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An Examination of the Relationship Between SafeCare Provider Fidelity and Parenting Outcomes

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An Examination of the Relationship Between SafeCare Provider Fidelity and Parenting
Outcomes

By

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B.A., Limestone 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

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APPROVAL PAGE

An Examination of the Relationship Between SafeCare Provider Fidelity and Parenting
Outcomes

By

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04/29/2015

Date

ABSTRACT

An Examination of the Relationship Between SafeCare Provider Fidelity and Parenting Outcomes

Background: In 2013, there were over 3 million reported cases of child maltreatment to state agencies, and 693,484 unique children were victims of child maltreatment. To address this public health problem, there is a move towards implementation of evidenced-based practice in the child welfare system. However, evidence based programs that are disseminated to community settings often fail to deliver the same positive outcomes found in research studies. Concern about this knowledge-to-practice gap has led to a burgeoning research focusing on factors that predict successful implementation including high fidelity.

Purpose: This study aims to fill the gap in knowledge regarding the relationship between provider fidelity for SafeCare, an evidenced-based parenting program, and parent behavior change. By improving our knowledge about fidelity in implementation we can work to improve the translation from laboratory to "real life."

Methods: The data was derived from a longitudinal study aimed at examining the implementation of the SafeCare model in Georgia. As part of this implementation the National SafeCare Research and Training Center (NSTRC) conducted trainings with 54 agencies across the state of Georgia. Trainings were delivered to individuals ("home visitors") under NSTRC implementation model who then began delivering SafeCare in the child welfare population. Home visitor fidelity monitoring was conducted by SafeCare trainers via audiotaped sessions in the home.
Family outcome data were collected as part of home visitors assessments of parents done as part of the SafeCare model. Specifically, home visitors measured home safety, parent health knowledge, and parent-child interactions.

Results: Correlations between fidelity and parenting outcomes ranged from r = -0.347 to r = .330, but none were statistically significant. To examine whether fidelity predicts behavior when controlling for other factors that may be predictive of family behavior, regression models were conducted controlling for age, sex, race, and work experience. In all regression models, fidelity remained a non-significant predictor (p > .05).

Conclusions: There are many possible reasons for the failure to find a statistically significant relationship between fidelity and behavior change including restricted variability, sample size, measures—or the possibility that no true relationship exists. By understanding fidelity in this implementation we can begin to think about successful components of broader implementation of this behavioral parenting model.

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Introduction

Prevalence and Impact of Maltreatment

Child maltreatment includes physical abuse, sexual abuse, and neglect. In 2013, there were over 3 million reported cases of child maltreatment to state agencies, and 693,484 unique children were victims of child maltreatment (U.S. Department of Health and Human Services, 2015). Children in the 0-5 age range account for nearly half of these cases. Among those victims of child maltreatment, more than 25% were under the age of three, and another 20% were between three and five % (U.S. Department of Health and Human Services, 2012). However, data by Finkelhor, Ormrod, Turner, and Hamby (2005) from the Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) suggest that the actual number of child maltreatment victims is much higher than reported. The actual number of victims of child maltreatment is likely closer to 1 out of 8 children. The Fourth National Incidence Study of Child Abuse and Neglect (NIS-4) reported an approximate 1.25 million children who were involved in a child maltreatment investigation (NIS- 4). Parents are the most common perpetrators of child maltreatment, with one or both parents being responsible for 81.49% of abuse and neglect cases (U.S. Department of Health and Human Services, 2015).

The vast majority of substantiated child maltreatment cases (79.5%) are cases of neglect (U.S. Department of Health and Human Services, 2013). While there has been a nationwide decline of physical and sexual abuse, rates of neglect have remained fairly constant (Finkelhor, Jones and Shattuck, 2015). In addition to being the most common form of child maltreatment, cases of neglect are the most likely to result in recidivism

compared to other forms of maltreatment. Neglect has been shown to be a significant

risk factor for re-abuse.

Child abuse and neglect can lead to serious negative health outcomes for the

victims. The data show that children who experience child maltreatment are at a much

greater risk for negative physical, behavioral, and mental health outcomes including:

child mortality, criminal behavior, drug and alcohol abuse, mental health diagnosis, risky

sexual behavior, and obesity (Gilbert, Widom, Browne, Fergusson, Webb and Janson,

2009). The Adverse Childhood Experiences (ACE) study showed that long-term effects

of early adversities such as child maltreatment are also associated with poor physical

health outcomes. The ACE study, which included over 17,000 people, indicated that

victims of child maltreatment are more likely to experience serious chronic illness such

as lung cancer, autoimmune disease, liver disease, and heart disease (Brown, Anda,

Felitti, Edwards, Malarcher, Croft, Giles, 2010; Dong, Dube, Felitti, Giles, Anda, 2003;

Dong, Giles, Felitti, Dube, Williams, Chapman, Anda, 2004; Dube, Fairweather, Pearson,

Felitti, Anda, Croft, 2009). Other longitudinal studies show child maltreatment can

predict allostatic load, or the cumulative "wear and tear" on the body from repeated

cycles of adjusting to stress, in adulthood (Widom, Horan and Brzustowicz, 2015).

Furthermore, abuse in childhood is associated with increased medical contacts for

negative physical health and development of adolescent obesity (Fergusson, McLead, and

Horwood, 2013; Shin and Miller, 2012).

Children who experience child maltreatment are also at an increased risk of

negative behavioral outcomes including increased risk for criminal activity. Children who

are victims of child maltreatment are at a greater risk of being perpetrators of intimate

partner violence in adulthood (White and Wisdom, 2003) and are, overall, 29% more likely to be classified as criminals in adulthood when compared to children who are not victims of child maltreatment (Wisdom & Maxfield, 2001).

In addition to the significant physical, psychological, and behavioral impact on victims, child maltreatment also bears a large economic burden to society. Child maltreatment is estimated to cost as much $124 billion dollars annually; which is an approximation of $210,012 for each victim over the course that individual's lifetime. Associated maltreatment cost may include childhood and adulthood health related costs, productivity loss, child welfare system cost, criminal justice system cost, and special education services costs (Fang, Brown, Florence, Mercy, 2012).

Interventions for Child Maltreatment

Each state has a child welfare system that is responsible for assessing and responding to reports of child maltreatment. Nationally, child welfare systems respond to more than three million reports of child maltreatment. The goal of the system is to assess each report for child well-being and determine if an investigation is warranted. In such cases that an investigation is warranted, services may be provided to both the children and the parents. These services may include assistance with basic needs like housing, utility, or food assistance. The child welfare system also makes referrals for family counseling, parent education, and mental health services as needed.

Many state child welfare systems have shifted their goals away from out-of-home placement (i.e., foster care, residential treatment homes, relative placement, etc.), toward the goal of increased family preservation (i.e., keeping families intact). With this new focus, there comes an increased need for high quality interventions that can reliably

increase parenting skills and reduce the likelihood of future occurrences of maltreatment. Child welfare systems have traditionally focused on investigation allegations of child maltreatment. However, more recently, the focus has been on services for family preservation and acting as brokers to community based mental health services. (Dorsey, Kerns, Trupin, Conover, and Berliner, 2012; Fitzgerald, Torres, Shipman, Goronno, Kerns, and Dorsey, 2015).

There have been several federal initiatives that support this transition, including the Child Abuse Prevention and Treatment Act (CAPTA) funded Preserve Safe and Stable Families projects as well as the Adoption and Safe Families Act (Chaffin and Friedrich, 2004). The Federal Title IV-E waiver program has allowed state child welfare systems to redirect funds intended for foster care and children in out-of-home placements to preventive services whose goal is to serve clients *before* they are removed and to prevent removal.

These shifts have placed a greater focus on services the child welfare systems provide to intact families. One service that is virtually always provided when maltreatment has occurred and the goal is family preservation (instead of removal) is parent training/education. By definition, physical abuse and neglect involve deficits in parenting, and virtually all systems look to rectify that through parenting programs. Most often, those parenting services are unstructured and not curriculum-based. Studies of unstructured parenting family preservation services show little evidence to support their effectiveness in changing important child welfare outcomes including reductions in re-reports, out-of-home placements, or increases in parent and child well-being (Chaffin, Bonner, and Hill, 2001). These programs have not been shown to be effective as reducing

child maltreatment recidivism. (Kauffman Best Practices Project, 2004; Saunders,

Berliner, & Hanson, 2004; Chaffin and Friedrich, 2004).

Behaviorally-based Parenting Programs for Reducing Child Maltreatment

The ultimate goal of most child maltreatment interventions is improved parental

functioning to reduce the likelihood of future danger or harm to children. This is

essential because more than 80% of child maltreatment perpetrators are parents.   The

interventions that have shown to have the greatest impact on reducing child maltreatment

recidivism are behaviorally-based parent training programs (Barth, 2009) and such

programs are broadly recommended by parenting experts (Barth et al., 2005; Whitaker,

Lutzker, & Shelley, 2005; Galanter, Self-Brown, Valente, Dorsey, Whitaker, D.J.,

Betuglia-Haley, and Prieto 2012). The goal of such programs is to teach parents new

skills to improve parenting, and thereby reduce the risk of maltreatment recidivism. In

recent years, several behavioral parenting programs have been shown to reduce child

welfare recidivism including Parent-Child Interaction Therapy, or PCIT (Chaffin,

Funderburk, Bard, Valle, and Gurwitch, 2011), the Triple P model (Prinz, Sanders,

Shapiro, Whitaker, and Lutzker, 2009), and the SafeCare model (Chaffin, Hecht, Bard,

Silovsky, and Beasley, 2012).

Implementation of Evidenced Based Practice (EBP) in Child Welfare Systems

In recent years, because of these results, there has been a push to implement

evidenced-based practices into the child welfare system. Evidenced-based practice

(EBP) began in the medical community as evidenced-based medicine, and is newer to the

field of mental health and social service. This idea migrated into the childhood services

field and was defined by Buysse, Wesley, Snyder, and Winton as, "…a decision making

process that integrates the best available research evidence with family and professional

wisdom and values," (2006, p.12).   The idea was to integrate research-based evidence

into clinical practice. The moving of evidenced-based practices into community services

settings has been called an "emerging national priority," (Schoenwald, Sheidow, and

Letourneau, 2004; Hoagwood, burns, Kiser, Ringeisen, and Schoenwald, 2001) and

experts agree that services should be based on evidence (Axford and Morpeth, 2013).

While it is generally agreed that the move to EBP is a positive move, the child

welfare system has been slow to implement EBP (Mitchell, 2011) or they are

considerably underused (Axford and Morpeth, 2013). Furthermore, despite expert

agreement that the move to EBP within the child welfare system is needed, there has been

less focus on how best to do that. This is especially important because failure to

successfully implement a program may not only result in failed outcomes, but also can

result in an effective program being seen as ineffective (Mildon and Shlonsky, 2011;

Dane and Schneider, 1998) or may result in the community-at-large becoming

disillusioned and withdrawing support for the intervention (Lee, August, Realmoto,

Horowitz, Bloomquist, and Kilmes-Dougan, 2008). Therefore, *deciding* to adopt EBP in

child welfare is not enough. Developing and deciding to adopt EBP is only the first step

toward providing services focused on improving family well-being. The selected EBP

has to be implemented well, in a way that will transfer the effective results of the

laboratory intervention, into real world settings and sustain them (Durlak and Dupre,

2008).

Implementation and Fidelity

One of the greatest challenges of EBP is understanding which strategies or components play the greatest role in successful implementation (Brown, Chamberlain, Saldana, Padgett, Wang, and Cruden, 2014). The data from five meta-analyses, encapsulating nearly 500 studies, shows that mean effect sizes of key program outcomes are two to three times greater when programs are free from serious implementation problems (Durlak and Dupre, 2008). In addition, data from 59 supplemental quantitative studies show that higher levels of implementation are associated with better outcomes. This is particularly true when dosage or fidelity is assessed (Durlak and Dupre, 2008).

There are many metrics of program implementation, but one of the most important and commonly used is fidelity. Fidelity is the extent to which a program was delivered as intended by the practitioners/interventionists.

Fidelity assessments allow stakeholders (developers, providers, consumers) to understand the extent to which the program is being delivered as intended (Schoenwald 2011). For the child welfare system specifically, this allows funders and system leaders to understand whether services are being delivered as intended, which is key because child welfare services are often delivered by contracted providers.

Evidence based programs that are implemented in community settings often fail to deliver the same positive outcomes found in research studies. One key reason for this may be the variability of implementation (Burbarger and Perkins, 2008; Cross and West, 2012; Fixsen et al, 2005; Hutching, Bywater, Eames and Martin, 2008), including poor fidelity. That is, if a program is not implemented as designed, one cannot expect to attain the research-based outcomes of that program. The failure of an effective laboratory intervention being translated to real life settings has been referred to as the "knowledge to

practice" gap. Concern about this knowledge to practice gap has led to a burgeoning

research focusing on factors that predict successful implementation including high

fidelity (Mildon and Shlonsky, 2011).

Adoption of evidenced-based practice can help translate research outcomes

through fidelity. Manualized evidenced-based practice models allow for fidelity

monitoring in implementation (Barth, Lee, Lindsey, Collins, Strieder, Chorpita, Becker,

and Sparks, 2011). Successful implementation of any program involves maintaining

fidelity or integrity to the model, or doing the model as it was designed (Fixsen et al.,

2005), which will raise the likelihood of achieving the desired outcomes (Durlak and

DuPre, 2008). Dane and Schneider (1998) define fidelity as how well the model

implemented relates to the original intention of the model. In addition, Fixsen et al (2005)

were able to identify that, for an implementation to be successful, it must have validated

measures as well as fidelity monitoring (Fixsen, Naoom, Blase, Friedman, & Wallace,

2005).

Fidelity monitoring can be provided as part of programmatic implementation. In

2008, a study by Lee et al. examined multidimensional constructs of fidelity at 27

geographically dispersed sites. This study found that fidelity monitoring is feasible at the

broad implementation level, as well as, with geographically dispersed sites and supports

the idea that fidelity monitoring can, and should be, implemented as part of a prevention

program.

Fidelity and Participant Outcomes.

It is typically assumed or hypothesized that better fidelity will be associated with

better client outcomes (DeRubeis and Feeley, 1990). Although prior research has

demonstrated a relationship between fidelity and client outcomes across studies (Durlak

& DuPre, 2008), relatively few individual programs have shown this at the client level.

Some studies outside of child welfare/parenting programs have shown that

provider fidelity is related to positive client outcomes (Abbott, O'Donnell, Hawkins, Hill,

Kosterman, and Catalano, 1998). For example, in the Multisystemic Therapy (MST)

model, which is focused on adolescents with serious behavior problems, caregiver-

reported provider adherence to the MST model has been related to youth outcomes

including arrest, incarceration, and placement (Henggler, Melton, Brondino, Scherer, and

Hanley, 1997; Henggeler, Pickrel, and Brondino, 1999; Huey, Henggeler, Brondino, and

Pickrel, 2000). A 2001 study by Becker, Smith, Tanzman, Drake, and Tremblay,

demonstrated that fidelity scores for employment programs for individuals with severe

mental health problems were associated with client employment outcomes. In this study,

the researchers sought to determine what implementation factors were predictive of

higher client outcomes. They found a significant correlation with fidelity to the program

in implementation, and higher levels of positive client outcomes. Additionally, fidelity to

the Assertive Community Treatment (ACT) model, an integrated approach to community

mental health service delivery for individuals with severe mental health problems, was

found to be related to reduced rates of psychiatric hospitalization (McGrew, Bond,

Dietzen, and Salyers, 1994).

Specifically to family well-being and parenting practice, a 2006 study of Parent

Management Training, Oregon Model (PMTO) found that high ratings on the Fidelity of

Implementation Rating System (FIMP) predicted parenting practice improvements.

(Forgatech, Patterson, and DeGarmo, 2005). In this particular study, when the program

was implemented with higher levels of fidelity the parenting outcomes were significantly

improved; however, the same measure of parenting practice had a much weaker effect

when the program was implemented with low levels of fidelity. This study of PMTO is

one of the only studies of disseminated evidence-based parenting programs that have

linked provider fidelity to client outcomes. The goal of this current study is to examine

this question for a rollout of the SafeCare model in the child welfare system in Georgia.

SafeCare©

SafeCare is a behavioral parent training program designed to address child physical abuse

and child neglect. SafeCare was specifically designed to address proximal risk factors

(i.e., unsafe home conditions, poor child health, etc.) for child neglect; in contrast, many

other behavioral parenting programs (e.g., Parent Child Interaction Therapy or PCIT,

Triple P, The Incredible Years) primarily target risk factors for child physical abuse such

as child behavior management and avoiding physical discipline.   The SafeCare model

consists of three skill-based modules focusing on child health, home safety and use of

positive parenting skills. These modules are delivered in a natural environment,

generally the home.

SafeCare is delivered in the home for 18-20 sessions, lasting 60-90 minutes each.

The three modules of SafeCare (parenting, safety, health) are delivered over

approximately six sessions for each of the three modules. Each module includes an

initial or baseline assessment, followed by several training sessions, and ends with a post-

training assessment. The training is delivered in a stepped process that includes—1)

explanation of the behavior and its benefits; 2) modeling of the behavior by the provider;

3) behavior practice by the parent; 4) positive feedback on parents performance by

provider; 5) constructive and corrective feedback on parents performance by provider; 6) wrap-up and review of the session as well as goal-setting for the time period until the next session.

Evidence for SafeCare.

Evidence supporting SafeCare has shown that parents completing SafeCare show improved parenting skills, and are less likely to be re-reported for child maltreatment. Regarding parenting, several studies have demonstrated improvements in parenting behaviors, including a recent randomized trial (Carta et al., 2012). Regarding child maltreatment reports, an initial small quasi-experimental evaluation of SafeCare found that reduced rates of child maltreatment reports among families completing SafeCare versus services as usual (Gershater-Molko, Lutzker, and Wesch, 2002). More recently, a randomized trial of SafeCare was completed in Oklahoma, in which almost 2,200 participants with substantiated maltreatment were treated with either SafeCare or services as usual, and were followed on average of six years to examine child maltreatment recidivism. Data from this study showed that participants who received SafeCare as compared to services as usual, were about 26% less likely to be re-reported to the child welfare system (Chaffin, Hecht, Bard, Silovsky, and Beasley, 2012). Families also appear to like SafeCare. Studies have shown that families are more likely to enroll in and complete services when offered SafeCare versus usual care (Damashek et al., 2011), and SafeCare services are rated as more satisfactory than usual care (Damashek et al., 2012).

SafeCare Implementation.

The National SafeCare Training and Research Center (NSTRC) conducts training and implementation support for sites that seek to adopt SafeCare. The implementation of

SafeCare, in any new setting, follows a phased process. Phase one of implementation includes assessing agency readiness and preparing a site for implementation. In this initial step, agencies and SafeCare administrators assess if a site is ready to implement SafeCare as an EBP, and if the model is a fit for the service system. The second step of implementation is the *initial SafeCare implementation* that begins with workshop training and includes extensive post-training support to ensure fidelity to the model. The third step is *ongoing SafeCare implementation* that includes the training of designated providers as new SafeCare coaches, as well as providing ongoing support for those coaches. The final step in implementation is the *sustainability* of the implementation, in which NSTRC creates a sustainability plan with the site; the plan may include training so that sites can sustain SafeCare independently without relying on NSTRC (Whitaker, 2009).

At each level of implementation, SafeCare©, as with any EBP intervention, must be replicatable. Forgatech, Patterson, and DeGarmo (2005) assert that interventions must be examined for fidelity to content and process of the intended model. This is especially true in the child welfare system. The system is often resource and finance stressed. Therefore, it is especially pertinent than any intervention model be one that: 1) is easily replicated 2) is able to be implemented with high levels of fidelity and 3) be cost-effective and outcome effective.

All SafeCare sites engage in continuous fidelity monitoring to ensure that the program is being implemented as designed. SafeCare providers are expected to maintain high levels of fidelity (85% or better). SafeCare fidelity is assessed directly via live observation, or via audio-recorded sessions, most often the latter due to the cost and

expense of live observation (Self-Brown and Whitaker, 2008). Thus, the NSTRC

implementation model relies heavily on the assessment of fidelity and the provision of

feedback to providers to ensure a high quality implementation with fidelity.

One gap in the SafeCare literature is that no studies have examined whether

individual variability in provider fidelity relates to the changes in parenting behavior.

This study aims to fill the gap in knowledge regarding the relationship between provider

fidelity for SafeCare and parent behavior change. By improving our knowledge about

fidelity in implementation we can work to improve the translation from laboratory to

"real life." Using a sample of providers trained to implement SafeCare in Georgia, and

the families they served, this research will examine the relationship between measures of

provider fidelity and family skill uptake. We hypothesize that higher fidelity scores will

result in greater behavior skill uptake.

Methods

The data for this study was collected as a subset from the grant titled

Implementation of SafeCare to Prevent Child Maltreatment in Underserved Populations

(Protocol Number: H09125), and as part of a statewide rollout of SafeCare in the Georgia

child welfare system.

The data was derived from a longitudinal study aimed at examining the

implementation of the SafeCare model in Georgia. As part of this implementation the

NSTRC conducted trainings with 54 agencies across the state of Georgia. Trainings were

delivered to individuals, who were contract workers, ("home visitors") under NSTRC

implementation model (Whitaker et al., 2008) who then began delivering SafeCare in the

child welfare population. All home visitors were coached as they implemented SafeCare

in the field, meaning their sessions were audio-recorded and reviewed, scored for fidelity,

and they were given positive and corrective feedback on their performance. Fidelity

monitoring was conducted by SafeCare trainers via audiotaped sessions in the home.

Family outcome data were collected as part of home visitors assessments of

parents done as part of the SafeCare model. Specifically, home visitors measured home

safety by assessing potential hazards in the home. Home visitors also assessed parental

health knowledge by examining parental responses to treating hypothetical childhood

illnesses or injuries. Finally, home visitors assessed parent-child interactions via in-home

observation.

Sample

There were 312 families included in the study, served by 178 home visitors. The

mean number of families served by each home visitor was 2.76 (sd = 3.23, range = 1 to

20). The data set contains a range of missing values on the variables we examined. The

missing variable counts ranged from 0-86. There are two primary reasons for missing

data in this implementation. For home visitors, many home visitors did not receive

referrals in this state. Additionally, many families who began the program did not

complete the entire curriculum. These two compounded problems led to a significant

amount of missing data.

Home visitor demographics. Demographic information was available on 178

home visitors.   The mean age was 42.5, (sd=10.89, range = 25 to 69) with 44 missing

data. The subset consisted of 42 Caucasian home visitors, 81 African American home

visitors, and 7 "Other," with 48 missing data. There were 120 female home visitors and

the remaining 14 were male, with 44 missing data.

Family demographics. The sample included 312 families. Demographic

information was available for 250 families. The mean parent age was 25.5, (sd=8.13,

range = 15 to 59), with 62 missing data. The subset consisted of 90 Caucasian parents,

138 African American parents, and 18 "Other," with 66 missing data. There were 238

female parents as the target adult and the remaining 12 target adults were male, with 62

missing data. Ninety families had one child, 65 had two children and 80 had three or

more children, with 77 families missing data. Among those with available data, 49.67%

(n=75) had CPS (Child Protective Services) cases open; 20.53% (n=31) have had at least

one CPS prior case; and 29.8% (n=45) have no history of CPS history.

Measures

Fidelity. Home visitor fidelity was measured using a structured checklist that is

used in all SafeCare implementations. Three different checklists (assessment, training,

and end of module) exist with between 28-29 items each. SafeCare coaches scored each session via audio-recording. Home visitors were scored on each checklist item with a '+'/'-'/'n/a' scale. A '+' was scored when a home visitor was observed using the technique being measured. A '-' score was given when a home visitor was observed as failing to use a technique. An 'n/a' was scored when an item was not relevant for a given session. Each '+' was given a value of 1.00 and each '-' was given a value of 0.0. Means were derived from each session by averaging all items score as 0 or 1; items scored 'n/a' were not included in computation of means. Home visitors included in this subset had a range of number of sessions from 1-36. For each home visitor, fidelity scores were averaged across all sessions to create a mean fidelity score. The *overall fidelity* score was 92.44 (*sd 4.81*). Fidelity scores were also computed for each module including: health fidelity, safety fidelity, parent-infant interaction (PII) fidelity, and parent-child interaction (PCI) fidelity. *Health fidelity* was computed as fidelity for health modules and the mean fidelity score was 92.58 (n=78, *sd 5.57*). *Safety fidelity* scores were computed for the safety modules and the mean safety fidelity score was 92.31 (n=59, *sd 4.96*). *PCI fidelity* was computed as fidelity within the Parent-Child Interaction module and the mean score was 92.16 (n=85, *sd 92.16*). *PII fidelity* was computed as fidelity within the Parent-Infant Interaction module and the mean PII fidelity score was 93.21 (n=60, *sd 5.56*).

Parenting outcomes. Parenting skill acquisition was measured for each family. For each SafeCare module, (parent-child interaction, safety, and health), a pre-assessment was given to obtain a baseline score. After the module was delivered, a post-treatment score was given. The home visitor, via live observation, measured parental skill acquisition. The home visitor used structured checklists designed for each model.

Health. Parenting health skills are measured using the Sick and Injured Child

Checklist (SICC). In this checklist parents were given a short vignette. The goal of the

vignette was for the parent to correctly identify if this was a scenario that should be

treated at home, warrants a phone call to a physician, or should be treated at the

emergency room. The SICC has various steps based on the vignette. The "treat at home"

vignette includes 14 steps, the "call the doctor" scenario includes 9 steps, and the

"emergency room" vignettes included 3 steps. The SICC is scored on a "check" or

"minus" scale. A score of "check" was given when a parent correctly performed the step.

A "minus" was given when the parent failed to correctly perform the step. A total health

score was created by dividing the number of steps correctly identified ("check") by the

total number of items scored. Scores were calculated and averaged across vignettes.

Health scores were calculated at baseline and post-intervention. Total health change

scores were calculated by the difference in baseline and post-intervention scores. The

mean health correct answer change was 3.51 (*sd*=1.51).

Safety. Safety scores were measured using the Home Accident Prevention

Inventory (HAPI). The home visitors used this structured inventory form to assess a

hazard count per room measured. Hazards were measured into the following categories:

poisons, fire and electrical, mechanical objects that can suffocate, choking, weapons,

drowning, and falling. If one hazard constituted an uncountable number of items (i.e. a

large box of buttons) the hazard was counted as 10. The hazards were assessed as a count

per room, with most families having hazards counted in three rooms. Hazards were

assessed as a baseline tally and as a post-intervention tally. Safety change scores were

calculated as the difference between the baseline count and the post-intervention count.

The mean hazard change score was -11.68 (*sd*=8.69).

    Parent Infant Interaction (PII). Parent infant interactions were measured using

the Infant Planned Activities Training (IPAT) Checklist. In this module, parents were

assessed on four primary behaviors: (1) looking; (2) touching; (3) talking; and (4)

smiling. The home visitor observed the parent-child interaction and assigned a 'check,'

'check plus,' or 'minus.' The 'check plus' indicated that parent used the technique

consistently and with ease throughout the entire interaction, as appropriate. The 'check'

indicated that the parent used the technique, but needed improvement in consistency or

competency. The 'minus' indicated that the parent failed to use the technique.

    The IPAT was delivered as a pre-intervention baseline assessment and then as a

follow-up post-intervention assessment, after the module was delivered. A total

parenting mean skill score was derived by dividing the total items scored as a 'check' or

'check plus' by the total number of items scored, excluding any items that were scored as

'n/a.' Parenting skill acquisition was computed as the difference between baseline

parenting mean skill and post-intervention parenting mean skill.

    Parenting mastery acquisition was also measured. Parents were considered as

having mastery on technique when a 'check plus' was scored. A mean parenting skill

mastery score was calculated by dividing the number of techniques that received a score

of 'check plus' divided by the total number of items scored. The pre-intervention mean

PII score was 0.88 (*sd*=.13). The post-intervention mean score was 0.97 (*sd*=.09). This

resulted in a mean PII behavior change score of 0.09 (*sd*=.12). Mastery scores were

calculated as a baseline score and post-intervention score. Mastery skill acquisition

change was calculated as the difference in baseline and post-intervention mastery scores. PII mastery mean scores were calculated to be 0.19 (*sd*=.32).

Parent-Child Interaction (PCI). Parent child interactions were measured using the SafeCare Child Planned Activities Training Checklist (CPAT). In this module, parents were assessed on ten behaviors (1) preparing in advance; (2) explaining the activity in advance; (3) explaining the rules and consequences; (4) incidental teaching; (5) physical interaction; (6) giving choices to the child; (7) using labeled praise; (8) ignoring minor misbehavior; (9) provides consequences; (10) wrap-up and feedback. The home visitor observed the parent-child interaction and assigned a 'check,' 'check plus,' or 'minus.' The 'check plus' indicated that parent used the technique consistently and with ease throughout the entire interaction, as appropriate. The 'check' indicated that the parent used the technique, but needed improvement in consistency or competency. The 'minus' indicated that the parent failed to use the technique.

The CPAT was delivered as a pre-intervention baseline assessment and then as a post-intervention assessment, after the module was delivered. Pre-intervention PCI scores were calculated and resulted in a mean score of 0.62, (*sd*=.24). Post-intervention mean scores were 0.86 (*sd*=.17). A total parenting mean skill score was derived by diving the total items scored as a 'check' or 'check plus' by the total number of items scored, excluding any items that were scored as 'n/a.' Parenting skill acquisition was computed as the difference between baseline parenting mean skill and post-intervention parenting mean skill. The mean PCI change score was .25, (*sd*=.22).

Parenting mastery acquisition was also measured. Parents were considered as having mastery on technique when a 'check plus' was scored. A mean parenting mastery

skill score was calculated by dividing the number of techniques receiving a score of

'check plus' divided the total number of items scored. Mastery scores were calculated

pre-intervention as a baseline score and post-intervention. Mastery skill acquisition

change was calculated as the difference in baseline and post-intervention mastery scores.

Mean PCI mastery scores were calculated and resulted in a score of .14, (*sd*=.29).

Statistical Analysis

Statistical analysis was performed using SAS 9.2 to determine if measures of

fidelity were related to parenting skill acquisition. Data was comprised of two separate

data sets from the same grant project, *Implementation SafeCare to Prevent Child*

Maltreatment Underserved Populations. Dataset one contained information about the

home visitors that participated in this implementation and included data related to each

individual home visitor, including all fidelity measurements. Dataset two contained data

for each family that was part of this data set. This dataset included the parenting

outcomes measures. The data were queried using Proc SQL to pull the variables of

interest and merged to create a dataset that included all instances in which measurements

of home visitor fidelity and family outcomes existed.

Data were examined for frequency and distributions. Pearson's correlations were

calculated for each fidelity measure and each behavior change measure. PCI and PII

behavior changed were assessed as mean behavior change as well as mastery behavior

change.

Simple correlations between fidelity measures and behavior change scores were

examined first. Next regression models were conducted to examine whether fidelity

scores predicted behavior change scores, while controlling for other potentially important

provider-level predictors of family behavior change. Finally, behavior change scores

were combined into a single metric by standardizing scores and taking the mean across

clients (this was done to bolster sample size for analyses because of missing data for each

analysis). This standardized mean behavior change was correlated with overall fidelity.

Results

 Fidelity and behavior change scores are displayed in Table 3. Mean fidelity

scores overall, and for each module were very high, ranging from 92.16-92.58. The

health fidelity mean was 92.44 ($sd = 5.57$); safety was 92.31 ($sd = 4.96$); PCI was 92.44

($sd = 5.57$); and, PII was 93.21 ($sd = 5.56$). Mean fidelity for all metrics was 92.44 with

a standard deviation of 4.81.

Means were also computed for behavior change. Health behavior mean change

was 3.51 with a standard deviation of 1.51. This indicated an increase of 3.5 responses

on the health vignettes. Safety-hazard mean change was -11.68 ($sd = 8.69$) indicating a

reduction of almost 12 hazards per room).   Mean PII change was 00.85 with a standard

deviation of 0.30. This indicated an improvement of 8.5 percentage points in the parent-

infant interaction.   PII mastery change had a mean of 0.19 with a standard deviation of

0.32, or an improvement of 19 percentage points in the mastery (or check-plus) level of

parent-infant interaction. Mean PCI change was 0.25 ($sd = 0.30$), indicating an

improvement of 25 percentage points parent-child interaction skills. Mean PCI mastery

change was 0.14 ($sd = 0.29$), indicating an increase of 14 percentage points the mastery

(check-plus) level of parent-child interaction.

Next, the simple correlations between fidelity and behavior change were

examined. The relationship between overall fidelity, as well as module specific fidelity,

was investigated using Pearson's r correlation analysis.

The correlations between the overall fidelity measure and each behavior change were computed. Correlations ranged from r = -0.347 to r = .330, but none were statistically significant. Next we examined the relationship between the module specific fidelity scores and behavior change in that module. None of the correlations were significant: for PCI r = .048; PII r = .15, Health r = -.23, Safety r = -.15, all p's > .05.

Behavior change was combined into a single metric by computing standard behavior change scores, or Z scores, for PCI, PII, health, and safety change (safety scores were multiplied by -1 as the scale for safety was reversed compared to the other behaviors). These variables were averaged to form a single behavior change metric. The purpose was to maximize sample size for regression modeling; many participants had behavior change scores for only one or two modules. Correlational analyses indicated that the overall behavior change score was not related to overall fidelity, r=0.06, p=.58.

Regression models were conducted to examine whether fidelity scores predicted behavior change when adjusting for other provider-level predictors of family behavior change. The first modeled each of the behavior change metrics on mean fidelity, age, gender, attitude towards evidenced based practice, level of education, and race, but missing data prohibited interpretation of this model. To examine whether fidelity predicts behavior when controlling for other factors that may be predictive of family behavior, regression models were conducted controlling for age, sex, race, and work experience. In all regression models, fidelity remained a non-significant predictor (p > .05).

Discussion

The purpose of this study was to assess the relationship between measures of fidelity and measures of parenting behavior change in this implementation of SafeCare. These findings provide additional understanding of fidelity in this implementation of SafeCare. In this study we found no significant relationship between fidelity and parent outcomes.

There are many possible reasons for the failure to find a statistically significant relationship between fidelity and behavior change. One reason is that there is no "true" relationship between provider and fidelity—that provider fidelity has no impact on parenting outcomes. Fidelity and outcomes have been linked in many interventions; however, this is the first attempt to examine the relationship between provider fidelity and parent outcomes in the SafeCare model. Thus, it is possible that, in this model, there is no relationship.

Another possibility for null findings is that there was not enough variability in the measure of fidelity. Overall, fidelity scores were very high and had very small standard deviations. This resulting variability may be too restricted to show any effect. In additional, virtually all fidelity scores were above 85%, the cutoff for 'adequate' fidelity as determined by the NSTRC (albeit, this is an arbitrary figure).

An additional explanation for null findings in this data could be that the measures used to quantify fidelity and behavior are less than optimal. The fidelity checklist includes between 28-29 different items. It is possible that all of these fidelity items do not contribute equally to impacting family behavior change. For example, the presence of "Other Materials" may not be as great a contributor as "Communicates, empathy,

warmth, understanding." Detailed scores on fidelity checklists were not available to test this hypothesis, but it is a direction for future research. Related, it is also possible that the measures for parenting behavior, not the measure of fidelity, could be flawed. For example, parents are given "credit" for being prepared in advance when a session begins and the supplies are in place. It could be that the parent actually did not "prepare in advance" but that the toys were never put away to begin with. However, given this data, it is not possible to assess.

Another possible reason for lack of significant findings could be attributed to the collapsing of data. In this analysis behavior change was collapsed over parents. That is, parenting outcomes were analyzed as means and not individual measures of occurrence. By combining the parenting measures per parent there is some individual behavior change measure that may be "lost" in the average. This analysis examined the total mean behavior change per module. For example, it is possible that the 4th assessment of parent-child interaction may be, on average, higher that the first measure for most parents. This analysis could not account for that possibility.

Furthermore, fidelity scores were collapsed at the provider level. That is, regardless of how many different families each provider served, and had fidelity scores for, those were collapsed into mean scores per provider. The result is that each provider contributed equally to the analysis. However, in "real life" it may be that some providers provided SafeCare once and some contributed 30+ scores. It is logical that the providers with more fidelity scores are more successful with SafeCare; however, this analysis does not entertain that.

Lastly, it is possible that there may be some bias at the provider level. The provider who delivered the intervention to a family was assessed for fidelity in that delivery. That same provider was responsible for scoring the families behavior change. It is possible that some providers have more stringent standards. If this were true, that could result in those providers scoring very high on fidelity, but also being very stringent scorers of the parents.

Limitations. There are a number of limitations with the data analyzed. The primary limitation is sample size. The number of observations included in parenting behavior measures ranges from 33-56. Additionally, there was little variability in the main dependent variable, fidelity.

In addition to small sample size, this data may not be generalizable to all parents who receive SafeCare as an intervention. Despite these limitations, this study extends our understanding of fidelity in implementation.

Implications and Future Directions.

By understanding fidelity in this implementation we can begin to think about successful components of broader implementation of this behavioral parenting model. One future direction for research should be examining the measurement tool of this model. Future research should examine an item-by-item correlation and factor analysis of this tool. There exists the possibility that each item of this measure does not contribute equally to capture the core values of the model.

Overall this study begins the process of examining the role of fidelity in implementation of SafeCare. Additional work is needed to assess this relationship with larger sample sizes and possible moderators in this relationship.

Table 1. Home Visitor Demographics

Home Visitor Demographics	N	%	Total
Age, years			
Mean (sd)	42.57 (10.89)		
Range	25-69		
Sex			134
Male	14	10.45	
Female	120	89.55	
Missing	44		
Race			130
African-American	81	62.31	
Asian American	1	0.77	
Caucasian	42	32.31	
Other	6	4.62	
Missing	48		

Table 2. Family Demographics

SafeCare Parent Demographics	N	%	Total
Age, years **Median (IQR)**			
	25 (20-30)		
Sex			226
Male	12	4.80%	
Female	238	95.20%	
Missing	62		
Race			246
African-American	138	56.10%	
Caucasian	90	36.59%	
Other	18	07.03%	
Missing	66		
Number of Children			235
1	90	38.30%	
2	65	27.66%	
3	37	15.74%	
4	22	9.36%	
5	10	4.26%	
6	11	4.69%	
Missing	77		
CPS History			151
No History	45	29.8%	
Prior History	31	20.53%	
Open Case	75	49.67%	
Missing			
Marital Status			226
Married	68	30.09%	
Single	158	69.91%	
Missing	86		

Table 3. Fidelity and Behavior Change Characteristics

Fidelity and Behavior Descriptives			
Variable	**N**	**Mean**	**SD**
Mean Fidelity	166	92.44	4.81
Health Fidelity	78	92.58	5.57
Safety Fidelity	59	92.31	4.96
PCI Fidelity	85	92.16	4.61
PII Fidelity	60	93.21	5.56
Health Change	48	03.51	1.51
Safety Change	33	-11.68	8.69
Mean PII Change	36	00.09	0.30
PII Mastery Change	36	00.19	0.32
Mean PCI Change	56	00.25	0.30
PCI Mastery Change	55	00.14	0.29

Table 4. Fidelity and Outcome Correlations

Fidelity and Outcome Change Correlations						
	Mean PCI Change	**PCI Mastery Change**	**Mean PII Change**	**PII Mastery Change**	**Health Change**	**Safety Change**
Mean Fidelity Sig. N	.010 .942 53	.038 .785 52	.164 .346 35	.064 .717 35	-0.073 .629 46	.330 .095 32
PCI Fidelity Sig. N	.096 .547 42	-0.100 .527 42	-0.347 .224 14	-.128 .664 14	-0.071 .731 26	.267 .284 18
PII Fidelity Sig. N	-0.221 .411 16	.307 .265 15	.155 .440 27	.120 .552 27	.135 .571 20	-0.126 .656 15
Health Fidelity Sig. N	-0.023 .090 32	.151 .411 32	.263 .262 20	-0.126 .598 20	-0.238 .168 35	.163 .436 25
Safety Fidelity Sig. N	.207 .332 24	.214 .316 24	.094 .719 17	.035 .895 17	-0.091 .681 23	-0.157 .496 21

*significant at the p<.05

Table 5. Regressions of Demographics on Standardized Behavior Change

Standardized Behavior Change   N=56

Variable	B	SE B	t	P
Intercept	3.11	3.14	.99	.33
Mean Fidelity	-0.03	.03	-0.97	.34
Age	0.003	.22	-0.66	.77
Level of Education	-0.15	.22	-.66	.5151
Gender				
Female	-0.36	.37	-.39	.70
Male	0.00	.	.	.
Ethnicity				
African-American	-0.15	.65	-0.23	.82
Caucasian	-0.07	.66	-0.11	.91
Other	0.00	.	.	.
R^2			.03	
F			.45	.72

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