALLING, TRIP, AND ACTIVITY RESTRICTION HAZARDS

	BALCONIES	STEPS	WINDOWS	OBJECTS IN WALKWAY	ACTIVITY RESTRICTION
DEFINITION	Balconies w/o doors, safety locks or bars to block access	Stairways or steps w/o gate or other device at top and bottom and banister on at least one side with balusters that child's head can't fit through	any ***accessible*** window at least 8-10 inches w/o safety lock, securely attached screen, or bars that child could not fit through	any item that poses a trip hazard, either on stairs or floor	surface areas (having distinct boundaries) in room that child would use, but can't due to clutter
EXAMPLES & NOTES		• stairs w/no gates (2 hazards) • stairs w/o banister • stairs w/widely spaced bars			• cluttered couch • cluttered table and chair set • cluttered bed

APPENDIX C. Home Accident Prevention Inventory (HAPI-R) Definitions-Parent Version

Home Accident Prevention Inventory (HAPI-R) Definitions - Parent Version

Hazard Categories

Poison by Solids and Liquids
- Medicines (e.g., pills, liquid medicines)
- Cleaners, room fresheners
- Alcohol or drugs
- Beauty products (e.g., make-up)
- Bug or rodent killer, bug repellent, plant fertilizer
- Paints, polishes, waxes, gasoline products, glues
- Poisonous plants

Fire & Electrical Hazards
- Matches, lighters, things that catch on fire or explode
- Missing appliance covers
- Fireplaces/heaters without screens
- Outlets & switches without plates
- Bare electrical cords & plugs

Suffocation Hazards
- Plastics, including bags
- Hanging cords

Small Objects (Choking Hazards)

Sharp Objects

Firearms (Guns)

Falling & Trip Hazards
- Balconies the child can get onto
- Steps that are not blocked
- Windows that are open or unlocked
- Objects on stairs or where people typically walk

Crush Hazards
- Boxes or other heavy objects the child could pull down on him/herself

Drowning Hazards
- Water in bathtubs, sinks, pools, or buckets
- Toilets that a child could get into

Organic Matter and Allergens
- Decaying food
- Lots of dust
- Lots of animal hair
- Insect and rodent droppings
- Dead insects

Hazards are accessible if

- The object is reachable and not secured.
  - A reachable hazard is
    - Within arm's reach of any child, 0 to 7 years old, as he or she stands on tiptoes on the floor.
    - Within arm's reach of any child 0 to 7 years old, when he or she climbs onto nearby objects.
  - An object is not secured if it is in an open (unlocked) container or space and does not have a childproof cap or lock or has a childproof cap or lock that is broken, cracked, or open.

Reduce hazards by

- Using childproof latches and locks
- Placing hazards out of reach
- Moving objects to where they won't be in the way
- Cleaning to remove allergens, dust, animal hair, unclean dishes, or spills
- Getting rid of insects and other pests

Always remember that SUPERVISION is an important part of keeping your child safe.

APPENDIX D. Home Assessment Consent

iSafety Home Assessment Consent

Part of the SafeCare® program is home safety. By getting rid of hazards in your home, you will lower the chance that your child will be injured. It can also help reduce allergies and asthma. The Home Accident Prevention Inventory (HAPI-R) helps point out hazards. The Home Visitor uses this checklist to see what hazards are in your home. They will look around areas of your home and check off if there are hazards. You may go with the Home Visitor while s/he does this. The Home Visitor may also want to measure how tall your child is to see if certain hazards are outside your child's reach. Most importantly, you decide where the home visitor can look.

If you do not wish a SafeCare® home visitor to look in certain areas of your home, please place and "X" on the line next to that area listed below.

LIVING ROOM

Look in furniture cabinets? _____
Look in furniture drawers? _____
Look under furniture? _____
Look behind furniture? _____
Other? Please list below. _____

_____

BEDROOMS

Look in cabinets? _____
Look in drawers? _____
Look under bed? _____
Look in closets? _____
Other? Please list below. _____

_____

BATHROOM

Look in medicine cabinets? _____
Look in cabinets? _____
Look in drawers? _____
Other? Please list below. _____

_____

KITCHEN

Look in cabinets? _____
Look in drawers? _____
Look in refrigerator and freezer _____
Other? Please list below: _____

_____

MISCELLANEOUS

Look in boxes? _____
Look at personal or household products? _____
Other? Please list below. _____

_____

I have read, or had read to me, the above. I agree to and understand the home safety procedure. I further understand that I can revoke this consent at any time.

_____ _____
Parent Date

_____ _____
Parent Date

_____ _____
Home Visitor Date

APPENDIX E. iSafety Parent Satisfaction Survey

iSafety Parent Satisfaction Survey

Thank you for being part of the iSafety research. We would like to learn some of your thoughts and feelings about this program. This will help us make the program better. Please read the following and circle the answer that best describes how you feel about each statement. Be as honest as you can. You can refuse to respond to any statements you don't want to. Please write any comments you have on the bottom of this form. Thank you for helping us by filling out this survey.

1. Since I finished the iSafety program, my home is
much safer safe the same less safe

2. When I think about what I know now about finding unsafe areas or things in my home, I feel
very sure of myself sure of myself a little unsure very unsure

3. When I think about getting rid of unsafe things or areas in my home, I feel
very sure of myself sure of myself a little unsure very unsure

4. When the home visitor explained the information about keeping my home safe, I
understood well understood was a little confused was very confused

5. The amount of time it took to make my home safer was
too long long just about right a short time

6. When I think about using the iPhone, I think the iPhone was
very easy easy a little tricky at times difficult

7. When the home visitor explained the information about how to use the iPhone, I
understood well understood was a little confused was very confused

8. When I had to use the iPhone to video rooms I made safer, I felt…
very uncomfortable uncomfortable comfortable very comfortable

9. When I think about how helpful the iPhone was in communicating with the home visitor about making my home safer, I think the iPhone was
unnecessary only a little helpful helpful very helpful

10. When I think about how many texts and emails I got from the home visitor, I think it was
too many the right amount a little too many way too many

COMMENTS: