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LELA E.A.STRONG

Training Mothers Recovering from Substance Abuse to Identify and Treat Their Children's Illnesses
(Under the direction of John R. Lutzker, Ph.D.)

Parents who abuse drugs and alcohol are at increased risk of child maltreatment, including the neglect of their children's health. The present research investigates the effectiveness of the SafeCare® Health module in training mothers with a history of substance abuse living in a residential treatment facility to correctly identify and treat their children's illnesses. Three mothers of children ages 5-years-old and younger participated in the study. Using a multiple-baseline, single-case experimental design, the research team examined the participants' ability to select the most appropriate course of action for addressing their children's illnesses. Results indicate that parents' skills increased steadily during the intervention, with two of the three participating parents demonstrating mastery of the skills presented. The results suggest that this intervention has great potential to be feasible and effective with this population in this setting. Future research should further investigate the relevance of this intervention with vulnerable populations living in a residential setting to examine whether the changes in targeted parenting skills result in changes in behavior that impact child maltreatment incidence reductions.

Keywords: Child maltreatment, parent skills training, parent substance abuse

TRAINING MOTHERS RECOVERING FROM SUBSTANCE ABUSE TO IDENTIFY AND TREAT THEIR CHILDREN'S ILLNESSES

by

LELA E.A. STRONG

B.A., SPELMAN COLLEGE

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

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA

TRAINING MOTHERS RECOVERING FROM SUBSTANCE ABUSE TO IDENTIFY AND TREAT THEIR CHILDREN'S ILLNESSES

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ACKNOWLEDGEMENTS

` I would like to acknowledge my committee chair, Dr. John R. Lutzker, for his invaluable insight and expertise throughout this process. Thank you for your seemingly infinite amount of patience and commitment to seeing that I graduate. I would also like to express my gratitude to my committee members, Drs. Jenelle Shanley and Shannon Self-Brown for their helpful feedback and support.

I would not have had the motivation to complete this project without the most important people in my life, my mother, father, brother and sister. Your faith in me kept me going and I am grateful for all your love, jokes, encouragement, and loans. I would also like to thank my fellow GRAs, Emily Gaskin and Kate Guastaferro, and all my friends (especially Ivy and Naima) who kept me focused and on track with one simple question, "So, have you finished your thesis yet?"

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Table of Contents

INTRODUCTION 2
Incidence of Child Maltreatment 2
Effects of Child Maltreatment 3
Substance Abuse and Child Maltreatment 6
Focus on Neglect 10
Parent Health Training Interventions 13
Purpose of the Current Study 14
METHOD 16
Participants 16
Setting 17
Observation System 17
Health Module Training 19
Reliability Training 21
Materials 22
Experimental Design 22
Procedures 23
Measures 26
Consumer Evaluation 27
RESULTS 28
Interobserver Reliability 28
Baseline 28
Follow-up 29
Consumer Evaluation 30
DISCUSSION 31
TABLES AND FIGURES 36
Table 1. Participant Demographic Information 36
Table 2. Parent Satisfaction Survey Results 36
Table 3. Interrater Reliability 38
Figure 1. Percent correct per behavior 39
REFERENCES 42

INTRODUCTION

Incidence of Child Maltreatment

Child maltreatment includes several different categories of harmful acts committed against children as well as negligent behaviors that affect a child's well-being. Physical abuse, failure to provide for a child's emotional and physical needs, psychological abuse, inappropriate control, extreme inconsistency, and sexual mistreatment can all be classified as maltreatment (Daro, 2011). The 2009 National Child Abuse and Neglect Data System (NCANDS) report (United States Department of Health and Human Services, 2010) comprises national and state statistics on child maltreatment based on data collected by child protective services agencies. According to this report, in 2009, 3.3 million reports involving the alleged maltreatment of 6 million children were made to Child Protective Services (CPS) (DHHS, 2010), 729, 300 of which were substantiated.

The National Incidence Study of Child Abuse and Neglect (NIS-4)(Sedlack et al., 2010) includes data from children who were investigated by Child Protective Service agencies, as well as those identified as maltreated by community professionals (known as "sentinels"), but not seen by CPS. The NIS-4 study noted specific differences in the distribution of child abuse experiences across gender, racial, and age variables. Children in the 0-2 age category had the lowest incidence rates of overall maltreatment when using the Harm Standard of abuse (Sedlack et al., 2010). While the increases were not significant, the incidence rates rose by age group for the measure of overall maltreatment and the measure of neglect until age group 15-17 where the incidence rate decreased. Alternatively, the 2009 NCANDS (DHHS, 2010), found that children in the age group of birth to 1 year had the highest substantiated rate of victimization at 20.6 per 1,000 of children in the population that age.

According to the 2009 NCANDS report (DHHS, 2010), children of African-American, American Indian or Alaska Native, and multiple racial descent had the highest rates of victimization at 15.1, 11.6, and 12.4 victims, respectively, per 1,000 children in the population of the same race or ethnicity. The National Incidence Study (2010) found that African-American children experienced significantly higher rates of overall maltreatment and abuse in comparison to Whites and Hispanics.

Effects of Child Maltreatment

Physical health effects. A significant amount of research has been devoted to investigating the deleterious physical, developmental, and psychological effects of early life stress on children and adults. Several of the studies of the enduring outcomes of child maltreatment have been based on data from the Adverse Childhood Experiences (ACE) study which documented the physical health and the experience of abuse (emotional, physical, and sexual), neglect (emotional and physical) and household dysfunction such as domestic violence, substance abuse, mental illness, and incarceration of 17,000 participants. Based on the logic that adverse childhood experiences lead to social, emotional, and cognitive impairment, which in turn triggers the adoption of health risk behaviors, disease and early death (Centers for Disease Control, 2011), these studies have shown relationships between maltreatment and varied disorders in adults including chronic obstructive pulmonary disease, autoimmune disease, and lung cancer (Anda et al., 2008, Dube et al., 2009; Brown et al., 2010). While the strength of the relationship between ACEs and health issues varies and is sometimes mediated by other factors, the results generally show that the risk for health problems increases in a graded fashion, with more ACE exposures associated with a higher risk.

Trickett and McBride-Chang (1995) summarized the developmental effects of different forms of child abuse and neglect, finding some support of evidence of physical effects of maltreatment including delays in motor development in infants, lower physical competence in young children, and somatic complaints in adult women. A more recent meta-analysis, found increased risks of negative physical health outcomes among adults who were abused as children (Wegman & Stetler, 2009). The experience of childhood abuse was associated with an increase in neurological, musculoskeletal, respiratory, cardiovascular, and gastrointestinal disorders in comparison to no exposure to child abuse. Other recent studies have also shown that adult women who had experienced childhood physical abuse were significantly more likely to report unfavorable perceptions of health than those who had not been abused (Thompson et al., 2004).

The immediate negative health effects of child maltreatment are equally damaging. After 12-18 years of observation, low-income, maltreated children were found to be at 1.73 times greater risk of hospital care for asthma, and twice as likely to be hospitalized for cardio-respiratory disease, and non-sexually transmitted infectious disease, than those who did not experience maltreatment (Lanier, Jonson-Reid, Stahlschmidt, Drake, & Constantino, 2009). In another prospective study, a relationship between maltreatment and poor health outcomes among children was observed with 6-year-old children who had experienced at least one of seven categories of abuse and household dysfunction nearly twice as likely to be rated as having poor health. Children who had experienced four or more types of abuse were nearly three times as likely to have an illness that required professional care (Flaherty et al., 2006).

Cognitive and psychological effects. Delays in cognitive and academic development have also been found in children who experienced child abuse compared to those who did not. Perlman and Fantuzzo (2010) examined the influence of maltreatment during infancy,

toddlerhood, and early elementary school on the educational performance of a cohort of 12,045 children. Children who were maltreated during these critical ages had lower scores on standardized academic achievement measures compared to children who had not experienced maltreatment. There is also evidence that child maltreatment can affect the course of brain development due to a lack of stimulation, interaction, and learning opportunities (Twardosz & Lutzker, 2010).

Exposure to abuse and neglect during critical periods of development also impacts psychological health. The stress of experiencing child maltreatment has been attributed to the dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis which is related to a sustained increase in the stress hormone cortisol and elevates the risk and severity of stress-related disease including posttraumatic stress disorder, major depressive disorder, and cardiovascular disorder in genetically predisposed individuals (Neigh, Gillespie, & Nemeroff, 2009). Women who have experienced physical abuse have been shown to have attenuated levels of salivary cortisol response to a psychological stress task compared to those who experienced no maltreatment or other types of maltreatment (Carpenter, Shattuck, Tyrka, Geracioti, & Price, 2011). The more adverse childhood experiences, the higher the adult prevalence of mental health disorders such as panic attacks, depressed affect, and anxiety as well as somatic complaints such as sleep disturbance and obesity (Anda, Felitti, Bremner, Walker, Whitfield, Perry, Dube, & Giles, 2005). Maternal exposure to abuse and trauma is also related to higher concentrations of cortisol in infants (Neigh et al., 2009).

An association has also been found between childhood abuse and psychiatric disorders among children and adults. Tyrka et al. (2009) indicated that physical, sexual, emotional abuse and neglect are risk factors for a broad array of personality disorders. Individuals from a

community sample who had experienced physical/sexual abuse and emotional abuse/neglect had a significantly higher number of symptoms from personality disorder Cluster A, B, and C of Structured Clinical Interview for DSM-IV Axis I and II Disorders (SCID-I and -II) than individuals who had not experienced abuse. Additionally, the risk of attempting suicide is increased two to five fold by exposure to any adverse childhood experience with the highest risk among individuals who had experienced emotional (OR =5), physical (OR=3.4), and sexual (OR=3.4) abuse (Dube et al., 2001).

Trickett and McBride-Chang (1995) provided additional support to the theory of atypical social and emotional development among maltreated children. The review found that children who had experienced sexual abuse displayed internalizing behaviors such as anxiety and social withdrawal during early childhood, disruptiveness, aggression and dissociation during middle childhood, earlier onset of sexual activity in adolescence, and depression, anxiety, and antisocial behaviors in adulthood. Physical abuse was also related to several emotional maladjustments such as disturbed peer relationships in middle childhood and adolescence, and lower self-esteem.

Substance Abuse and Child Maltreatment

Maltreatment during childhood has also been associated with risky behaviors during the adolescent and adult years. Hussey et al. (2006) conducted an analysis of data collected in the 2001-2002 National Longitudinal Study of Adolescent Health, finding that adolescents who had experienced maltreatment including supervision neglect, physical neglect, physical assault, and contact sexual abuse were more likely to use cigarettes, regularly use alcohol, engage in binge drinking, and use marijuana.

Substance abuse is frequently associated with the sequelae of child maltreatment. Simpson and Miller (2002) conducted a review of the literature documenting the relationship between childhood physical and sexual abuse and substance abuse later in life. They found a significantly higher rate of childhood sexual abuse among adolescent girls and women in treatment for substance abuse compared to the general population. However, there was no increased rate of childhood sexual abuse among men in substance abuse treatment in relation to the general population.

The link between adverse childhood experiences and substance abuse was also examined by Dube et al. (2003) comparing the results of the Adverse Child Experiences questionnaire to the responses to standard health examinations of Kaiser Health Plan members. Drug use at age 14 or younger was twice as likely for adults who had experienced sexual, physical, emotional abuse or neglect. It was also found that the risk of lifetime drug use was twice as likely among these groups. Wilson and Widom (2009) studied the pathway between childhood abuse and neglect and illicit drug use, finding that other harmful behaviors such as prostitution, homelessness, delinquency and criminal behavior, and school problems were mediators of this relationship.

Parental drug and alcohol addiction increase the likelihood of neglect and place the health of a child in jeopardy. According to the current National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2010), approximately 22.5 million persons were classified with substance abuse or dependence. The 2002-2007 data from this survey indicated that over 8.3 million children under 18 years of age (11.9 percent) lived with at least one parent who was dependent on or abused alcohol or an illicit drug during the past year (SAMHSA, 2009).

Research has consistently shown a significantly increased rate of child maltreatment, including neglect, among parents who abuse drugs and alcohol. Young, Boles, and Otero (2007) summarized available data from a number of national studies, estimating that 22,440 children receiving in-home services for maltreatment and 128,640 to 211,720 children in out-of-home care had a parent with a substance use disorder in 2004. In that same year, approximately 295,000 parents receiving treatment for substance use had one or more children removed by child protective services. Data from the Fragile Families and Child Wellbeing Study showed that children for whom either parent has a substance problem were four percentage points more likely than children of non–substance abusing parents to be in fair or poor health (Osborne & Berger, 2008). During pregnancy, a mother's use of cocaine in addition to other risk factors such as lack of prenatal care, clinicians' concerns about housing, either maltreatment or placement of an older child, was related to a significantly higher risk of neglect and abandonment than children born to mothers without a history of substance abuse (Levental et al., 1997).

The strength of the relationship between substance abuse and neglect specifically is well-documented. Ondersma (2002) investigated four factors commonly associated with neglect among families with low socioeconomic status. Substance abuse was found to be the strongest predictor of neglect among negative life events, depression, and social isolation. Brown et. al (1998) examined the influence of demographic, familial, parenting and child risk factors on neglect, discovering that maternal sociopathy (i.e., alcohol, drug problems, or problems with the police) produced the highest odds ratio for neglect, with paternal sociopathy also producing significantly increasing the odds of neglect.

The elevated likelihood of neglect among parents who are using or withdrawing from drugs and alcohol is related to their inability to respond appropriately to the cues of an infant or

child for physical nurturing and to provide consistent care due to an impairment of judgment and priorities (Wells, 2009). The Dunn et al. (2002) review found that substance abusers possess certain characteristics that heighten the risk for child neglect, such as substance abuse in the family of origin, dysregulation and antisocial personality characteristics, selection of mates predisposed to substance use disorder (SUD), high comorbidity of SUD and other psychiatric disorders, drug-seeking behaviors, and the neuropharmacological effects of drugs. Substance abusing women specifically also exhibit personality characteristics associated with neglectful parenting in community populations, including egocentrism, impulsivity, low self-esteem, a sense of helplessness (i.e., external locus of control), and cognitive immaturity (Dunn, 2002).

Crittendon (1993) provides an information-processing approach to understanding the etiology of neglect suggesting that negligent parents have difficulties in the perception of a child's needs, the interpretation of the meaning a child's needs, selecting an appropriate response, and responding in ways that address the child's needs. Interventions to address these deficiencies among women who are substance abusers have been implemented with some success. Children exposed to drugs in utero had significantly fewer behavioral problems in comparison to a standard care group after their mothers participated in an in-home parenting intervention aimed at improving maternal interaction and knowledge of developmental skills (Butz, Pulsifer, Marano, Belcher, Lears & Royall, 2001). Parenting knowledge surrounding skills such as feeding, child development, and newborn care were low among substance abusing mothers and showed a significant increase after a parenting intervention tailored to drug-exposed children (Velez, Jansson, Montoya, Schweitzer, Golden, & Svikis, 2004).

Focus on Neglect

Although all forms of maltreatment tend to produce negative physical and mental health outcomes, neglect is especially of concern due to its prevalence. In 2009, the most common form of maltreatment was neglect, with 78.3% of all unique victims experiencing some type of neglect (DHHS, 2009).

The definition of neglect can vary based on professional standards as well as the state in which it occurred. However, the core concept of neglect includes the lack or omission of various caregiving behaviors towards a child (Lutzker& Bigelow, 2002). Neglect typically falls into one of five categories: physical neglect, or the failure to protect a child from harm or danger and provide basic needs; emotional neglect, which includes overlooking or ignoring a child's pleas for comfort or warmth; mental health neglect, or refusal to comply with the treatment plan for a child with a mental illness; educational neglect, or failure to ensure that a child attends school; and medical or health neglect or failure to provide essential medical care for a child (Erickson & Egeland, 2011). Dubowitz (2011) presents a broad definition of medical or health neglect among children, identifying it as the existence of unmet basic health needs. Basic health needs include any needs that jeopardize a child's health when not satisfied.

DHHS (2009) reports that while 2.4% of children who were maltreated were medically neglected, a more significant percentage (9.8%) of child maltreatment fatalities were the result of medical neglect. The most common form of health or medical neglect involves the lack of adherence with health care appointments, treatment or recommendations (Dubowitz, 2011). Failures or delays in seeking healthcare also constitutes neglect and can result in treatable childhood illnesses developing into more serious health problems.

Several parental variables are associated with the prevalence of medical neglect, such as culture or religion, level of income, and having an intellectual disability. The cultural or religious beliefs of a parent could result in the decision to forego traditional treatment options for illnesses for her child in favor of alternative methods. This refusal of service could lead to serious harm in some instances (Dubowitz, 2011). The increased risk of medical neglect among parents with intellectual disabilities can be linked to their limited knowledge and skills in identifying and understanding the significance of symptoms that pose a threat to the health of a child (Tymchuk, 1992), as well as the level of familial and social support available to the parent (Johnson, 1993; Dubowitz, et al., 1993). Impoverished parents are also at risk of neglecting the health of their children due to a lack of familial and social support (Dubowitz, 2011; Dubowitz et al. 1993).

Parents' level of health literacy can also impact communication between pediatricians and parents and the parents' their ability to identify and employ the most appropriate form of treatment when their children are ill. Physicians were also shown to overestimate the literacy level of patients, and speak using jargon or overly complex language. This impacts adherence to prescribed treatment and ultimately health outcomes (Kelly & Haidet, 2007). Fifty-three percent of Americans were shown to possess skills at an intermediate level of health literacy, while 36% were categorized as basic or below basic (Ratzan & Parker, 2006). Individuals with basic or below basic health literacy skills are more likely rely on sources such as television and radio for health information and less likely to use sources such as newspapers, magazines, books, and the Internet (Ratzan & Parker, 2006).

This lack of knowledge has contributed to an emerging problem of inappropriate use of emergency care for non-emergent medical issues. From 1996 through 2006, the annual number of ED visits increased from 90.3 million to 119.2 million visits (up by 32%). Of these 119.2

million visits, 12.1% were classified as non-urgent (Pitts, Niska, Xu, & Burt, 2008). Among children under the age of 15, 14.6% of emergency department visits were deemed non-urgent, with the highest prevalence in the 1 year -4 year (13.5%) and 5-year to 14-year age groups (16.5%) (Pitts et al., 2008). The most common reasons for visiting the emergency department among children (15- years-old and under) were maladies such as fever, cough, vomiting, earache, and unspecified injuries to head, neck, or face. Emergency room visits are expensive, averaging $1265 in 2008 (Agency for Healthcare Research and Quality, 2008). In this same year, household emergency room expenditures totaled $47 million, with $6 million of expenses for children age 0-17 (Agency for Healthcare Research and Quality, 2008). In addition to being costly, overreliance on emergency care further burdens this system and precludes patients from seeking the continuity of care of provided by a primary care physician (PCP), which has been shown to have positive health benefits (Berry, Brousseau, Brotanek, Tomany-Korman, & Flores, 2008; Herman & Mayer, 2004)

In some instances, HMOs and PCPs have been deficient in disseminating information on health problems that require emergency attention. One study found that 43% of low-income parents who had brought their children to the emergency department (ED) for non-urgent issues were not educated by their insurance provider about emergent illnesses and injuries (Doobinin, Heidt-Davis, Gross, & Isaacman, 2003), while other qualitative studies found that many parents had not discussed emergent and non-emergent illnesses with their child's PCP (Berry, Brousseau, Brotanek, Tomany-Korman, & Flores, 2008), and had been erroneously referred to the ED by their PCP (Chin, Goepp, Malia, Harris, & Poordabbagh, 2006).

Familial demographics do not always account for emergency care misuse. One study found that lower income, family education level, and use of public insurance are related to a

higher Emergency Department reliance among children or the percentage of all healthcare visits that occur in the ER (Kroner, Hoffmann, & Brousseau, 2010).Other studies have reported that individuals with private insurance use the emergency department more frequently than those who are uninsured or have public insurance (Pitts et. al, 2008), and found no difference in non-urgent emergency room use among children with private, public, or no insurance (Luo, Liu, Frush, & Hey, 2003) after controlling for covariates.

Parent Health Training Interventions

Interventions tailored to improve health literacy using written materials have shown the potential for societal and financial benefit. After an education intervention using a health aid book and non-urgent medical scenarios, low-income, minority parents who had unnecessarily brought their children to the pediatric emergency department showed a 30% reduction in emergency department use (Herman, Young, Espitia, Fu, & Farshidi, 2009). Postintervention, 16% of parents reported consulting a health book as their first course of action when their children were sick, up from 1% pre-intervention and a lower proportion of parents indicated that they would contact a physician or go to the ED for certain non-urgent medical scenarios (Herman et al., 2009).

Herman and Mayer (2004) previously found similar results with a sample of Head Start families using the same health aid book. Parents who received the book showed a 48% reduction in emergency department visits and a 37.5% reduction in clinic visits. An extension of this pilot study found a potential costs savings to Medicaid of $554 per family or about $5.1 million annually through the treatment of low-acuity childhood illnesses such as fevers and colds at home versus in a medical setting (UCLA Anderson School of Management, 2007).

Children's health education interventions for mothers at-risk for abuse and neglect that include a home visitation component have also been effective in increasing health knowledge and skills among this population (Bigelow & Lutzker, 2000; Delgado & Lutzker, 1988). These studies trained parents using the Health module of SafeCare, an evidence-based parenting model. The Health module involves in-home visits by a trained practitioner who teaches parents to use health reference materials, prevent illness, identify symptoms of childhood illnesses or injuries, and provide or seek appropriate treatment by following the steps of a task analysis. Due to the strong evidence of an increased risk of neglect and abuse among substance-abusing parents and the increasing use of the pediatric emergency department for non-urgent problems among many parents, it is expected that these women could benefit from the SafeCare Health module. However, this intervention has not previously been implemented in a population of women at great risk for medical neglect, specifically mothers recovering from substance abuse, nor has this intervention been implemented in a setting with multiple participants residing in the same housing. These are the intentions of the current study.

Purpose of the Current Study

The social and environmental factors associated with this setting (roommate-style community housing), as well as population characteristics (drug and/or alcohol addiction) are expected to have an impact on the results of the SafeCare® Health module. Previous studies and formulated models underscore importance of social and environmental factors in the initiation and maintenance of new behaviors. Thus, the purpose of this research was to understand how these influences affect the acquisition and mastery of skills related to treatment of children's illnesses and injuries for mothers living in a residential drug recovery program. Specifically, the research question asks whether the Health module of the SafeCare intervention could be

effective when used with mothers living in a residential recovery program who have a documented history of drug or alcohol abuse.

METHOD

Participants

Three mothers participated, recruited from a comprehensive residential recovery program for women with and without children. All three mothers single, African-American and under the age of 35. Each was unemployed, however, one mother started a job during the study. The highest level of education completed was high school; two of the mothers had completed at least some high school and one had obtained her high school diploma. Mother 1 had two children, both living in the residential facility with her. Mother 2 had four children with one living at the facility with her and Mother 3 had four children with two children living at the facility.

The program admission coordinator and residential counselors generated a list of eight women who met the study inclusion criteria: 1) had a child age five or younger; 2) had a treatment plan that suggested the mother would be a resident of the program's community housing for the duration of the data collection process; 3) possessed characteristics of a successful participant in the recovery program based on the opinion of the experienced admission coordinator and residential counselors, such as adherence to program rules and regulations and participation in program activities, group, and individual counseling sessions; and, 4) expressed an interest in participating. At the time of recruitment, three of the women on the list were no longer receiving services. Meetings were scheduled with the five remaining women on the list to explain the purpose of the study, the requirements of the study participants, and the incentive for study participation. After these meetings, three women agreed to participate and signed the informed consent form. Two were living as roommates and were not included in the study due to the potential for contamination of the single-case research design, leaving one study participant. Two additional women were nominated by the staff based on the criteria after

the roommates were excluded from the study, one woman agreed to participate and signed the consent form. An additional participant requested to be included in the research after learning of the purpose from another participant, and was upon verification by staff.

Setting

The SafeCare Health module training was conducted in the apartment homes rented by the program for the participants. The apartments were located directly behind the administrative buildings of the program. They were fully furnished and included a living room, kitchen, bathroom, and at least two bedrooms. Two of the women shared the apartment with one other individual who was also a participant in the recovery program. One of the women lived with two other roommates. Individuals were matched as roommates on the basis of whether they had children or not. Women with children were placed in apartments with other women who also have children of the same gender when possible. The SafeCare Health module training occurred in the living room of each apartment.

Observation System

The data collection tool for the SafeCare Health module training was the Sick or Injured Child Checklist Home Visitor Version (SICC-HV). The SICC-HV provides ordered steps that a mother should take when her child presents the symptoms or problems listed on a scenario card. There were three potential courses of action that the mother could take for each scenario: Call the Doctor (CD); Treat at Home (TH); or, Go to the Emergency Room or Call 911 (ER). There were a total of 14 steps to be completed for the TH scenarios, 6 steps for the CD scenarios, and 3 steps for the ER scenario. The first two steps for each type of scenario were to identify and state symptoms and assess additional symptoms as needed. The following steps varied based on the appropriate treatment. For the ER scenarios, one additional step was required – Go to the ER or

call 911. For the CD scenarios, the additional steps included completing the relevant portions of the Health Recording Chart, calling the doctor's office, describing the symptoms correctly to the doctor, and asking for or accepting an appointment. For the TH scenarios, the steps were divided into three different categories, First Check, Follow-up 1, and Follow-up 2. For the First Check, the steps included looking up symptoms/illness in the reference guide or consulting a health professional, completing the Health Recording Chart, stating and administering appropriate treatments correctly, reading instructions on medicines or getting specific instructions about medicines from the doctor, and recording the treatment and dose correctly. The steps for Follow-up 1 and 2 were to check the symptoms again after the recommended time, continue the treatment if the symptoms are still present, and record the time, symptoms, treatment, and dose correctly.

Scoring was based on the mother first correctly completing the first two general steps outlined above. If the mother correctly completed these steps, a plus (+) was noted on the SICC-HV. If the mother did not complete these steps, a minus (-) was noted. The ER scenarios and a select number of CD and TH scenarios did not require any action for step 2 (Assess additional symptoms).These were scored as N/A. The mother then had to correctly identify the course of action that should be taken (CD, ER, or TH) based on the health symptoms or problems written on the scenario card. If the mother did not identify the correct course of action, (i.e., she indicated she would go to the ER when she should Call the Doctor or Call the Doctor when she should Treat at Home), the role-play was either ended or continued with the course of action prescribed by the mother. If the mother erroneously indicated that she would take the child to the ER in any scenario, the role-play was ended. The role-play was also ended if the mother indicated that she would Call Doctor for an appointment when she should Treat at Home. In

other scenarios (e.g., the mother indicated she would Treat at Home when she should Call the Doctor), the role-play was continued with the course of action prescribed by the mother, however, a minus (-) was scored for each step that was incorrect. If the mother correctly identified the course of action to be taken, the researcher continued the role-play scenario and scored each ordered step on the SICC-HV with a plus (+), a minus (-), or N/A based on the acceptable responses listed on the Scenario Answer Sheet. At the end of the scenario, the researcher added up the total number of steps completed correctly and the total applicable steps. The total number of correct steps was divided by the applicable steps to calculate the percent correct for the scenario.

Health Module Training

Home Visitor training. The researcher, to be referred to henceforth as the Home Visitor (HV), was trained to deliver the SafeCare Health module in a face-to-face six-hour training session. The session was conducted by a certified SafeCare trainer with NSTRC. The HV was provided with a manual that contained an outline of the home visitor Health module sessions, applicable forms, Sick or Injured Child Checklist HV version (SICC-HV) and the Sick or Injured Child Checklist Parent Version (SICC-P) , 26 scenario cards that presented a situation in which a child is sick or injured and the mother must select TH, CD, or ER, scenario answer sheets, a health recording chart used to train the mothers to keep accurate records, and a health manual that served as a resource for the mothers and included information on prevention, illness symptoms, and appropriate care techniques.

The training workshop consisted of didactic learning and role-play scenarios. First, a Power Point presentation was shown that explained the contents of the training manual in detail. The HV was then instructed on how to facilitate a home visit with a mother using the scenario

cards, the scenario answer sheet, SICC- HV, SICC-P, Health Recording Chart, and the Health manual. The instructor explained the goals of Session 1, the baseline assessment, and the HV and the reliability observer engaged in a role play for one of each scenario (TH, CD, ER) with each other or the instructor.

The instructor then discussed Sessions 2-6, which were training sessions for the mother. The HV and the reliability observer watched a video that modeled the facilitation of Session 2. Next, they practiced conducting Session 2 by role-playing with each other. Finally, the HV and the SafeCare trainer participated in a role-playing session in which the HV delivered session 2 of the Health module to the trainer who acted as the mother. The SafeCare trainer observed the HV for fidelity to the model and provided her with appropriate feedback. After satisfactory completion of the role-play, the HV also completed a quiz of the information presented in the Health module. The quiz included 26 items that were a combination of fill-in-the-blank and true/false questions. The HV achieved a score of 85% or better and was certified to deliver the Health module.

Observer training. The reliability observer was enrolled in the Master of Public Health program and was working as graduate research assistant in the Center for Healthy Development. She received the training on the SafeCare Health module from the same SafeCare trainer as the HV and was provided with the same written and visual materials. The reliability observer also participated in a role-play session in with the SafeCare trainer in which she delivered session two of the Health module series to the trainer who acted as the mother. The certified SafeCare trainer also observed the reliability observer for fidelity to the model and provided her with appropriate feedback. After satisfactory completion of the role-play, the reliability observer also completed a quiz of the information presented in the Health module. The quiz included 26 items that were a

combination of fill-in-the-blank and true/false questions. The reliability observer met the criterion of a score of 85% or better and was certified to observe the delivery of the Health module.

Reliability Training

Reliability training. The HV and the reliability observer established reliability of 85% or better prior to the initiation of the study by viewing video recordings of home visits with parents where the SafeCare Health module was being implemented. The HV and the reliability observer scored each of the behaviors (TH, CD, ER) presented in the video separately using the SICC-HV. The HV and reliability observer then each described how the ordered steps were scored on the SICC-HV (either plus or minus) and discussed any discrepancies in scoring or understanding of measures to establish consistent scoring of the behaviors. Interobserver agreement was calculated by using the formula:

$$\frac{\text{Agreements}}{\text{Agreements + Disagreements}} \times 100$$

Reliability scoring. Interobserver reliability was measured for all of the baseline conditions for each mother and for one intervention condition. The criterion for interobserver agreement was at least 85%. Interobserver agreement was established for the baseline and subsequent intervention conditions by comparing the individual scores (plus or minus) of the HV and the reliability observer for each ordered step on the SICC-HV. If the HV and the reliability observed score an ordered step identically, this was considered an agreement. If the HV and the reliability observer had different scores for the ordered step, this was considered a disagreement.

Interobserver agreement was calculated by using the formula:

$$\frac{\text{Agreements}}{\text{Agreements + Disagreements}} \times 100$$

If the agreement fell below the 85% criterion at any time during the intervention conditions, the HV and reliability observer would stop conducting sessions with the mothers and continued to collaborate until the criterion was achieved.

Materials

Materials that the mothers received included:

- **Health Manual** – This is a resource guide for mothers and includes the Health Information Forms, Health Recording Chart, Caring for Your Sick or Injured Child, prevention techniques, and the Symptom and Illness Guide.

- **SICC-P** – This document was used to guide and evaluate the mothers' responses to the scenarios. It provides a step-by-step approach for mothers to decide the appropriate action (TH, CD, or ER).

- **Health Kit –** This is a supply kit containing home medical supplies such as a digital thermometer, antibiotic ointment, and diaper cream.

Experimental Design

A single-case, multiple-baseline research design across behaviors replicated across mothers was used to evaluate the effects of the intervention. The order of the training of the three decision-making behaviors (TH, CD, and ER) was based on baseline data. The HV, in concert with her advisor, monitored the data for trends in order to determine the next behaviors to train.

Behaviors with the most stable scores were trained first. Stability (no change) or a downward trend in baseline determined when intervention could begin. Behaviors that showed upward trends were not trained until stability was established. Data were collected face-to-face via the SICC-HV during each visit with each mother.

Procedures

The SafeCare Health module is designed to teach mothers how to recognize and respond to health-related symptoms of children in the home. The intervention typically consists of six sessions including baseline, intervention, and follow-up. The SafeCare Health module interventions occurred in the apartment homes of the mothers, and were scheduled for up to 1.5 hours at a time, not more often than two times per week.

Orientation and Baseline. During the first visit to the home, the HV provided an overview of the Health module, including the goals and expected outcomes of training. She also provided an overview of the baseline session and the role-play scenarios. The mother also completed a demographic survey, which asked basic questions such as race, marital status, and household income, as well as a pre-study survey which included questions regarding the current health status of the child, the health access of the child, and the mother's feelings about her level of empowerment in caring for her child.

The HV then collected baseline data, using the SICC-HV, for each of the three health-related behaviors: Treat at Home (TH), Call the doctor's office and make an appointment (CD), or Go to the Emergency Room or Call 911 (ER). The HV handed the mother a scenario card with a health symptom or problem that their child could experience written on it. The mother was instructed to read the scenario aloud. After the mother had finished reading the scenario, the HV

began to follow the steps on the Scenario Answer Sheet which provided dialogue and sequenced actions for the HV for correct and incorrect answers the mother may provide. The HV first asked the mother, "Tell me what the problem is." Based on the mother's response the HV scored the first step on the SICC-HV as a plus (+) or minus (-). The mother was expected to identify and state the child's symptoms. The HV then asked the mother to "Show me what you would do". Based on the mother's response, this step was also scored as a plus (+) or minus (-). The mother was expected to assess additional symptoms as needed and use the Health manual if necessary. For the ER scenarios and a select number of TH and CD scenarios, this step was not applicable and was scored as N/A. The HV then continued with the scenario and provided additional prompts to the mother based on the type of scenario such as, "Show me what you would do now", "It's three hours later, show me what you would do now", and "Let's say it's the next day, show me what you would do now". For the Call the Doctor (CD) scenarios, the HV role-played as a doctor's office staff member and continued the role-play prompting the mother to provide the child's symptoms. Scoring was accomplished by entering a plus (+) or minus (-) or N/A beside each ordered step on the SICC-HV based on whether the mother completed the step correctly, incorrectly, or it was not applicable. If the mother said that she would take an incorrect course of action, (i.e., she said she would Treat at Home when she should Call the Doctor), the role-play was either ended or continued with the action indicated by the mother and steps scored as incorrect. This decision was based on the instructions on the Scenario Answer Sheet. The HV did not provide any feedback or coaching to the mother during baseline. Next, the contents of the Health Manual were also presented and discussed. Finally, the session was summarized and the assignment for the next visit was explained. Visits continued until baseline data were stable or declining. The reliability observer was present for the first session during baseline. She was

introduced to the mother, and sat in an area of the room close enough to the HV and mother to hear the interaction. The HV signaled the reliability observer when she was ready to begin and repeated each action that the mother indicated she would take to ensure both correctly followed the sequence of the scenario.

Implementation/Training. Once baseline data were collected, training on each of the three classes of behaviors took place via conversation, demonstration, and practice using a step-by-step procedure related to each type of behavior and the health reference manual. The order in which the behaviors were taught was determined by baseline data which were collected for each of the classes of behaviors on which the mother had not yet received training. During the first training session, the HV explained how to use the health manual to look up information on symptoms and illnesses. The HV also explained the purpose of the SICC-P. Following this discussion, the HV modeled the steps of the SICC-P using a scenario. The mother was then prompted to practice the steps of the SICC-P using the same scenario that the HV modeled. After this demonstration, the mother was provided with praise regarding steps performed correctly and corrective feedback regarding steps performed incorrectly. In the following sessions, several behaviors were practiced and the mother used the SICC-P and the Health Manual to decide the appropriate course of action to take (either TH, CD, or ER). The HV continued to provide feedback and encouragement to the mother. Portions of the health reference manual were also read aloud by the mother and the HV during the visit. She was also given the opportunity to ask questions about the contents of the Health Manual and the role-play scenarios. The mother was required to demonstrate mastery with each class of behavior before beginning training for the subsequent behavior. Mastery for the CD and TH scenarios was established as a score of 80% correct and mastery for the ER scenario was established as 100% correct. Mastery criteria were

determined in concert with the faculty advisor based on the criteria used in previous SafeCare Health module studies and a judgment of a reasonable number of steps that the participant could complete correctly. The educational background of the participants was also considered. Data to determine each mother's mastery of the class of behaviors that were recently taught were collected at the beginning of each training session. The mother used the Health Manual as a reference during data collection. After the data collection, the HV continued to train the behavior class if mastery was not achieved, providing the mother with feedback to reinforce positive behaviors and correct missed steps.

Follow-up. The HV observed the mother's performance as she demonstrated one role-play for each behavior class (TH, CD, and ER). The role-play scenarios were scored using the SICC-HV to ensure the mother demonstrated 100% mastery of the proper steps to take for the ER and 80% for the CD and TH classes. Follow-up visits were conducted at one and three months postintervention. Each mother received a $25 gift card to a discount store after the completion of her 3-month follow-up visit. Also, the health kit was valued at $45.

Measures

The dependent variables were scores on each of the three classes of health behaviors. The SICC-HV form was used to record the percentage of steps completed correctly using the role-play scenarios. There were no identifying data linking the mother to the number she was assigned as part of the study. Each mother was assigned a corresponding number at the beginning of the study by the HV. The HV was responsible for the collection and storage of data under the mother's number in a secure location. Faculty and project-related staff at the Center for Healthy Development had access to the data for review of the HV's work and other work related to the specific research outlined in this protocol.

Consumer Evaluation

Upon completion of the intervention, mothers completed the Parent Satisfaction Survey to assess their perceptions of the program's usefulness and the training skills of the Home Visitor. It consisted of 11 items that were rated using a Likert-scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). Additional space was provided for comments. Results are displayed in Table 2.

RESULTS

Interobserver Reliability

For each mother, reliability observations occurred during the first baseline session and one training session. Interobserver reliability was maintained at 83% and above over the duration of the study. A reliability score of 83% occurred once and the Home Visitor and reliability observer discussed discrepancies in their individual scores prior to continuing with reliability observations during training sessions. The mean reliability score for all observed sessions was 100% for Mother 1, 93.8% for Mother 2, and 98.6% for Mother 3.

Baseline

Figure 1 shows the effects of the Health module intervention. During baseline, each mother's scores were below the mastery criterion for the Call the Doctor and Treat at Home skills. Each mother achieved scores of 100% correct after three baseline sessions for the Call 911 or Go to the ER skill. Due to this level of mastery, no training occurred for the Call 911 or Go to the ER skill. Mother 1 displayed a decreasing trend for Call the Doctor and an increasing trend for Treat at Home, achieving a score of 58% during the second baseline session. This behavior eventually became stable after four baseline sessions. Mother 2 also showed a decreasing trend in scores for Call the Doctor and instability for Treat at Home. Mother 3 showed a slight increasing trend in Treat at Home and a significant amount of instability in the Call the Doctor.

For Mother 1, training began with Call the Doctor because of a descending trend from the second baseline session and an increased score for Treat at Home. After receiving training for Treat at Home, her score increased in Session 3 from 16% to 66%. Her score dropped slightly in session 4 and remained stable at 100% in the following sessions. Baseline data collection continued for the Treat at Home until the score became stable. Training began during Session 4 and after dropping in Session 5 from 53% to 33%, thereafter increasing steadily.

For Mother 2, training also began with Call the Doctor after showing a decreasing trend, and an increase in Treat at Home. After intervening in the second session, the mother's score dropped in Session 3 from 66% to 33%, however, her score increased in the next session and steadily increased with the mother achieving 100% mastery after nine sessions. For Treat at Home, stability was attained after seven baseline sessions. After training, the mother's score increased dramatically, from 15% correct to 83% correct, and mastery was maintained during the remaining sessions.

For Mother 3, the Treat at home behavior showed an ascending trend during the second baseline session, however, the score for the Call the Doctor increased more significantly. Therefore, training began with the Treat at Home. The scores for this behavior were extremely unstable during training. Due to the fact that this behavior did not display a steady, increasing pattern until session 10, training was not initiated for the Call the Doctor behavior.

Follow-up

Mother 1 was not available for follow-up. Mother 2 showed mastery of the Call the Doctor and Call 911 or Go to the ER with 100% correct for each behavior. She received a score of 77%, slightly below the mastery criterion of 80%, for Treat at Home, and additional training

was delivered during the follow-up session. One month postintervention Mother 3 showed mastery for Call the Doctor, Treat at Home and Call 911 or Go to the ER with scores of 83%, 100%, and 100% respectively.

Consumer Evaluation

All three mothers indicated that the training and written materials sessions were useful, and that the training would be helpful to other parents. When asked if the training had made it easier to decide when to go the emergency room and when to call the doctor, all three mothers responded favorably with two mothers selecting “Strongly Agree” and one mother selecting “Agree”. The mothers also responded favorably when asked if caring for their sick or injured child had become easier, with two mothers selecting “Strongly Agree” and one mother selecting “Agree”. Their survey responses and written comments also indicated that they found the Home Visitor to be knowledgeable and friendly.

DISCUSSION

The purpose of this research was to improve the health literacy of mothers living in a residential drug recovery program using the SafeCare Health module and to determine whether the Health module of the SafeCare intervention is effective when used with a sample of mothers living in a residential recovery program who have a documented history of drug abuse. Child maltreatment, specifically medical neglect, is a significant problem and mothers who abuse drugs and/or alcohol are at an increased risk of committing this form of maltreatment due to the potential for a lack of comprehension concerning the child's health care (Jenny, 2007). This study aimed to examine if a history of substance abuse affected a mother's acquisition and mastery of skills taught in the SafeCare Health module, as well as enhance the mother's knowledge of how to properly care for their children when they are sick or injured. Another goal was to understand how the setting (roommate-style apartment homes) impacted the success of the Health module intervention. This module had not yet been implemented in this environment with this mothers recovering from substance abuse.

The intervention was effective in teaching mothers to identify and assess their children's symptoms and determine the appropriate treatment for the symptoms described. Skill acquisition occurred gradually and at the conclusion of training, two of the three mothers had achieved 100% mastery of each of the behaviors and one mother achieved 100% mastery of two behaviors. The mothers did not receive any training for Call 911 or Go to ER. Each of the mothers obtained mastery of the ER behavior after three baseline sessions, two of the three maintained 100% mastery after each session. This master y of the ER behavior was also maintained at the follow-up session for Mother 2 and Mother 3's first follow-up. These results are consistent with another study of the Health module that found that five of the seven

participants achieved 100% mastery of the ER behavior after one baseline session and all participants maintained 100% mastery after training (Bigelow & Lutzker, 2000).

Mother 3 was the only participant available to complete both follow-up sessions. Mother 2 completed one session after leaving the program, while Mother 1 was unable to be contacted for follow-up. Postintervention scores decreased significantly for Mother 3 for the Call the Doctor and Call 911 or Go to the ER behaviors and for Mother 2 for the Treat at Home behavior. Environmental factors may explain the drop in the TH behavior postintervention for Mother 2. This session was conducted after the mother was removed from the program for a rules violation and occurred in the administrative offices of the recovery center instead of her apartment home.

Mother 1 was at a more advanced stage in her treatment than the other participants when training began which may have positively affected her ability to master the Health module skills. Also, both Mother 1 and Mother 2 displayed a high level of engagement during training. Mother 3 displayed lower levels of engagement in comparison to the other participants, however, there were several factors in her life that that may have had an effect on her engagement and skill acquisition.

The decline in postintervention performance for Mother 3 and the degree of instability in her scores during training may be partially explained by factors that affected her motivation and attentional resources. She was approximately four months pregnant when the intervention began and close to nine months pregnant at the second follow-up session. In addition, she also was the primary caregiver for two small children and one had been diagnosed with a learning disability. During training, she was frequently interrupted by her children or stopped a lesson to discipline the children's behavior. Problem-solving strategies were attempted which included providing the children with a toy to play with while training was occurring and taking breaks during training to

check in with them. The reliability observer also spent time with the children while the mother was involved with training during the sessions that she attended.

Mother 3 was entering substance abuse rehabilitation for the second time in recent months when the training began and was, like the other participants, heavily involved with the components of the treatment program including daily morning and afternoon meditation and group therapy, personal and career development sessions, and religious services. A parenting course is also provided as a part of the recovery program. The delivery of parenting training in combination with other services including substance abuse treatment and job training has been associated with a smaller effect size for the parenting intervention due to a diversion of attention to other objectives. Programs without ancillary services were shown to have twice the effect size of programs including these services (Kaminski, Valle, Filene, & Boyle, 2008). This mother's highest priority may have been maintaining sobriety and completing the program requirements versus the SafeCare training.

Also, based on her baseline scores, Mother 3 began her training with the Treat at Home behavior, both of the other participants began with the Call the Doctor behavior. In the standard application of the Health module, this behavior is trained first because it is the most intensive of the three behaviors. This behavior requires the participant to complete 14 steps correctly while the Call the Doctor and Call 911 or Go to the ER behaviors require the participant to complete six and three steps, respectively. In consideration of the other environmental influences that this mother was experiencing, it may have been overwhelming to begin training with this behavior and affected motivation to devote time and cognitive resources to gaining skills in this area. This suggests an important adaptation consideration when delivering SafeCare with parents in active recovery.

This also speaks to the generalization observed for the Call the Doctor (CD) behavior. The mother did not receive training for this behavior, yet she maintained 100% mastery of this behavior after 10 sessions. This behavior is comprised of six steps, the first two of which are identical to Treat at Home (TH). Repeated exposure to the steps of Treat at Home during training and CD during baseline may have resulted in an increase in this score outside of training.

Despite these factors and highly variable scores, Mother 3 displayed skill acquisition and generalization when presented with a real-life health scenario after five sessions of the intervention. She told the HV that after her daughter fell and hit her head, she immediately referred to the health manual as opposed to becoming alarmed or calling 911, which had been her usual response. She also correctly identified that she should treat her daughter at home. The mother stated in her written comments and informal discussions with the HV that she had "learned a lot" and felt calmer when addressing her children's health problems as opposed to preintervention where she reported feeling panicked when her children displayed signs of illness.

This setting provided unique challenges in comparison to previous studies of the Health module. The participants were housed in roommate-style apartments and faced distractions from their children as well as other adults in the room. The participants' confidentiality may have also been comprised in some instances due to the presence of non-participants in the living room area during training. However, the community setting also has potential for the success of a group-based delivery of the Health module. The mothers involved in the study shared the knowledge and skills that they had acquired through the training with other women at the recovery center through informal discussions. Mother 3 mentioned that she assisted another mother who was not a study participant when her child displayed signs of the croup by referring to the health manual provided to her for appropriate treatment instructions. Mother 2 also stated that she consulted the

health manual for a mother whose child had complained of an earache for several weeks. Also, roommates and friends of the participants who had witnessed training being delivered or heard about the details of the training requested to be included in future implementations of the program.

More structured, intensive problem-solving may have been useful. Early application of this approach could result in fewer distractions, more rapid skill acquisition and also shorter training time. Another limitation includes the use of a newly revised picture-based version of the health manual that had some inconsistencies with the original version. This version had been simplified to be used with mothers with intellectual disabilities and was being piloted for use with a larger demographic with this group. Supplementary information from the original Health manual was also provided to the participants.

In conclusion, this research builds upon the work of Delgado and Lutzker (1988) and Bigelow and Lutzker (2000) by examining the effectiveness of the Health module in a sample of women recovering from substance abuse residing in communal housing. In this research, a majority of the participants demonstrated mastery of the skills presented, indicating the efficacy of this intervention with this sample. Future research should be focused on finding further support of the usefulness of the SafeCare Health module in this and other vulnerable populations such as homeless parents or parents with intellectual disabilities.

TABLES AND FIGURES

Table 1. Participant Demographic Information

Mother	Age	Marital Status	Race	Education Level	Employment Status	Total Number of Children	Number of Children (0-5)
1	22	Single	African-American	Some High School	Looking for employment	2	2
2	29	Single	African-American	Some High School	Unemployed	4	2
3	34	Single	African-American	High School Diploma	Stay-at-home parent	4	2

Table 2. Parent Satisfaction Survey Results

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Caring for my child's health when he/she is sick or injured has become easier	2/3	1/3			
2. Deciding when to take my child to the doctor has become easier	2/3	1/3			
3. Deciding when my child needs emergency treatment has become easier	2/3	1/3			
4. I believe that this health training would be useful to other parents	3/3				
5. I do not feel the health training gave me new or useful information or skills				1/3	2/3
6. Practicing during the sessions was useful	3/3				
7. The written materials were useful	3/3				
8. The Home Visitor was on time to appointments	2/3	1/3			
9. The Home Visitor was warm and friendly	3/3				
10. The Home Visitor was negative and					3/3

critical	
11. The Home Visitor was good at explaining the material	3/3

Written Comments:

I really enjoyed it. I learned a lot of new info.

Ms. Lela was very helpful to me every time she came and visit me. She was nice to me and my kids. I have learned a lot from Ms. Lela. She has taught me to be calm when my kids get sick or injure themselves.

Table 3. Interrater Reliability

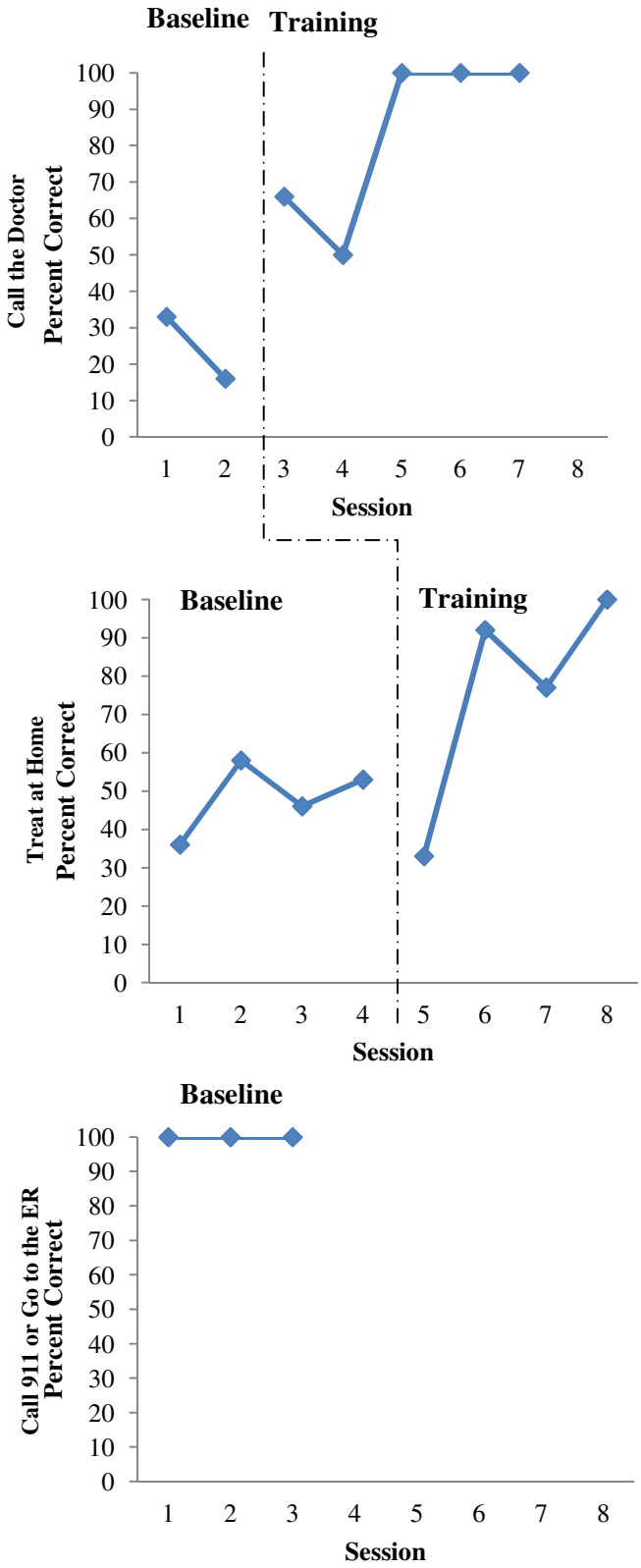
Mother 1	**Baseline 2/28**	**Training 3/25**
Call the Dr.	100%	100%
Treat at Home	100%	100%
ER	100%	100%

Mother 2	**Baseline 3/25**	**Training 4/15**
Call the Dr.	100%	100%
Treat at Home	100%	93%
ER	100%	

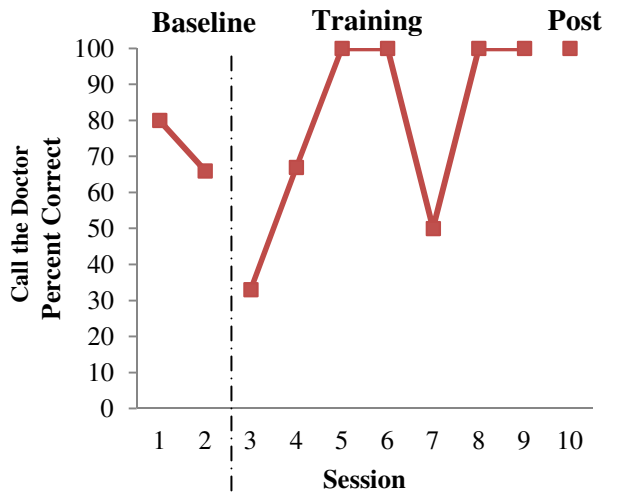
Mother 3	**Baseline 4/25**	**Training 6/7**
Call the Dr.	83%	100%
Treat at Home	100%	86%
ER	100%	

Figure 1. Percent correct per behavior

Mother 1



Mother 2


Baseline
Training
Post
Call the Doctor
Percent Correct
100
90
80
70
60
50
40
30
20
10
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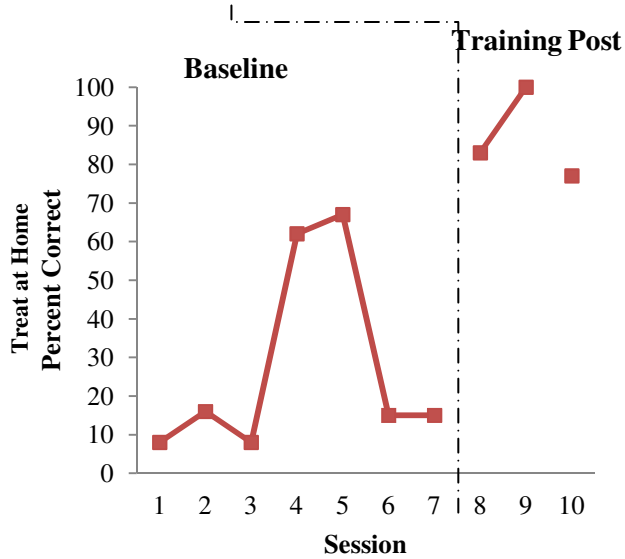
1 2 3 4 5 6 7 8 9 10
Session


Training Post
Baseline
Treat at Home
Percent Correct
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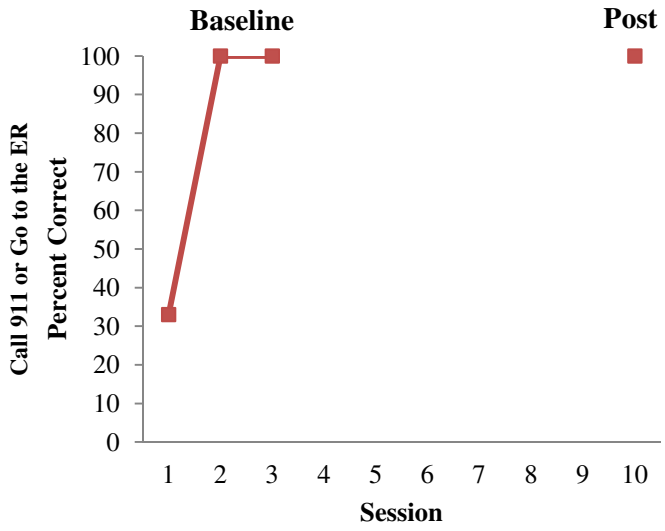
1 2 3 4 5 6 7 8 9 10
Session


Baseline
Post
Call 911 or Go to the ER
Percent Correct
100
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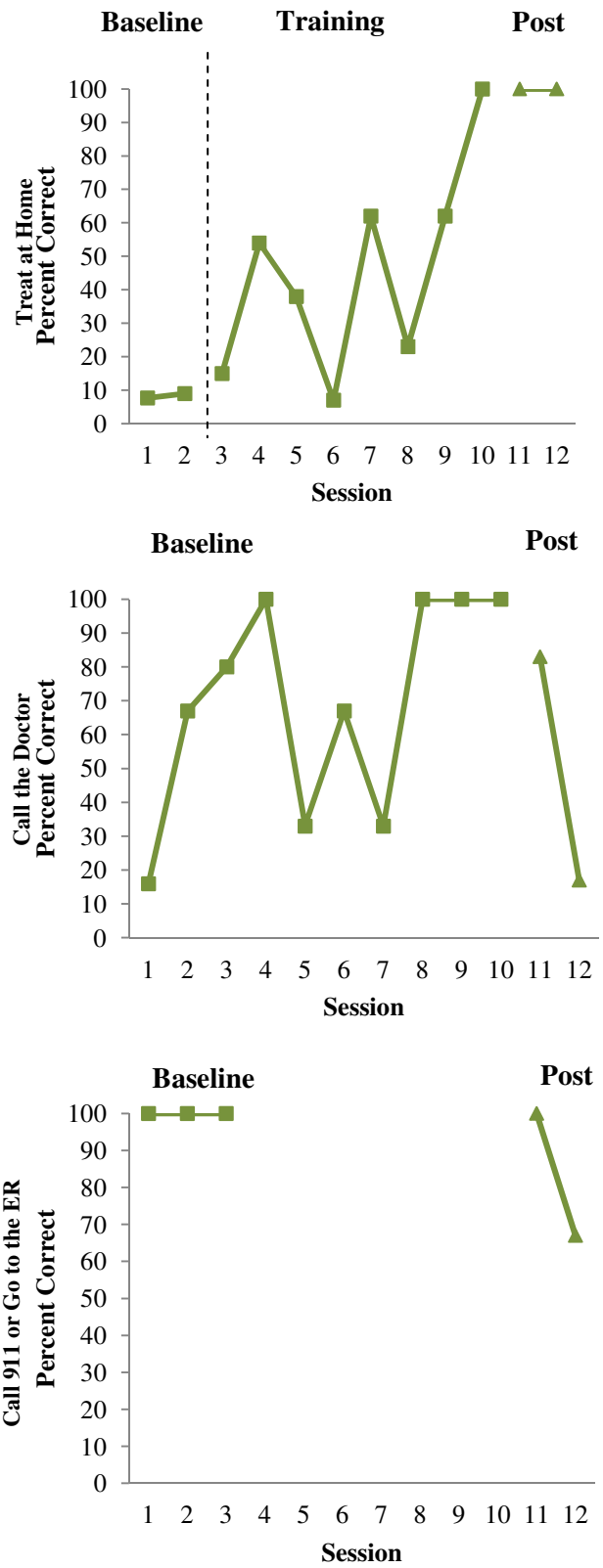
1 2 3 4 5 6 7 8 9 10
Session

Mother 3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Call 911 or Go to the ER Percent Correct
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Session

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