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Examining Parental Generalization of the SafeCare[®] Child Health Module Using Smartphone Enhancements

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Examining Parental Generalization of the SafeCare® Child Health Module Using
Smartphone Enhancements

By

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Master of Public Health
GEORGIA STATE UNIVERSITY

A Thesis Submitted to the Graduate Faculty of Georgia State University in Partial
Fulfillment of the Requirements for the Degree

MASTER OF PUBLIC HEALTH

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APPROVAL PAGE

EXAMINING PARENTAL GENERALIZATION OF THE SAFECARE CHILD HEALTH
MODULE USING SMARTPHONE ENHANCEMENTS

By

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Abstract

Child maltreatment is a serious public health problem that leads to psychological, physical, behavioral, and economic burdens for children and broader community. Current data suggest that child maltreatment has declined over the past 20 years with the smallest declines in child neglect. In 2013, medical neglect represented approximately 31% of all substantiated cases of child maltreatment. SafeCare® is an evidence-based home visiting program that targets risk factors for child maltreatment by providing three modules: home safety, health, and parent-child interaction, or parent-infant interaction for children who are not walking. The SafeCare health module aims to teach parents how to identify and treat their children when they become ill, reducing the potential for medical neglect. Previous SafeCare research demonstrated that incorporating cell phones into training improves home safety and parent-child interaction outcomes. The current research evaluated the SafeCare health module and the effect cell phone enhancements had on parents' child health knowledge. Data reaffirm the value of the SafeCare health module to increase parental child health skills and that incorporating cell phone technology may promote generalization and may engage participants and increase effectiveness.

Keywords: smartphone, SafeCare, health, child maltreatment

Examining Parental Generalization of the SafeCare® Child Health Module Using
Smartphone Enhancements

Literature Review

Child Maltreatment

Child maltreatment is a serious public health problem that leads to psychological, physical, behavioral, and economic burdens for not only children experiencing the trauma, but for the broader community as a whole. Child maltreatment is defined as “any act or series of acts of commission or omission by a parent or other caregiver (e.g., clergy, coach, teacher) that results in harm, potential for harm, or threat of harm to a child” (Centers for Disease Control and Prevention [CDC], 2014). Forms of child maltreatment include: physical abuse, sexual abuse, psychological abuse, physical neglect, emotional neglect, medical/dental neglect, educational neglect, inadequate supervision or exposure to violent environments. The United States Department of Health and Human Services (2015) reported that in 2013, there were 3.4 million referrals made nationwide to Child Protective Services (CPS), which included 6.3 million children. There were 678,810 unique victim accounts of child abuse and neglect nationally. In Georgia, there were 110,323 CPS reports and 18,752 child victims and 71 child fatalities. Child maltreatment comes with a cost that rivals high profile public health problems such as stroke and Type 2 diabetes. Fang and colleagues (2012) reported that the total lifetime economic burden from new cases of child maltreatment in the United States in 2008 was approximately \$124 billion. Rovi, Chen, and Johnson (2004) reported that children who were hospitalized and reported for child maltreatment were more

likely to die during hospitalization, have longer stays, receive twice the number of diagnoses, and incur double the charges than non-maltreated hospitalized children. The same study also showed the primary form of payment was Medicaid (66.5%) for maltreatment-related hospitalizations versus 37.0% of non-maltreatment related hospital stays. Child maltreatment is a serious public health concern that has many consequences including excessive risky behaviors, criminal activity, proneness to victimization, perpetuating further violence, and emotional and physical disturbances (Felitti, et al., 1998).

Current data suggest that child maltreatment has declined over the past 20 years in the areas of emotional child abuse and sexual abuse (Finkelhor, Shattuck, Turner, & Hamby, 2013), but not dramatically in child neglect (Finkelhor, Jones, & Shattuck, 2013), which remains the most prevalent type of child maltreatment in the United States. Child neglect is defined by the World Health Organization (1999) as the failure to provide for the development of the child in all categories: health, education, development, nutrition, shelter, and safe living conditions. Failure to provide must be examined from a context that considers the resources realistically available to the caretakers of a child or has a high likelihood of causing damage to the child's health or physical, mental, spiritual, moral, or social development.

Medical Neglect

The National Child Abuse and Neglect Data System (NCANDS) divides neglect into four categories: physical, educational, emotional/psychological, and medical. Medical neglect is defined by the failure to provide necessary healthcare for a child when financially capable, and includes the refusal to provide emergency care for an

acute illness and ignoring recommended treatment options when a child has a chronic illness resulting in numerous hospital visits or a deteriorating health status. According to the Child Welfare Information Gateway (2012), in 2011, medical neglect represented approximately 31% of all substantiated cases of child maltreatment, representing over 15,000 children. Approximately 34% of the children experiencing medical neglect were younger than 3-years-old and approximately 75% were under 12-years-old.

Sequela

The Adverse Childhood Experiences (ACE) studies, executed and funded by the CDC and the Kaiser Permanente Department of Preventative Medicine were originally conducted to examine the lasting effects on adults who experienced child abuse, neglect, or other childhood traumatic experiences. The ACE study examined retrospective survey data from over 17,000 participants who reported their physical health and their adverse childhood experiences of abuse (emotional, physical, and sexual), neglect (emotional and physical), and household dysfunction (i.e., mental illness, substance abuse, domestic violence, etc.). The amount of exposure to adverse childhood experiences was related and highly predictive of multiple risk factors for many poor health outcomes, including death (Felitti et al., 1998). Hanson et al., (2014) examined the effects of early life stress (ELS) on the development of the hippocampus and amygdala. The ELS of interest was physical abuse, neglect, and/or low socioeconomic status. The hippocampus is involved in learning, memory, and stress response, while the amygdala is responsible for emotional and social information processing. Damage to these brain regions can

make it difficult to recognize important social stimuli. Hanson et al (2014) found that children who had been exposed to physical abuse or came from a low socioeconomic background were found to have smaller hippocampal regions and children exposed to greater cumulative stress and expressed behavioral problems were found to have smaller hippocampal and amygdala regions. Thus, there is evidence that experiencing adverse circumstances at an early age is associated with structural differences in the brain.

Jinseok (2009) used the National Longitudinal Study of Adolescent Health (Add Health) to examine intergenerational transmission of child abuse (ITCA) and to compare the patterns of transmission of physical abuse and neglect. The original Add Health study longitudinally examined a nationally representative population of adolescents' health related behaviors. The study by Jinseok and colleagues (2009), examined responses from adolescents in grades 7 through 12 and compared their responses when interviewed again when they were between 18- and 28-years old. The adults who became parents and reported experiencing neglect and physical abuse in childhood, (grades 7 through 12) were more likely to display neglect and physical abusive parenting behaviors, respectively. More specifically, parents who reported being neglected during childhood were 2.6 times more likely to show neglectful parenting behavior and twice as likely to report physically abusing their children. Also, parents who recalled being physically abused were 5 times more likely to report being physically abusive to their children and 1.4 times more likely to report neglectful parenting.

In sum, major findings indicate that as exposure to ACEs or early life stress increase, so does the risk for health problems later in life including, but not limited to: alcoholism, depression, drug use, liver disease, suicide attempts, smoking, risk for intimate partner violence, and sexually transmitted diseases, (CDC, 2014). The ACE studies provide an example of why prevention and intervention of child maltreatment is so critical.

Health Education

Health literacy is a factor that considerably impacts child health education and how it is effectively communicated to parents. While there is no single definition for the concept of health literacy, the Institute of Medicine's proposed definition is the ability of individuals to attain, process, and recognize basic health information and services needed to make correct health decisions (Nielsen-Bohlman, 2004). The health decisions relied upon by parents to make include prevention of diseases (e.g., immunizations), management of chronic diseases, and recognizing when it is appropriate to take their child for medical appointments (Moore, Robert, Perry, & Derek, 2013). Nielsen-Bohlman (2004), reports that almost half of all American adults have difficulty understanding health information, thus affecting their ability to use subsequent information appropriately.

Low health literacy leads to decreased use of preventative care services (Dewalt, Berkman, Sheridan, Lohr, & Pignone, 2004) and results in increased health care costs, estimated up to \$73 billion dollars (Friedland & O'Neill, 1998). A parental low health literacy negatively impacts adults' health outcomes as well as child health outcomes. Morrison, Schapira, Gorelick, Hoffmann, and Brousseau (2013)

measured the health literacy of 503 caregivers in a pediatric emergency department, and found that 55% demonstrated low health literacy. Low health literacy was found to be a predictor of non-urgent emergency room use. DeWalt and Hink (2009) found that parents with low health literacy had less knowledge about health and made choices that were less advantageous for their children's health compared to those with higher literacy. Materials and the messages portrayed at the appropriate literacy level have the potential to improve child health outcomes, especially in families with the most social adversity (Davis, 2013).

SafeCare

SafeCare is an evidence-based home visiting program that targets risk-factors for child maltreatment by providing three modules: home safety, health, and parent-child interaction (or parent-infant interaction) for children under 5-years old. The purpose of the home safety module, the focus of the present research, is to reduce and eliminate hazards in the home as well as to prevent unintentional injury to children. The health module teaches parents how to identify and treat their children when they are ill. The parent-child interaction (PCI) module provides parents with skills to improve child behavior, and the parent-infant interaction (PII) module teaches parents how to interact verbally and physically with their infants. The SafeCare model has demonstrated noteworthy improvements in targeted parent behaviors. For example, Gershater-Molko and colleagues (2003) found an 84% increase in positive parenting skills (i.e., home safety, child health and parent-child interactions) taught through SafeCare. Similarly, Guastafarro and colleagues (2012) found that SafeCare and similar evidence-based interventions were effective

at improving parenting skills. Chaffin and colleagues (2012) found that when recidivism outcomes of SafeCare were compared to enhanced services as usual, SafeCare was more effective at reducing recidivism.

Technology

Cell phones are easily accessible and widely used by persons of all income levels (Brenner, 2013). The Pew Research Center reported that as of January 2014, 98% of people ages 18-26, 97% of people ages 30-49 had a cell phone and 84% of those with an annual household income under \$30,000 had a cell phone. Smartphone ownership has increased from 35% in 2011 to 58% in 2014, and the trend of increasing ownership is seen in other devices as well, such as, desktop or laptop, eBook reader, tablet computer, mp3 player, and game console (Pew Research Center, 2014). Taking into consideration that the largest percent of child maltreatment perpetrators (40.5%) are between the ages of 25-34 (USHHS, 2015), there is reason to suggest that technology may be a useful tool in child maltreatment interventions. As cell phone technology continues to grow and advance it is important that public health programs incorporate this technology to increase effectiveness. In a review of mobile phone applications in preventative health it was found that there are four main areas that are positively impacted: delivering health information and instruction, successful treatment compliance, chronic disease monitoring, and providing reminders via text messages (Vodopivec-Jamsek, de Jongh, Gurol-Urganci, Atun & Car (2008).

Technology has been found to be useful in identifying child maltreatment occurrences, delivering prevention programs, and effective in the dissemination and

execution of interventions (Self-Brown & Whitaker, 2008). Jabaley, Lutzker, Whitaker, and Self-Brown (2011) showed that iPhones were effective in reducing home safety hazards and that incorporating them into the SafeCare model also reduced face-face time of the home visitor and the families. Bigelow and colleagues (2008) reported that parents were less likely to drop out of the intervention program when cell phone technology was incorporated and that parents' use of learned parenting skills increased 22% from baseline to postintervention with cell phones incorporated into the intervention. This demonstrates that cell phones are helping parents apply parenting techniques and they are integrating them into their every day lives with ease. In addition, Carta and colleagues (2013) compared outcomes of mothers receiving Planned Activity Training (PAT), part of the SafeCare Parent-Child Interaction module, with cell phone technology incorporated (CPAT) to those who received PAT without cellphone technology. PAT is a five-session module that teaches parents how to positively and effectively engage with their children by establishing rules and limits and providing feedback regarding the child's behavior to prevent challenging behavior. Mothers who received CPAT were more likely to incorporate the newly learned parenting strategies, thus, reducing depression and stress for the mothers. They also found that the children demonstrated higher rates of positive engagement and adaptive behaviors. This study found that by enhancing PAT with cellphone technology, the program had improved effectiveness by increased use of the learned strategies, higher retention rates, and improved child engagement.

Health Studies

A meta-analysis (Geeraert, Noortgate, Grietens, and Onghena, 2004) found that early prevention programs aimed for children 3-years-old and under yielded significant positive effects for preventing child maltreatment. Participating in early prevention programs teaches parents how to manage stress and create a positive learning environment for their children before harmful recurring behaviors are established (Hawley, 2000; Whitaker, Lutzker & Shelley, 2005). Programs that incorporate home visitation are effective at preventing maltreatment before it occurs and preventing recidivism by parents with a substantiated child maltreatment history (Flaherty, Stirling & The Committee on Child Abuse and Neglect, 2010; Zielinkski, 2005).

Incorporating written materials into child maltreatment interventions improves outcomes in a cost-effective manner. Herman, Young, Espitia, Fu, and Farshidi (2009) found a 30% reduction in unnecessary emergency room visits in low-income, minority parents who participated in an intervention using a health aid book and non-emergency medical scenarios. Herman and Jackson (2010) trained parents how to respond to common childhood illness with a low-literacy health book and found that emergency room and doctor visits decreased as well as missed days at work or school.

Delgado and Lutzker (1988) found that parents retain health education knowledge when skills are taught through modeling and role-playing followed by positive practice versus solely using written materials for education purposes. Employing only written materials to educate parents assumes parents have a

sufficient English reading ability, will take the time out of their day to read the information, and that reading alone will be efficient to retain and carry-out the suggested course of action pertaining to child health. However, Delgado and Lutzker (1988) determined that once parents acquired the skills through practice and role-playing, they were more likely to effectively use the written materials to supplement their subsequent actions regarding their child's health.

Generalization of Intervention

Generalization, in relation to this study, is defined as the occurrence of similar behaviors during non-training conditions that were taught during training (Stokes & Baer, 1977). According to Stokes and Baer (1977), generalization can occur across subjects, settings, people, behaviors and/or time. McNeil, Eyberg, Eisenstadt, Newcomb and Funderbuck, (1991) found that children were able to generalize desired behaviors in the classroom following parent-child interaction therapy in the home. To date, there is little research available demonstrating generalization of behaviors in child maltreatment interventions.

Current Study

The focus of this study was to assess at-risk parents' acquisition of basic parenting skills taught in the SafeCare intervention and how parents use these skills when the home visitor is not in the home. SafeCare was delivered to three at-risk families in their homes as usual and integrated generalization assessment through technological enhancements between sessions. This study measured generalization through different modes of communication via iPhone technology and collected generalization data across behaviors and replicated across participants.

Parents were trained in the SafeCare child health module which was technologically enhanced through texting, calling, or a videoconferencing mechanism (e.g., FaceTime®). Parents were prompted by the home visitor through these forms of technology to demonstrate generalization of trained skills, the purpose of which was to see how the parent utilized the newly trained skills when the home visitor was not in the home. It was predicted that families would increase child health care skills following intervention and that integrating the technological enhancements would promote a high rate of skill acquisition.

Method

Participants

Three mothers were recruited from a nonprofit organization dedicated to helping homeless families with children and by word of mouth. The first mother was recruited using the services of the nonprofit organization. The second participant was recruited by word of mouth from the first mother and the third participant was recruited by word of mouth from the second mother. All three mothers were coworkers.

Dyad One, an 18 year-old mother and her 7-month-old daughter, lived in two different extended stay hotels and an apartment during the training. The mother was employed at the beginning of intervention at a call center and was in the interview process for another position at the end of intervention. She was married; the father of the daughter was incarcerated. The mother's highest level of education was "some high school." She was earning an income of \$10 per hour and working 45 hours per week. Sessions took place in the hotels and the apartment.

Dyad Two, comprised of a 23-year-old mother and her two children, a 3-year old daughter and 1-year old son. During training they lived in an apartment during the training, which she shared with her brother. The mother was not married but the children had regular visits with the father. She indicated her highest level of education was “some college” and was employed at the beginning of training at a call center but had taken employment elsewhere before the training was completed. She was earning an annual income between \$15,000 and \$29,999. Sessions took place in the home, the home of a friend, and in the home (a house) of the grandmother. The multiple settings were occurred upon request of the mother based on her availability.

Dyad Three, a 27 year-old mother and her 9- and 4-year-old daughters, lived in an apartment at the beginning of intervention, but moved to a new apartment during training. She indicated her highest level of education was “some college” and was employed at a call center at the beginning of training, then unemployed for a short time before re-graining employment by the end of training. She indicated her annual income was between \$4,000 and \$5,999. All sessions took place in the home with the exception of one, which took place in a secluded location in the food court in a mall due to carpets being cleaned in her apartment. For purposes of this study, the mother used her 4-year-old daughter as a point of reference for the child health scenarios.

Table 1							
<i>Mothers' Demographics</i>							
<u>Mother</u>	<u>Age</u>	<u>Marital Status</u>	<u>Race</u>	<u>Education Level</u>	<u>Employment Status</u>	<u>Total Number of Children (0-5)</u>	<u>Number of Children (0-5)</u>
1	18	Married	AA	Some High School	Employed	1	1
2	23	Single	AA	Some college	Employed	2	2
3	27	Single	AA	Some college	Employed	2	1

Materials

Mothers participating in the Health module each received a health manual (See Appendix A), the *Sick and Injured Child Checklist – Parent Version* (SICC-P) (See Appendix B), a health kit, and an iPhone™. The health manual served as a resource guide for the parent to reference for questions regarding child health. The manual, previously validated by medical professionals for accuracy and relevance (Bigelow & Lutzker, 2000) included a form on which the parent may record important phone numbers, a health supplies checklist, a health-recording chart, and steps for caring for a child in a variety of health situations. Also included in the health manual was information regarding hygiene, nutrition, physical activity, immunizations, and preventing shaken baby syndrome and sudden infant death syndrome (SIDS). The health manual also included a symptom and illness guide that details how to approach health events such as injuries, breathing problems, allergies, bites and stings, convulsions, ears, eyes, head, throat, skin and hair, nose, and intestinal issues.

The SICC-P provided detailed information on the steps to take when evaluating health concerns. It is a one-page summary of the steps presented in the larger health manual. When trained to use the SICC-P, parents are taught specified steps to determine if health concerns warrant which of the following: care at home, doctor appointment, or go to the emergency room or call 911.

Upon completion of the training sessions the mothers were compensated with a health kit. The kit included basic health essentials, for example, digital thermometer, Band-Aids™, sunscreen, antibiotic ointment, and other similarly related products. The mothers received the health kit after the final follow-up session to provide them with tools to use the skills learned in training going forward upon completion of the module, but after delivery of the training sessions so as to reduce the risk of biasing the results.

An iPhone 5S or 4S was provided for each mother upon completion of all five baseline sessions. The phone was used for generalization measures as well as a tool for keeping in contact with the mothers to schedule sessions. Phone communication included video-conferencing, text messages, and video chat. The available phones for use were provided by the Center for Healthy Development at Georgia State University. The mothers were also compensated \$20 after each session.

Before the start of the baseline and training sessions, the parents received an informed consent form that detailed the purpose of the study, procedures, any possible risks or benefits of participation, confidentiality, and listed points of contact if needed throughout the program. All procedures were reviewed and

approved by the Georgia State University Institutional Review Board before the start of the study.

Home Visitor Training

The Home Visitor (HV) and Reliability Observer (RO) were trained to deliver the SafeCare health module. Training consisted of watching online role-plays and didactic presentations on skills with quizzes throughout that incorporated the SafeCare materials consistent with real life health scenarios. The HV and the RO practiced by role-playing the sessions until mastery was achieved. Mastery, defined as an understanding of the health scenarios, was achieved by scoring 90% inter-observer reliability.

Reliability Training

Interobserver reliability was established through practice sessions in which the two HVs met with a staff member from the National SafeCare Training and Research Center (NSTRC) to role-play the sessions in the module. The HV and the RO took turns presenting the NSTRC staff member with health scenarios as if they were the parent and the staff member was the mother. The HV and the RO practiced scoring the answers using the specified protocol designated for each scenario. This training took place as necessary until a minimum of 90% reliability between the HV and RO was achieved. Reliability was calculated using the following formula: number of agreements divided by the sum of all agreements and disagreements multiplied by 100.

Assessment

The health module was designed to consist of five baseline sessions, five training sessions and one follow-up session. The module taught the parents how to identify and care for health related illnesses. The number of baseline sessions was pre-determined by the experimental design. During baseline sessions the HV examined the mothers’ responses to emergency room scenarios (ER), doctor’s appointment scenarios (DA), and care at home scenarios (CH) scenarios. This measured the mother’s knowledge of typical child health scenarios. The prompts used by the HV when presenting each scenario type can be seen in the table below.

Table 2					
<i>Scenario Prompts</i>					
<u>Type</u>	<u>Step 1</u>	<u>Step 2</u>	<u>Step 3</u>	<u>Step 4</u>	<u>Step 5</u>
ER	Describe what is going on with your child.	Is this an emergency?	What would you do next or whom would you call?	No additional steps.	No additional steps.
DA	Describe what is going on with your child.	Is this an emergency?	Does this need medical help?	What would you do next and what would you watch for?	Parent uses health-recording chart.
CH	Describe what is going on with your child.	Is this an emergency?	Does this need medical help?	What would you do next and what would you watch for?	Parent uses health recording chart.

Table 2

During baseline sessions the HV offered no feedback to incorrect or correct responses. This was explained to the mothers by the HV as a way for the HV to learn what the mothers knew and understood about their children's health. Each training session began with assessment of each scenario type (ER, DA, and CH) and designated one day of training ER scenarios, one day of training DA scenarios, and one day of training CH scenarios. The HV offered feedback to responses by the mother during training sessions only. The remaining two days of training also began with assessment of each scenario type and focused the training on prevention tips, information on nutrition and physical activity, and summaries of what was trained on the previous days. The HV also communicated with the mothers via text, FaceTime, and video between training sessions for generalization and scheduling purposes.

The HV collected data using the *Sick and Injured Child Checklist – Home Visitor Version* (SICC-HV) for each of the three scenarios: CH, DA, or ER. The health scenarios manual consisted of 40 unique scenarios presenting the symptoms of a child illness or ailment. The mother indicated the course of action to address the problem (CH, DA, or ER). At each visit, the mother was asked one of each type of scenario. For every question the parent answered correctly, a (+) was recorded and for every incorrect answer a (-) was recorded. After each session, the HV totaled the correct answers for each scenario and a total correct percentage was calculated. Mastery of each scenario type was required before moving on to the next. The mother had to demonstrate 100% mastery for the ER scenarios and 80% mastery for DA and CH scenarios.

Consumer Satisfaction

Once the mothers completed the final training session, they were asked to complete a Parent Satisfaction Survey. The survey was an 11-item questionnaire with statements designed to assess the mothers' perceptions of the SafeCare health module. The statements were rated by the mothers using a Likert-scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). There was also additional space for the mothers to leave comments. Once the mothers completed the Parent Satisfaction Survey, they placed it in an envelope and gave it to the HV.

Experimental Design

The current research was conducted in part to meet the criteria for single-case design outlined by the What Works Clearinghouse (WWC; Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2010). This multiple-baseline design across behaviors, replicated with three mothers was used to examine the effects of the intervention on health behavior and parental knowledge. This design attempted to meet What Works Clearinghouse (WWC) standards with reservations, set forth by the U.S. Department of Education. These standards specify that single-case research designs must have a minimum of six phases with at least 3 data points per phase with reliability checks in 20% of sessions.

Data were collected face-to-face using the SICC-HV. The order of training was ER, DA, and CH. This order was intentionally set forth to start with the most serious circumstances and end with the least serious.

Experimental Procedures

Baseline. During each baseline session, the HV presented the mother a card with a health scenario that her child could experience and read aloud while the parent read along. The HV followed the steps outlined on the SICC-HV, which provided prompts for the HV and sequenced actions for the health scenario and then recorded the mothers' responses. The HV offered no feedback to the mother's responses and was explained to mothers by the HV as a way for the HV to better understand the mothers' skills regarding child health. After the baseline data were collected, the session was summarized with the mother and the next session was scheduled either in person by text message with the HV.

Training. Following the five baseline sessions, the health manual and SICC-P were distributed to the mothers at the first training session. The mother was also provided with the iPhone™ during the first training session. Training was separated into three skill sets: ER, DA, and CH as set forth by the experimental design.

Training began with scenarios that require a visit to the ER or to call 911. When this skill was mastered, the mother was trained on the DA skill set and practiced the ER steps. Once mastery was achieved, the mother was trained in the final skill set, CH, while continuing to practice the already mastered skill sets.

The training occurred through a standardized presentation format in which first, the skills were explained and modeled by the HV, then the parent practiced the skill and the HV provided positive and corrective feedback until mastery was achieved. Mastery was achieved by scoring 100% on the ER scenarios and 80% correct for the DA and CH scenarios. For example, the HV first explained how to use

to the health manual as a reference guide to look-up symptoms related to illness.

The HV then modeled the steps using the SICC-P to demonstrate the decision-making behavior (skill) desired from the parent. The parent was then prompted using the SICC-P using the same scenarios the HV had modeled. Positive and corrective feedback were provided to the parent after each scenario. This loop continued until mastery was achieved for the specified skill.

Generalization Sessions. Between training sessions, contact was made with the mother by iPhone with the parent. Questions were asked that utilized each feature of the phone (e.g., video-conferencing, FaceTime™, text, and video-messaging) and can be seen in the table below.

Table 3					
<i>Cell Phone Protocol</i>					
	<u>Session 1</u> (Text)	<u>Session 2</u> (FaceTime)	<u>Session 3</u> (Text)	<u>Session 4</u> (Text)	<u>Session 5</u> (Video)
<u>Content</u>	If your child gets a cut on their arm and it is red and swollen, what should you do?	Talk through a novel health scenario with parent.	What should you do if your child has a cough that continues to get worse?	If you are unsure of what to do about your child's health condition (rash, cut, fever, vomiting, etc.), what is the best thing to do?	Have the parent send a video of them taking their child's temperature.
<u>Correct Response</u>	Call the doctor	100% on ER and 80% on DA and CH	Make doctor appointment	Call the Doctor	Video of the parent correctly taking

	child's temperature
Table 3	

Follow-Up. After completing the training sessions and acquiring mastery for ER, DA, and CH, the mother was contacted by the HV to schedule a face-to-face session one month postintervention. The HV re-assessed the mother's maintenance of the three scenario types. Maintenance was measured by asking the mother the three specified scenarios types (ER, DA, and CH) and recording the percentage of correct responses. Mothers then received their health kit and returned the phone.

Results

Baseline and Training

Mother One. Upon completion of five baseline sessions, in which the performance ranged from 33% to 100% correct, with a mean of 79.8%, training for the ER scenarios began. Skills assessed on all three scenarios at the beginning of the first training session indicated the mother needed training for ER skills, thus training began. Each assessment occurred at the beginning of a training session. At the beginning of the second training session, skills for each scenario were assessed and the ER score was 100%. This remained stable throughout each training session. Based on the improved demonstration of ER skills, DA was trained in the second session. When all three scenarios were assessed at the beginning of session three, the DA scores did not indicate adequate skills and understanding and was therefore retrained during session three. At session four, after assessing each scenario, DA was at a criterion score of 80%; this demonstration of DA skills was maintained

throughout the remaining training sessions. CH was trained in session four and data remained unstable until follow up sessions were completed.

Mother One scored 0% on the first generalization question and her data showed an upward trend going forward, scoring a 100% on the second, third, fourth, and fifth questions. However, the third question was comprised of three parts (ER, DA, and CH) and she only maintained 100% was for the ER scenario; an 80% was scored for DA and a 20% was scored for CH.

Mother Two. Upon completion of five baseline sessions in which the performance ranged from 0% to 100% correct, with a mean of 66.4% training for the ER scenarios began. Skills assessed on all three scenarios at the beginning of the first training session indicated the mother was still deficient in ER skills with a score of 66% and thus was trained. At the beginning of the second training session, skills for each scenario were assessed and the ER score was 33% indicating a need for another ER training session, as a score of 100% is considered successful for ER. After training ER during the second session, the assessment in the third session showed ER skills at 100% and remained stable throughout each training session throughout training. Based on the improved demonstration of ER skills, DA was trained in the third session. When all three scenarios were assessed at the beginning of session four, the DA scores indicated adequate skills and understanding; this demonstration of DA skills was maintained throughout the remaining training sessions. CH was trained in session four and data remained stable throughout sessions five and six.

During the generalization questions, mother two scored 100% on each question asked throughout the training. However, she did not respond to the final generalization question and therefore no data could be reported.

Mother Three. Upon completion of five baseline sessions in which the performance ranged from 0% to 66% correct, with a mean of 52.8% training for the ER scenarios began. Knowledge assessed on all three scenarios at the beginning of the first training session indicated the mother had still not mastered ER desired skills with a score of 66% and thus was trained. At the beginning of the second training session, knowledge for each scenario was assessed and the ER score was adequate at 100% and remained stable throughout the remaining training sessions with the exception of session three. In session three, ER was not retrained, but the scenario was practiced in further detail until the mother demonstrated sufficient knowledge by scoring 100% throughout the remaining training. DA was trained in the second session, and at the beginning of session three the DA scores indicated adequate knowledge and understanding; this demonstration of DA skills was maintained throughout the remaining training sessions. CH was trained in session three and data remained stable at 80%, throughout sessions four and five.

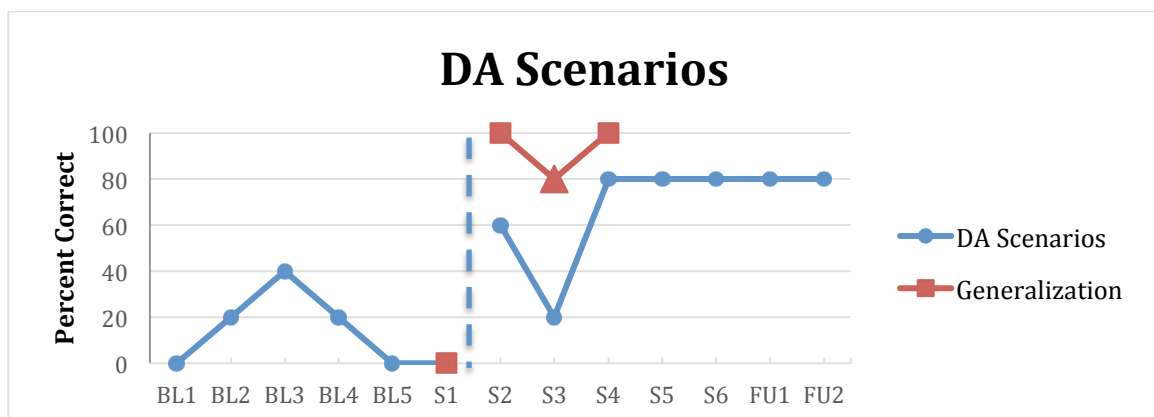
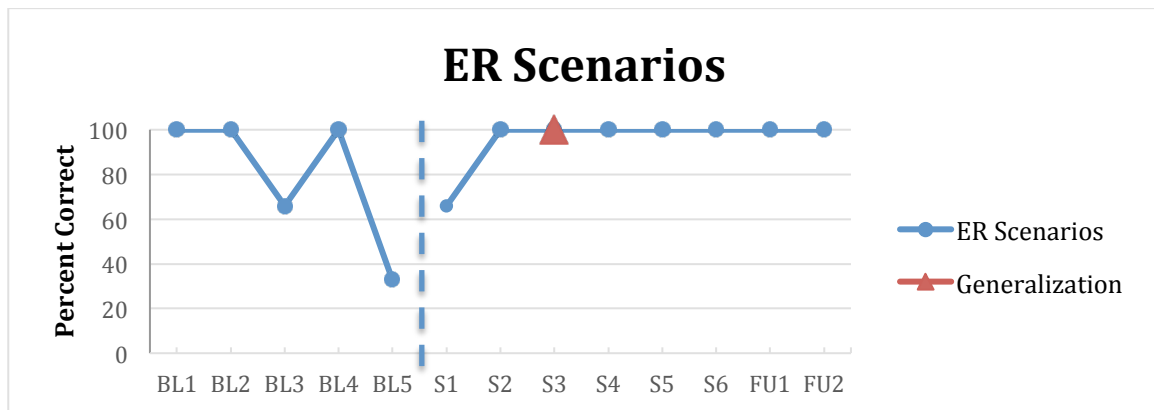
Mother three scored 0% on the first generalization question and her data also showed an upward trend going forward, scoring a 100% on the second, third, fourth questions. However, the third question was comprised of three parts (ER, DA, and CH) and the 100% was only seen for the ER scenario; an 80% was scored for DA and a 0% was scored for CH. The final generalization question was not answered and therefore no follow-up generalization data can be reported.

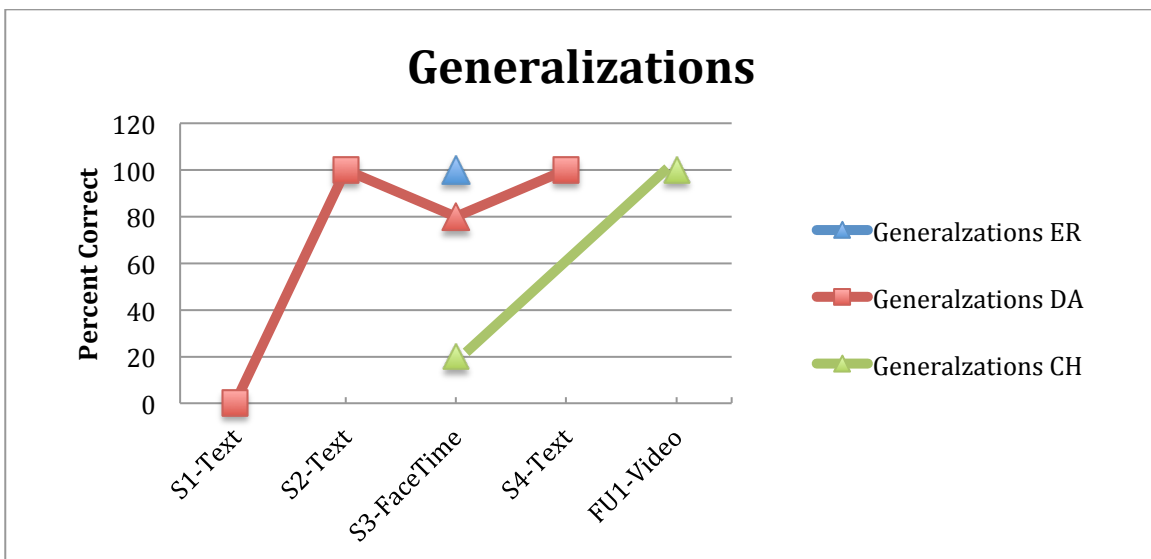
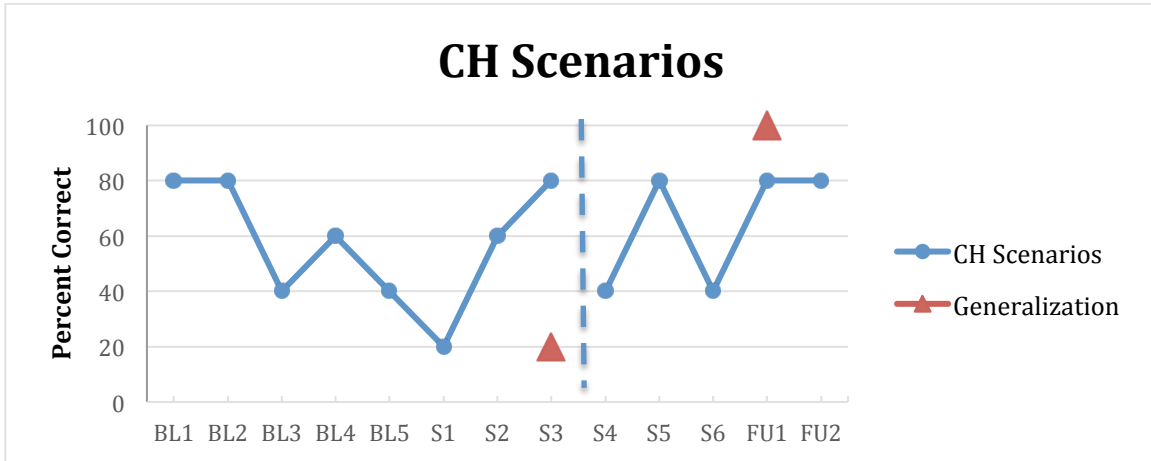
Follow-up

Mother One. This mother received a follow-up session and due to unstable data indicating a weak knowledge of CH scenarios, she received a booster session, during which CH was trained until the mother’s CH score was back to criterion of 80%. Data for ER and DA remained stable for the follow-up and booster sessions and was deemed adequate by the HV.

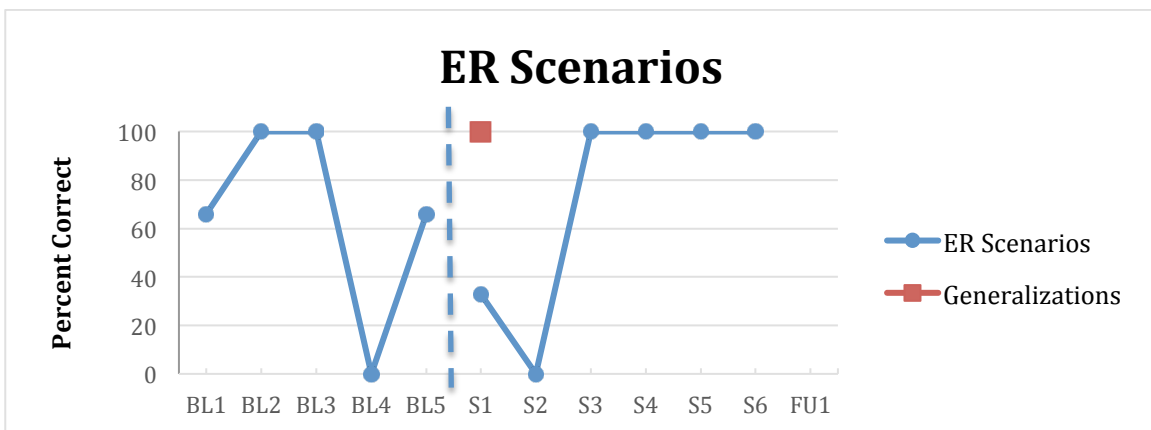
Mother Two and Mother Three. Mothers two and three did not maintain contact with the researcher to participate in a follow-up session and therefore no data can be reported.

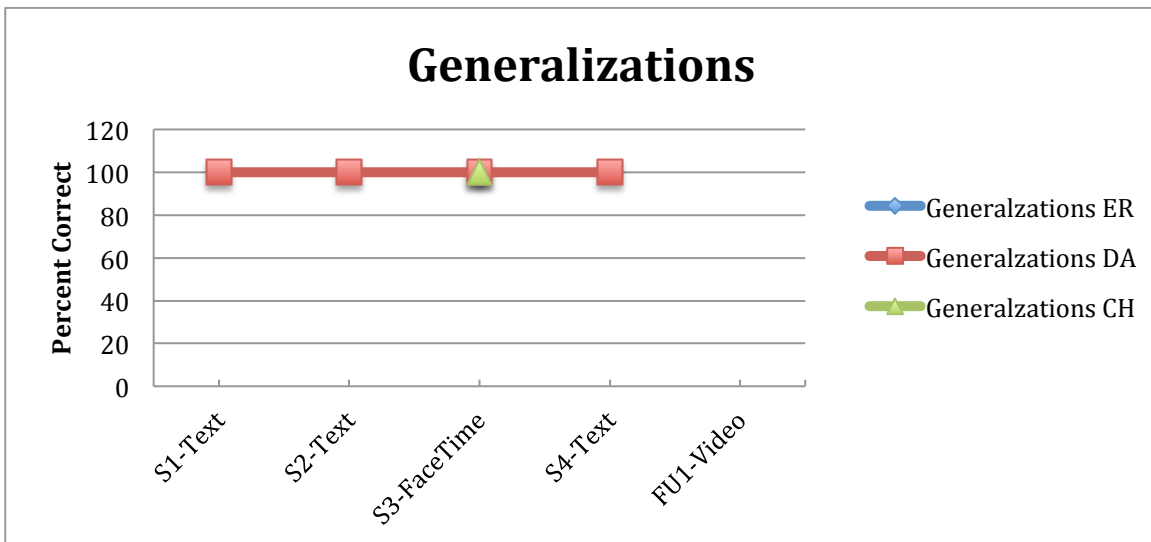
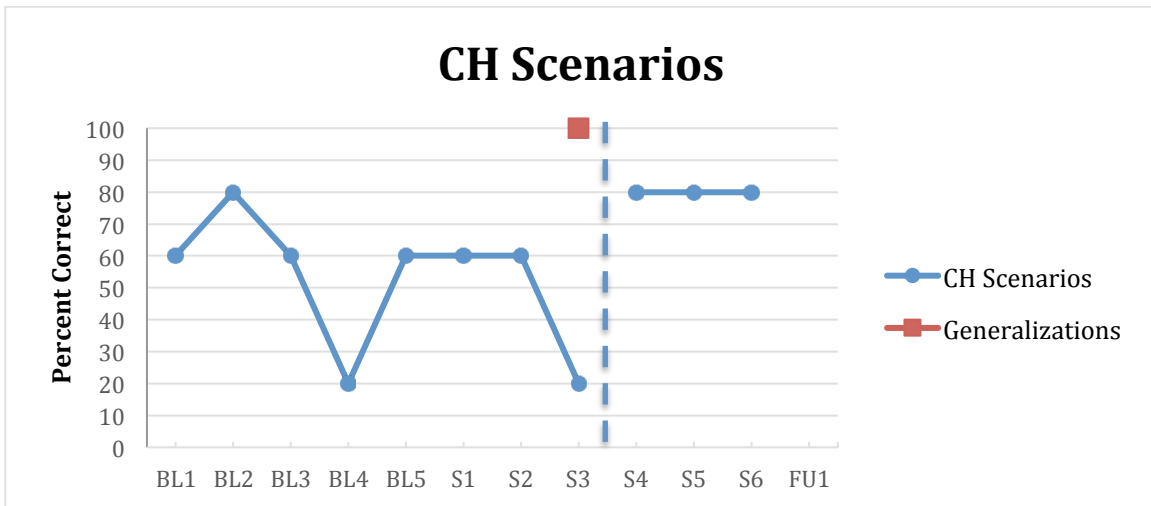
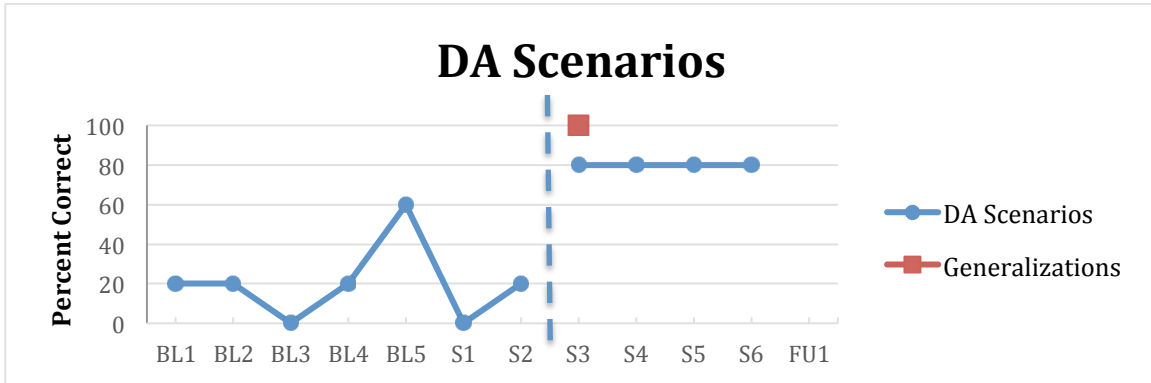
Mother 1



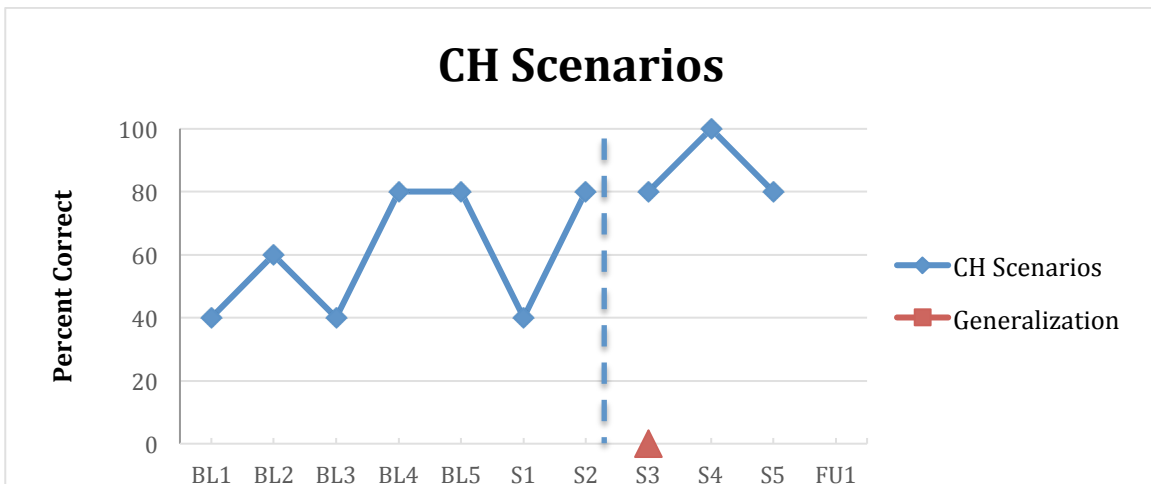
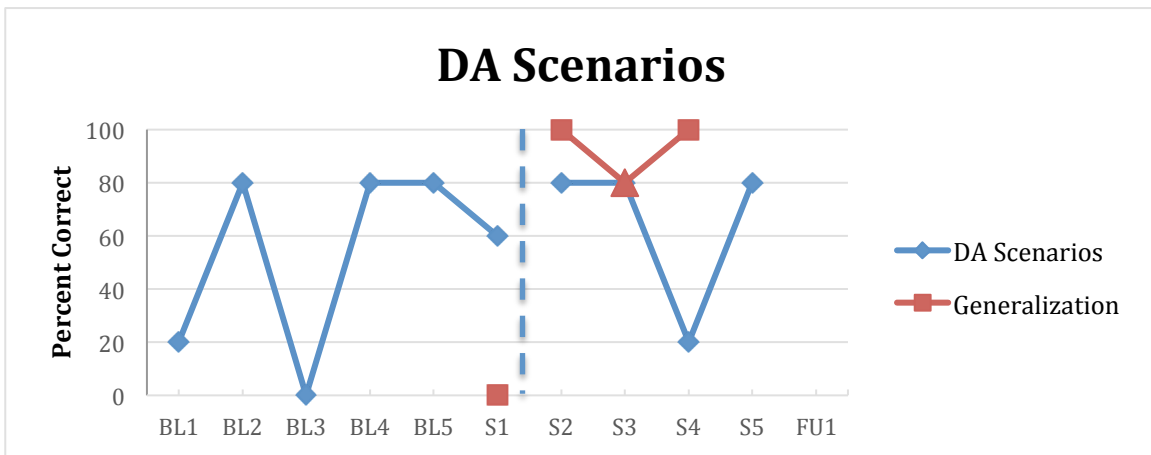
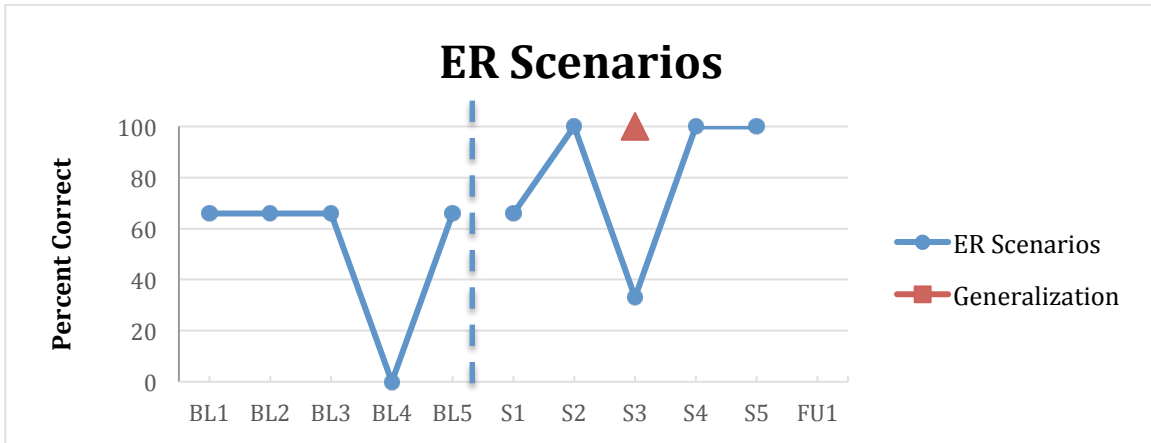


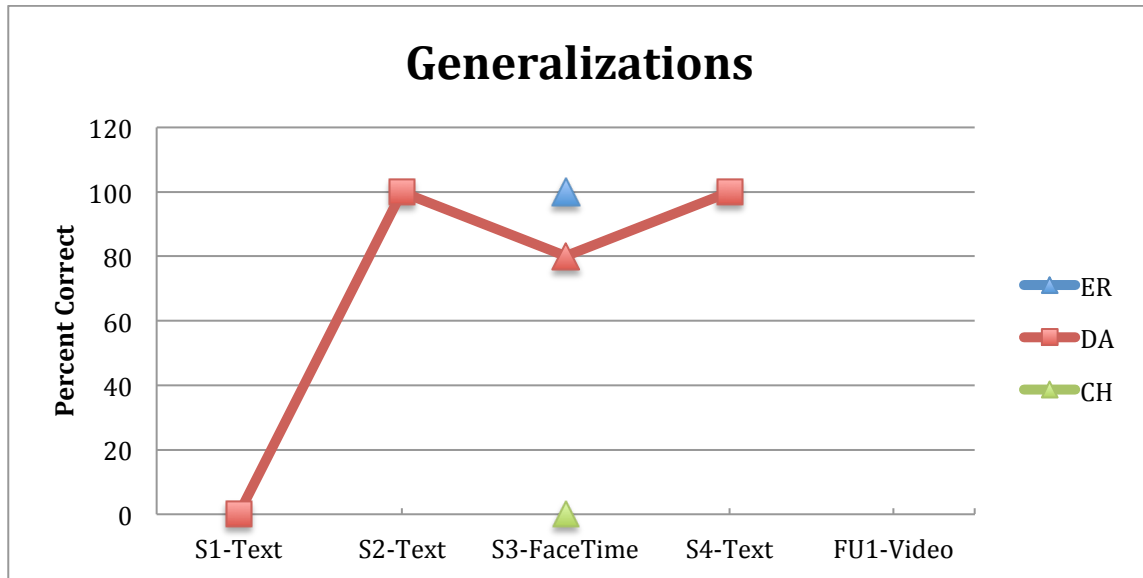
Mother Two





Mother Three





Consumer Evaluation

Mothers One and Three completed the Parent Satisfaction Survey. Both mothers indicated that the training helped them better understand their children’s health and that the training would be beneficial for other parents. The mothers also both indicated that knowing when their child needs emergency treatment and when to take their child to the doctor became easier. They indicated practice during sessions and the written materials were useful. They believed the HV to be warm and friendly, on time to appointments, and good at explaining the material.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Caring for my child’s health when he/she is sick or injured has become easier	2/2				
2. Deciding when to take my child to the doctor has become easier.	2/2				
3. Deciding when my child needs emergency	2/2				

treatment has become easier.					
4. I believe that this health training would be useful to other parents.	2/2				
5. I do not feel the health training gave me new or useful information or skills.					2/2
6. Practicing during the sessions was useful.	2/2				
7. The written materials were useful.	2/2				
8. The Home Visitor was on time to appointments.	2/2				
9. The Home Visitor was warm and friendly.	2/2				
10. The Home Visitor was negative and critical.					2/2
11. The Home Visitor was good at explaining the material.	2/2				

Discussion

The current research evaluated the SafeCare health module and the effect cell phone enhancements had on parents' general child health knowledge. Previous SafeCare research that examined cell phone enhancements was conducted on the home safety module. No previous research had incorporated the use of cell phones into the child health module. Thus, this research integrated generalization assessments through technological enhancements between sessions through the use of iPhone's texting, FaceTime, and video features. It was predicted that participating

mothers would show increases in their health care skills performance following intervention, and that integrating the technological enhancements would promote a high skill acquisition.

The order the intervention was trained in (ER, DA, then CH) was intentional to control for generalization by the mothers. The first prompt by the HV when reading through all scenarios asks the mother to determine if something is an emergency or not. Asking the mother to decide this without the proper ER training would lead them to generalizing ER scenarios once the HV trained the remaining DA or CH scenarios. The same logic can be used for training DA before CH. The mother has to decide if the scenario needs medical help. Training DA before CH allowed the mother to recall the DA training to help in her decision for CH.

The ER scenarios were trained twice to Mother 2 due to her receiving a score of 0% immediately following the ER training. This was surprising, as previous research has shown an increased use of emergency room visits in lieu of preventative care visits (Wang, Villar, Mulligan, and Hansen, 2005). This mother received a 0%, indicating that she deemed the child health scenario not an emergency. After ER was trained for a second time this mother showed a consistent understanding of child health skills. Mothers 1 and 2 only required one ER training session before showing a consistent understanding of child health skills, which is consistent with the research by Wang and colleagues (2005).

Mother 1 required DA training twice because her DA score in the session immediately following DA training dropped to 20%. This may have been due to distractions her baby created during the initial DA training. After the repeated

training, Mother 1 showed consistent child health skills for DA. Mother 3 scored 20% on DA after CH was trained. This drop in score may have been due to the variability of the scenarios given; for example, the mother may have experienced a particular scenario before and others may have been novel. Scenarios were not retrained if the mothers' scores dropped in later sessions; instead, the HV just discussed the particular scenario with the mother in detail, answering any questions she may have. Once this occurred, Mother 3's DA scores remained stable at 80% throughout the remaining intervention.

All three mothers only required one CH training session. Mother 1's score was 40% in the second session following CH training; therefore, a second follow-up, face-to-face booster session was completed to ensure CH understanding. The multiple baseline design ensures internal validity, but the study design cannot control for external factors that may have caused the mothers to understand the material some days better than others. The mothers' rapid skill CH skill acquisition may have been due to generalization by the mothers. Prior to CH training the mothers had already completed ER and DA training so they may have found it easier to understand the CH skills.

The use of cell phones during the training appeared effective at increasing the mothers' generalizability of correct child health answers to prompts between sessions. There was only one ER scenario used, four DA scenarios, and two CH scenarios. All three mothers scored 100% for the ER generalization scenario, which was asked upon completion of session 3 via FaceTime. All three mothers exhibited mastery of ER skills prior to session 3; therefore, a score of 100% shows successful

ER skills by the mothers when the HV is not present. Four DA scenarios were used for generalization: the first, second, and fourth via text, and the third via FaceTime. Mothers 1 and 3 scored a 0% on the first DA scenario, which occurred prior to any DA training. The second DA generalization scenario all three mothers scored 100%. Mother 2 had not received DA training at this point, due to repeating ER training, but did have all the written materials, so it is possible that while the HV was not present she utilized them to answer the questions. Once DA was trained to all mothers, mastery was demonstrated of DA skills over two different media (FaceTime and text), exhibiting sufficient DA skills when the HV was not present. Two different CH scenarios were used for generalization, the first via FaceTime upon completion of training session three, prior to CH training for all mothers and once more upon completion of all training sessions, via video. Mother 2 scored a 100% on the first CH scenario, while mother 1 scored 20% and mother 3 scored 0%. Again, this demonstration of mastery for CH by mother 2 when the HV is not present could be due to the written materials or a presentation of generalization for CH by session 3. Mothers 1 and 3 did not show any generalization of CH skills prior to CH training. Mother 1 was the only mother to send the HV a video for the final generalization assessment; she scored a 100%, demonstrating a sufficient understanding of CH skills when the HV is not present. Mothers 2 and 3 did not send the HV a video and were hereafter lost to follow-up. This may be explained by apathy for the video feature or for the intervention after multiple training sessions.

Overall, all three features (text, FaceTime, and video) were successful at assessing the mother's generalization skills. Video was the least successful because two out of three mothers did not participate in that question.

Mothers 2 and 3 were lost to follow-up; therefore only follow-up data for mother 1 were available. Postintervention scores for mother 1 demonstrate mastery of all skills (ER, DA, and CH) face-to-face and over video.

The consumer satisfaction survey indicated that the mothers enjoyed the program and found it to be useful. They also indicated that they liked the HV. These factors may have contributed to the high amount of sessions the mothers participated in.

Limitations

There are some limitations of this research that need to be considered. The number of sessions required by the families to complete the research was cumbersome and could certainly be considered a limitation. Coordinating schedules between the mothers and the HV was difficult because the mothers had full-time jobs requiring 12-hour shifts with one or two days off a week. These days off work were usually the only available times the mother could meet with the HV. Baseline sessions were much easier to schedule with the mothers because they were brief, lasting approximately 5 to 10 minutes, however, the training sessions lasted approximately 45 minutes each. The length of time the families needed to commit to participate in this research was considerable and is also, thus a limitation. At minimum, each mother participated in a total of 11 sessions. Only one mother participated in the follow-up session and the subsequent booster session due to a

lack of retention of the CH skills. This mother's retention could have been due to different factors. She seemed to enjoy learning about the subject matter and she took notes during the training sessions. She was also considerably younger than the other mothers. She revealed to the HV during one session that her mother had passed away several years ago and she did not remain in contact with much of her family. She may have seen more value in participation than the other mothers.

The multiple settings used for each mother could present unique challenges as well. Mother 1 moved twice during the training and therefore the intervention took place in three different settings. Her child was frequently a distraction for her during training, as she was 6-months-old and required much supervision. Mother 2 moved once during training and during the third baseline session requested to meet her at a friend's for that session. All training sessions took place at her apartment or at her mother's house which is where she moved in the middle of training. The multiple settings could have caused distractions; her children who also required supervision, and the presence of her roommate may have also distracted her. All sessions for Mother 3 took place in her apartment with the exception of session 4, for which she requested to meet her in the food court at a mall because she was getting the carpets cleaned in her apartment. The training conducted at the food court was conducted at a table secluded from most people. In this setting the mother was very engaged and relaxed. She may have been more comfortable without the HV present in her home.

The iPhone also presented some challenges with FaceTime. The connection was not always clear and several attempts had to be made between the HV and

mother 1 due to an unclear connection. Therefore, future research may incorporate another face-to-face phone feature, such as Skype™, or use text or voice-calling features to substitute. Also, future research endeavors aimed at understanding generalization should include a broader scope of questions from the health materials. This study included questions for each scenario type (ER, DA, and CH), but future research should include each scenario type before and after training of each scenario. For example, responses for CH scenarios via cellphone enhancements would be recorded before and after CH was trained so they could be compared. The same would also be done for ER and DA. Future research incorporating cell phones may consider using them for providing feedback. The HV gave no feedback on generalization questions, but it may have been useful to help them retain the information on child health. Jabaley, et.al (2011) showed the incorporation of iPhones in the SafeCare safety module reduced face-to-face time in the home. Future research could use iPhones as a way of decreasing face-to-face sessions for the SafeCare health module. Future research could also include the cellphone as a way to disseminate the health information to the mothers, scheduling an entire session to occur over a call or FaceTime.

The follow-up time could also be considered a limitation with this study. The added 1-month follow-up to an already 11-session training protocol likely led to attrition of mothers 2 and 3. These mothers may have lost interest in the training. The repetitive nature of the sessions, with the assessments of ER, DA, and CH during each session, may have caused the mothers to lose interest. Follow-up data from only one participant severely limits the generalizability of the data. The impact of

uncontrolled social-ecological factors in this study design could explain the variability of the mothers' scores. At times, there was a week between training sessions due to scheduling conflicts of the mother or the HV; therefore, a more structured time frame, with no scheduling conflicts would have been helpful to speed up the training. This may have facilitated a more rapid skill acquisition and shorter training time.

Attempting to meet WWC criteria set forth by the U.S. Department of Education was also a barrier. It was not possible to maintain the WWC criteria because reliability in 30% of sessions did not occur in any phase. Maintaining this reliability was seen as too intrusive and impractical for study purposes. High reliability was reached by the HV and RO prior to beginning of intervention and scheduling conflicts made it impossible to secure two HVs to participate in the training. Including two HVs with one mother may have made the mother feel uncomfortable. Many of the limitations seen during the study were due to the proposed study design set forth by the WWC. The WWC recommendations may be nearly impossible to implement with programs that incorporate home visitation in child welfare and high-risk homes.

Conclusions and Future Study

This study is the first of its kind to incorporate cellphones to measure generalization behavior of parents in child maltreatment intervention. The iPhone and its relevant enhancements provided the HV and the mothers with opportunities for communication. The most widely used feature was texting, which was primarily used for logistical purposes that were essential for the HV to meet the mothers (i.e.,

location and time). Given the number of training sessions required for this research, perhaps the incorporation of cell phones contributed to the amount of sessions the mothers participated. Therefore, this research may support findings by Bigelow et al., (2008), that integrating cell phones into a SafeCare intervention lowers attrition rates. Although two mothers were lost to attrition, they were lost for follow-up and were still active participants for 11 sessions; had the cell phones not been a part of the intervention, the mothers may have been lost sooner. In conclusion, the present research findings suggest that cellphones might be an important enhancement tool for the dissemination of the SafeCare health module.

References

- Carta, J. J., Lefever, J. B., Bigelow, K., Borkowski, J., & Warren, S. F. (2013). Randomized trial of a cellular phone-enhanced home visitation parenting intervention. *Pediatrics*, *132*, 167-173. doi: 10.1542/peds.2013-1021Q
- Crimes Against Children Research Center. (2013). *Updated trend in child maltreatment, 2011*. University of New Hampshire: Finkelhor D., Jones, L., Shattuck, A.
- Corso, P.S. and Lutzker, J. R. (2006) The need for economic analysis in research on child maltreatment. *Child Abuse and Neglect*, *30*, 727-738. doi: 10.1016/j.chiabu.2005.12.006
- Davis, D.W., Jones, V.F., Logson, M.C., Ryan, L., Wilkerson-McMahon, M. (2013). Health promotion in pediatric primary care: Importance of health literacy and communication practices. *Clinical Pediatrics*, *52* (12), 1127-1134.
- DeWalt D.A., Berkman, N.D., Sheridan, S., Lohr, K.N., & Pignone, M.P. (2004). Literacy and health outcomes. *Journal of General Internal Medicine*, *19* (12), 1228-1239.
- Fang, X., Brown, D. S., Florence, C. S., & Mercy, J. A. (2012). The economic burden of child maltreatment in the United States and implications for prevention. *Child Abuse & Neglect*, *36*(2), 156-165.
- Felitti, V.J., Anda, R.F., Nordenberg, D., Williamson, D.F., Spitz, A.M., Edwards, V.,

- Koss, M.P. & Marks, J.S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the adverse childhood experiences (ACE) study. *American Journal of Preventative Medicine*, 14 (14), 245-258.
- Finkelhor, D., Shattuck, A., Turner, H.A., & Hamby, S.L. Trends in children's exposure to violence, 2003 to 2011. [published online April 28, 2014]. *JAMA Pediatrics*.
- Flaherty, E. G., Stirling, J., and The Committee on Child Abuse and Neglect. (2010) The Pediatrician's Role in Child Maltreatment Prevention. *Pediatrics*, 126(4), 833- 841. doi: 10.1542/peds.2010-2087
- Geeraert, L., Van den Noortgate, W., Grietens, H., and Onghena, P. (2004) The Effects of Early Prevention Programs for Families with Young Children at Risk for Physical Child Abuse and Neglect: A Meta-Analysis. *Child Maltreatment*, 9(3), 277-291. doi: 10.1177/1077559504264265
- Gershater-Molko, R. M., Lutzker, J. R., & Wesch, D. (2003). Project SafeCare: Improving health, safety, and parenting skills in families reported for, and at-risk for child maltreatment. *Journal of Family Violence*, 18(6), 377-386. doi: 10.1023/A:1026219920902
- Guastaferrro, K. M., Lutzker, J. R., Graham, M. L., Shanley, J. R., & Whitaker D. J. (2012). Safecare: historical perspective and dynamic development of an evidence-based scaled-up model for the prevention of child maltreatment. *Psychosocial Intervention*, 21(2), 171-180.
- Hanson, J.L, Nacewicz, B.M., Sutterer, M.J., Cayo, A.A., Schaefer, S.M., Rudolph, K.D., Shirtcliff, E.A., Pollak, S.D., Davidson, R.J. (2014) Behavior problems after early life stress: contributions of the hippocampus and amygdala. *Biological Psychiatry*, 77 (4), 314-323. doi:10.1016/j.biopsych.2014.04.020
- Hawley, T. (2000) Starting Smart:How Early Experiences Affect Brain Development. Washington: Zero To Three & The Ounce of Prevention Fund.
- Herman A., Young, K. D., Espitia, D., Fu, N., Farshidi, A. (2009). Impact of a health literacy intervention on pediatric emergency department use Pediatric emergency care. *Pediatric Emergency Care*. 25(7), 434-8.
- Herman, A. and Jackson, P. (2010). Empowering low-income parents with skills to reduce excess pediatric emergency room and clinic visits through a tailored low literacy training intervention. *Journal of Health Communication*, 15 (2010), 895-910. doi: 10.1080/10810730.2010.522228

- Hildyard, K. L. and Wolfe, D. A. (2002) Child neglect: developmental issues and outcomes. *Child Abuse and Neglect*, 26, 679-695.
- Jabaley, J. J., Lutzker, J. R., Whitaker, D. J., & Self-Brown, S. (2011). Using iPhones to enhance and reduce face to face home safety sessions with safecare: an evidence-based child maltreatment prevention program. *Journal of Family Violence*, 26(5), 377-385. Doi: 10.1007/s10896-011-9372-6
- Jinseok, K. (2009). Type-specific intergenerational transmission of neglectful and physically abusive parenting behaviors among young parents. *Children and Youth Services*, 31 (2009), 761-767.
- McNeil, C.B., Eyberg, S., Eisenstadt, T.H., Newcomb, K, & Funderbuck, B. (1991). Parent-child interaction therapy with behavior problem children: generalization of treatment effects to the school setting. *Journal of Clinical Child Psychology*, 20 (2), 140-151.
- Moore, Robert, Perry, & Derek. (2013). *Health literacy: Developments, issues, and outcomes*. New York, NY, USA: Nova Science Publishers, Inc.
- Morrison, A.K., Schapira, M.M., Gorelick, M.H., Hoffmann, R.G., & Brousseau, D.C. (2013). Low caregiver health literacy is associated with higher pediatric emergency department use and nonurgent visits. *Academic Pediatrics*, 14 (3), 309-314.
- Nielsen-Bohlman, L., Panzer, A.M., Kindig, D.A., editors. *Health literacy: a prescription to end confusion*. National Academies Press; Washington DC: 2004.
- “Mobile Technology Fact Sheet” Pew Research Center, Washington, D.C. (January 2014) <http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/>, March 28, 2015.
- Rovi, S., Chen, P., & Johnson, M.S. (2004). The economic burden of hospitalizations associated with child abuse and neglect. *American Journal of Public Health*, 94 (4), 586-590.
- Self-Brown, S. and Whitaker, D. J. (2008) Parent-Focused Child Maltreatment Prevention: Improving Assessment, Intervention, and Dissemination with Technology. *Child Maltreatment*, 13(4), 400-416. doi: 10.1177/1077559508320059
- U.S. Department of Health and Human Services (DHHS), Administration on Children, Youth and Families. *Child Maltreatment 2012* (Washington, DC: U.S. Government Printing Office, 2013).

Wang, C., Villar, M.E., Mulligan, D.A., and Hansen, T. (2005). Cost and utilization analysis of pediatric emergency department diversion project. *Pediatrics*, 116 (5), 1075-1079.

Whitaker, D. J., Lutzker, J. R., and Shelley, G. A. (2005) Child Maltreatment Prevention Priorities at the Centers for Disease Control and Prevention. *Child Maltreatment*, 10(3), 245-259. doi: 10.1177/1077559505274674

World Health Organization. Report of the consultation on child abuse prevention, 29-31 March 1999, WHO. World Health Organization, Geneva. Geneva, Switzerland (1999).

Zielinski, D. S. (2005) Long-term Socioeconomic Impact of Child Abuse and Neglect: Implications for Policy. Retrieved from: <http://www.childwelfare.gov>

Appendix A

Health Manual

Below is a sample page taken from the health manual the mothers received. This specific example is from the emergency section, which describes, in alphabetical order, scenarios that require emergency care.

Emergency

Emergency When to Call 911 or Go to the Emergency Room

If your child seems very sick or injured or is having very bad health problems, call 911 or go to ER. If the illness or injury is potentially life-threatening, call an ambulance IMMEDIATELY

General Symptoms Needing Emergency Care
Call 911 or take your child to the nearest emergency room, if your child:

- Is **unconscious**—he is limp, not moving, can't wake up
- Has a **high fever** (rectal temperature of 104° in a child older than 3 months) and a **very stiff neck**
- Has a **rectal temperature above 102°** and is **younger than 3 months**
- Is **severely dehydrated**—he has symptoms like very little urine, sunken eyes and no tears, and wrinkly, dry skin
- May have eaten **something poisonous**—possibility if the child is acting strange, is very drowsy or very active, has passed out, is vomiting or having diarrhea, smells strange, or has something odd on mouth or fingers
- Is **choking** and can't cough—his face or lips may be **turning blue**
- Has **stopped breathing or is having trouble breathing**
- Had a **major injury** and has serious symptoms

Allergies
Call 911, or take your child to the nearest emergency room, if your child:

- Has been stung by an insect and has **hives (round, raised areas all over his body), trouble breathing, or swollen mouth, lips, tongue, or throat**
- Has just eaten and has **hives (round, raised areas all over his body), trouble breathing, or swollen mouth, lips, tongue, or throat**

Bites and Stings
Call 911, or take your child to the nearest emergency room, if your child:

- Has been **badly bitten by an animal**
- Has been **stung by an insect and is having an allergic reaction**. He has hives (round, raised, red, itchy areas on the skin), or has trouble breathing, or has a swollen mouth, lips, tongue, or throat

Breathing
Call 911, or take your child to the nearest emergency room, if your child:

- Has **stopped breathing or is having a very hard time breathing**. Has symptoms like being too short of breath to talk, or has bluish or gray fingernails or lips

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Appendix B

Sick and Injured Child Checklist – Parent Version (SICC-P)

SICC-P Steps

The Sick or Injured Child Chart – Parent
Steps to take when your child is sick or injured

