Published in final edited form as:
Child Youth Serv Rev. 2011 July ; 33(7): 1270–1279. doi:10.1016/j.childyouth.2011.02.022.

Use of a Parent Management Training Intervention with Urban Foster Parents: A Pilot Study

Sonya J. Leathers[a], **Jill E. Spielfogel**[a], **Lorri S. McMeel**[b], and **Marc S. Atkins**[a]
[a]University of Illinois at Chicago, Chicago, IL, United States
[b]University of St. Francis University, Joliet, IL, United States

Abstract

The development of effective interventions for foster children with behavior problems is essential given the consequences of behavior problems for children's placement stability and permanency outcomes. This article presents findings from a pilot study of an intervention providing parent management training (PMT) and support to foster parents in groups and home visits. The intervention was an adaptation of the KEEP (Keeping Foster Parents Trained and Supported) group intervention, provided in a large urban child welfare agency serving predominantly African American foster parents. The study used an intent-to-treat design, with 25 foster parents of 31 children (age 4–12) in specialized foster care assigned to either an intervention or treatment as usual control group. Longitudinal outcomes were analyzed using random effect regression models. Over time, children's behavior problems were significantly lower in the intervention group relative to the control group, and the effect of the intervention was partially mediated by parents' understanding of how to appropriately use the intervention parenting skills. These results provide support for the effectiveness of KEEP with urban foster children with significant behavior problems.

Keywords

Evidence-based practice; Behavior problems; Mental health services; Foster parents; Foster children

Foster children have behavior problems at three to four times the rate of the general population of children, with 47% of children in care at least a year estimated to have externalizing CBCL scores in the clinical range (Burns et al, 2004). Despite this high level of need, surprisingly few mental health interventions have been studied in populations of foster children. A study by the Office of Victims of Crimes reported that only 1 of 24 mental health interventions for children who had been abused is effective. Sixteen had some empirical support for their efficacy, and one was considered potentially harmful (Saunders, Berliner, & Hanson, 2004). Further research is needed to develop effective interventions for foster children, particularly as the consequences of foster children's untreated mental health issues can be severe. Behavior problems account for a significant proportion of all unplanned moves from one foster placement to another (Chamberlain et al., 2006; James,

*Corresponding author. 1040 W. Harrison St., Chicago, IL, 60607. Tel. 1 312 996 8512. sonyal@uic.edu.

Landsverk, & Slymen, 2004; Barth et al., 2007), and each of these moves involves additional losses and discontinuities in children's caregiving and schooling. Over time, these disruptions can lead to increased behavior and school problems (Newton, Litrownik, & Landsverk, 2000; Stone, 2007; Altschuler, 2006). There is a critical need to develop effective mental health services for foster children to interrupt this trajectory.

The research reported in this article focused on this issue with a pilot study of a parent management training intervention (see Price et al., 2008) adapted for urban, predominantly African American foster families caring for children with behavior problems.

Development of Mental Health Interventions for Foster Children

Several factors support the development of unique interventions for foster children. Experiences of abuse, neglect, poverty, parental substance abuse, and multiple caregivers lead to complicated presentations of symptoms and needs that may undermine the effectiveness of evidence-based interventions developed for children in intact families. Child welfare systems are also subject to pressures related to high caseloads, high staff turnover, and a continual influx of new cases, creating stressed, difficult work climates that interfere with the sustained use of effective interventions (Glisson & Green, 2006). As case managers may be more concerned with "regulating" their cases than providing emotional support and information to clients, foster parents often feel unsupported and report experiencing greater parenting stress (Leathers et al., 2009), creating an additional barrier to effective treatment. Furthermore, mental health services for foster children are characterized by administrative barriers (Raghavan, Inkelas, Franke, & Halfon, 2007), low caregiver involvement (Zima et al., 2000; Orme & Buehler, 2001), and reliance on individual child treatment based on attachment theory with no empirical support (Barth et al., 2005). In many service systems, foster parents rarely participate in services, despite foster children's high prevalence of disruptive behavior problems, which require caregiver involvement for effective treatment (Landsverk, Burns, Stambaugh, & Reutz, 2009; Lochman, Salekin, & Haaga, 2003; McNeil, Capage, Bahl & Blanc, 1999).

Despite these challenges, child welfare systems also present unique opportunities for the development and support of effective mental health services. Child welfare system involvement clearly increases children's access to mental health services. Nationally representative data from the National Survey of Child and Adolescent Wellbeing indicate that about 75% of foster children with significant mental health symptoms receive at least one mental health session (Leslie et al., 2005). Additionally, the direct care of foster children is regulated by the foster care system, providing the opportunity to support systematically effective treatments that are administered by caregivers. Foster parents are required to receive ongoing training that is federally reimbursable under Title IV-E and states and child welfare agencies are able to regulate the amount and type of training that foster parents are required to complete. Use of the mandate to promote positive care through foster parent training could support effective treatment of behavior problems, in particular, as the interventions with the most support for the treatment of behavior problems involve changing parent-child interactions.

Unfortunately, these opportunities to support effective service models have not been optimized in most service systems. Notably, many of the most commonly used foster parent training programs result in little to no differences in parenting behavior (Lee & Holland, 1991; Puddy & Jackson, 2003; Dorsey et al., 2008). Effective parent training models could potentially reduce behavior problems, increase positive exits from foster care (Price et al., 2008), and lead to greater foster parent satisfaction with parenting (Fees et al., 1998). The

present study examined the potential for an evidence-based foster parent training program to positively influence foster parent-child interactions and reduce child behavior problems.

Previous Studies of Parenting Interventions Adapted for Foster Parents

Several studies have focused on adapting evidence-based interventions to address foster children's behavior problems (Linares, Montalto, Li & Oza, 2006; Sanders, Cann & Markie-Dadds, 2003; Nilsen, 2007). Parent Child Interaction Therapy (PCIT) involves intensive individual vivo coaching in specific parenting skills in 10–16 sessions (Herschell, Calzada, Eyberg, McNeil, 2002), with co-therapists coaching parents as they interact with their child, typically through a one-way mirror. One study found it to be effective in decreasing risk for child maltreatment (Chaffin et al., 2004) and another study found that it decreased child behavior problems three to six years after treatment (Hood & Eyberg, 2003).

When implemented with foster parents in a large, uncontrolled study, outcomes for foster children were comparable to outcomes for children living with their biological parents, with a significant decrease in behavior problems occurring over time for both groups (Timmer, Urquiza, & Zebell, 2005). The reduction in children's behavior problems was slightly less in foster families than in intact families, but this difference only approached significance. A smaller uncontrolled study with foster parents in a 2-day workshop also demonstrated that the behavior problems of foster children dropped to a non-significant range on the Eyberg Child Behavior Inventory a month after receiving the training (McNeil, Herschell, Gurwtich & Clemons-Mowrer, 2005), providing additional support for the efficacy of PCIT for foster children.

Adaptations of the Incredible Years (IY) intervention (Webster-Stratton, 1994, 1998, 2001) have also been studied with foster parents. In a pilot study that included 18 foster families and children (Nilsen, 2007), strong to moderate intervention effects were found for the conduct, aggression, and externalizing subscales of the CBCL (Cohen's *d*s, .82, .61, and .68, respectively). This study was limited by the small sample and use of a comparison group that was formed based on the foster parents' inability to attend the intervention group, which might have lead to a nonequivalent comparison. However, the large effect sizes support continued study of the intervention with larger samples. In another experimental study of IY that included a diverse sample of 128 foster and biological parents and added a co-parenting component (Linares et al., 2006), the intervention effect sizes on externalizing behavior problems were small at the end of the intervention and at a 3- month follow up (Cohen's ds, .14 and .36, respectively, n.s). The IY intervention was developed for a wider age range of children, with versions with established effectiveness for children ranging in age from 0 to 12, which is an advantage over PCIT, which was developed for younger children. However, the lack of a strong effect in the one larger study that has been completed suggests that more adaptations of this intervention might be needed to meet the treatment needs of foster children.

A third intervention, the Triple P Positive Parenting Program, (Triple P; Sanders, 1999) has been effective for treating a diverse range of clinical problems, including depression in mothers with disruptive children (Sanders & McFarland, 2000) and prevention of maltreatment involved with Child Protective Services (CPS) (Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009). Results from a pilot study with CPS-referred parents also suggested that elements of the Triple P training were compatible with the child welfare structure, but this intervention has not yet been adapted for use with foster parents (Petra & Kohl, 2010).

Finally, Keeping Foster Parents Trained and Supported (KEEP) was developed by Chamberlain specifically for foster families based on her more intensive treatment foster

care model, Multidimensional Treatment Foster Care (MTFC; Fisher & Chamberlain, 2000). MTFC is a professional foster parenting model that is effective in reducing adolescents' serious behavior problems and arrests through an intensive behavioral program implemented by trained foster parents (Chamberlain, Fisher, & Moore, 2002). Two distinct interventions have been developed on the basis of MTFC. The Early Intervention Foster Care Program, an adaptation for pre-school age children, is an effective intervention that reduces placement disruption among high-risk pre-school age foster children (Fisher, Burraston, & Pears, 2005). The KEEP model was developed as a preventative model for use with elementary school age foster children and provides training and demonstration of parent management training skills in a group format, with a focus on developing skills and providing support to foster parents.

Similar to IY and PCIT, the intervention's primary theoretical basis is behavioral. It begins with increasing effective praise and positive interactions, and then focuses on appropriate discipline techniques. Individualized behavior charts are created for each foster parent and ongoing support is provided in their use. The group leader makes home visits when a foster parent enrolled in the group is unable to attend that week. KEEP was first studied in a sample of 72 children in three counties in Oregon, and was found to reduce child behavior problems and placement disruption as compared to services as usual (Chamberlain, Moreland, & Reid, 1992). Chamberlain and colleagues then conducted a large study of 700 racially diverse foster parents in San Diego County and found it to be effective in reducing problem behaviors as measured by the Parent Daily Report and improving placement outcomes when placement stability and reunifications were combined (Chamberlain et al., 2008; Price et al., 2008). In this study, no significant differences in effectiveness across different racial groups (white, African American, and Latino) were detected (DeGarmo, Chamberlain, Leve, & Price, 2009), supporting its use with diverse groups of foster parents. Additionally, parental use of a higher proportion of positive reinforcement at termination mediated the effect of the intervention on behavior problems at termination, suggesting that changes in parenting practices led to the reductions in behavior problems (Chamberlain et al., 2008).

The Present Study

In this study, Chamberlain's KEEP intervention was adapted for use in an intent-to-treat study in a large urban child welfare agency serving predominantly African American foster parents. We added material related to school achievement and modified some components to meet the needs of children with a moderate to severe level of behavior problems placed in specialized foster care. This article presents results on children's emotional and behavioral outcomes.

We were particularly interested in whether the intervention would be effective with urban African American foster parents caring for children with clinically significant behavior problems because parent management training was primarily developed with Caucasian families and previous research has suggested that parent training could require modified engagement practices or be less effective with economically disadvantaged families than with the majority population (Kazdin, 1997; Lundahl, Risser, & Lovejoy, 2005; Sanders & Bor, 2008). Because parenting behavior and values vary by culture, parent-mediated treatments that are effective with Caucasian populations may not be as effective with minority populations (Forehand & Kotchick, 1996; Assemany & Macintosh, 2002). Given that African American children are disproportionately represented in foster care (Hill, 2007; U.S Department of Health and Human Services, 2008), and that they enter care at a higher rate and stay longer than white children (Harris & Courtney, 2003), it is essential to

understand whether mental health interventions developed in predominately Caucasian populations are effective with African American families.

In addition, for urban parents, negative attitudes about clinic-based services also restrict access and follow through with services (McKay, Atkins, Hawkins, Brown, & Lynn, 2003; Owens et al., 2002), suggesting that services should be provided in flexible ways that depart from a clinic-based model. Consistent with this perception, feasibility research that we conducted before initiating the intervention suggested that case managers believed that few of the foster parents served by the agency would voluntarily attend a group to receive the intervention (Leathers et al., 2009). To address this possibility, we developed a stand-alone home visiting protocol based on the manualized KEEP intervention which allowed us to provide the intervention to a greater proportion of foster parents. To create an intent-to-treat intervention group, all foster parents who consented to be interviewed were included, without any requirement that they participate in the intervention.

Our central hypothesis was that intervention foster parents would report fewer child behavior problems over time relative to control foster parents. Additionally, we expected positive parenting practices (praise, consistency, use of mild discipline, and less yelling and hitting) and the foster parents' understanding of how to appropriately use the intervention parenting techniques to mediate the intervention effect, indicating that the intervention reduced behavior problems through changes in parenting practices.

Methods

Overall Design

A single large child welfare agency was selected as the research site based on the size of its caseload in the Chicago metropolitan area. The project's budget did not allow for inclusion of more than one agency, and as the largest child welfare agency in the city, this agency provided the opportunity to pilot test the intervention in a single site. As throughout the state, intake in this agency is determined through a combination of random case assignment created during a case management performance-based contracting initiative in 1997 (see Kearney, McEwen, Bloom-Ellis, & Jordan, 2010), and the availability of a foster parent within a particular agency to accept placement of a child with special needs. At this agency, the standard procedure is to assign incoming cases to casework teams based on openings that occur as children leave the agency. This provides the opportunity to create a semi-experimental design by comparing outcomes across the specialized foster care teams, as this procedure results in caseloads with a comparable severity of need across the teams. On average, these teams provide the same services and have no differences in their permanency outcomes for children in the study's age range. Overall, very few direct services are provided to foster parents by the case manager other than shorts visits focused on the child's wellbeing 1–3 times each month. An ongoing foster parent advisory and support group meets monthly and is open to all foster parents, but this resource was used by few foster parents during the study period.

In this study, eligible children from two specialized foster care teams were assigned to a treatment-as-usual control group (n = 13) and children from another specialized foster care team were assigned to the intervention group (n = 18). The difference in the number of children eligible in each of the case management teams was due to two of the teams serving a greater number of children who did not meet the age criteria. In particular, one team included case managers who primarily provided services in a teen parent program. Assignment of children to groups based on casework teams was necessary rather than simple random assignment because intervention caseworkers were also trained in the intervention. Contamination of the control group could occur if caseworkers had cases in both the

intervention and control groups. A total of 30 foster parents were eligible for the study and 25 (83%) of those eligible participated, with 15 in the intervention group and 10 in the control group. Foster parents who consented to participate did not have to commit to receiving any services; they were told that services would be offered, but they could choose to refuse services and remain in the study. Foster parents were paid $40–50 to complete each interview but they were not reimbursed for their time or travel expenses to attend groups. Consistent with an intent-to-treat design, data for all children were included in the analyses regardless of their foster parents' level of participation in the intervention.

Foster parents and caseworkers were interviewed four times over 12 months (baseline, 3 months after baseline, 6 months after baseline, and 12 months after baseline). The intervention consisted of 16 sessions of 90-minute foster parent groups held weekly at an agency site in the neighborhood of most of the attending foster parents, or up to 16 home visits that covered the same material delivered in a manualized protocol developed for this study. Children in both the intervention and control groups received services as usual, which consisted individual psychodynamic therapy throughout the study for the majority of the children. The outcome measures examined across time included externalizing and internalizing behavior problems, with proximal outcomes of parenting practices expected to mediate any changes that occurred over time.

Selection Criteria

To create a sample that included as wide a range of foster children as possible, the only inclusion criteria for the study were (1) placement in a foster home that received a "difficulty of care" rate for the selected child; and (2) age 4 to 12 at the time of selection. To receive a difficulty of care rate, the agency must apply for a review of the child's behavioral, medical, and developmental needs. Although the majority of children whose foster parents receive an enhanced rate have significant behavioral needs, in some cases these children might have primarily medical or developmental needs. After identifying all children who met the inclusion criteria, their current foster parents were contacted about the study. No inclusion or exclusion criteria were used to enroll foster parents.

Description of the Sample

Children ranged in age from 4 to 12, with a mean age of 8.58 years. Of the 31 included children, 30 were African American and 1 was Caucasian (Table 1). More than half were boys. Twelve of the children were biological siblings, with 10 of these children placed together in pairs. Additionally, two additional unrelated children were placed in the same home. We were unable to statistically control for the potential effects of clustering within homes because of the small sample. Instead, we averaged all data for the six pairs who were placed together and used these averages rather than individual-level data in all multivariate analyses, resulting in a sample of 25 single or paired children. This approach reduces the sample size, but ensures that correlated observations have not lead to biases in the results.

Foster parents ranged in age from 28 to 64, with a mean age of 49 years. Six were married or cohabitating with a long time partner and 19 (76%) were currently single parents. Three had not completed high school or a GED, 5 had a high school diploma or a GED, 2 an associate's degree, 10 (40%) some college, and 4 had a bachelor's degree. They were predominately African American (96%), with just one who was Caucasian. Two children, one African American and one Caucasian, were placed with foster parents who were of a different race. Thirteen families resided in Chicago and 12 resided outside of the city limits.

Description of the Intervention and Adaptations

The original KEEP intervention consists of a series of 90-minute groups led by a paraprofessional facilitator who is assisted by a co-facilitator. The 16 sessions include information on how to increase cooperation, effective encouragement, incentive charts, discipline strategies (timeout, privilege removal, and work chores), avoiding power struggles, and pre-teaching. One session covers "super tough" behaviors, including bedwetting, lying, stealing, and inappropriate sexual behaviors, and one session covers ways to promote school success. A detailed description of the intervention and the basis for its development can be found in Chamberlain, Fisher, and Moore, 2002, and Price, Chamberlain, Landsverk, and Reid, 2009.

In this project, adaptations to the intervention included (1) the addition of more content on assisting children academically; (2) specification of DVD clips from *Off Road Parenting* and foster parent role plays for each parenting technique; and (3) use of the intervention as a stand-alone home visiting protocol. As in the original KEEP model (Price et al., 2009), foster parents were called each week to ask how the week was going for their child. The Parent Daily Report measure was administered to ask about specific behavior problems and the foster parents' stress level in response to any problems that were reported. Foster parents were provided with support and at times the next group session was modified to address needs that were discussed in these calls.

The group was led by a primary facilitator who had a master's degree in education and a co-facilitator who had a master's degree in an unrelated field. Neither facilitator had a mental health background or any knowledge of parent management training before taking the position as a group facilitator, but their advanced training in another field might have enhanced their skill set as facilitators.

To assess the need for adaptations to the intervention based on culture or its use in an urban context, we conducted focus groups with foster parents, agency case managers, and therapists to discuss the intervention. After reviewing the session topics and a brief description of each topic, all participants endorsed the relevance of the topics for foster parents. As there were no substantive revisions suggested, no specific cultural adaptations were made to the content of the intervention. However, both facilitators were African American, and the primary facilitator had grown up and was currently living near the neighborhood where most of the foster parents lived. The facilitators were encouraged to discuss any cultural issues that came up during sessions, and at times discussions did focus on cultural differences in parenting. Although we did not specifically test whether these conversations facilitated greater use of the intervention, these conversations might have addressed ambivalence about use of techniques such as time out that initially were viewed by some foster parents as inconsistent with African American parenting.

Academic support—In this project, three sessions focused on assisting children academically were added in place of the original single session focused on homework support. This material was added due to the significant concerns about foster children's academic outcomes. Results from a meta-analysis suggest that 33% of foster children are retained at least one grade, and 24% have been expelled or suspended from school at least once (Scherr, 2007). The school content was adapted from materials used in an ongoing school-based study in the Chicago Public Schools (Atkins et al., 2008) and included structured homework support, school home notes, and dialogic reading, which was used flexibly based on the child's age and needs. Academic outcomes were limited in this study as the intervention began in the summer and some children were not in school due to their age or changing school placements.

Use of DVD clips and foster parent role plays—As in the original intervention, DVD clips from *Off Road Parenting* (Pacifi, Chamberlain, & White, 2002) were used to demonstrate specific behavioral techniques such as positive praise and time out. In our adaptation, we specified particular clips for use in each session and added role play exercises after each DVD clip. Foster parents began each session with an informal discussion of the week and their children's behaviors, and then the facilitator presented structured material and DVD clips on the group's topic for about a half hour. Discussion and role play of the material then followed the facilitator's presentation.

Stand-alone home visiting protocol—One concern raised in the focus groups with agency staff and therapists was that few foster parents would be able to attend a group every week to receive the intervention. To increase access, the intervention was adapted into a home visiting format. In the original KEEP intervention, the group facilitator made home visits to foster parents who were unable to attend the groups, but foster parents could not receive the entire intervention in home visits. In our study, foster parents who were unable to attend groups due to a schedule conflict, lack of interest, or distance from the agency had the option of receiving the entire intervention through home visits. Six foster parents received the intervention solely or primarily through home visits. Changes to the manualized KEEP intervention for the home visiting protocol included editing material for presentation to an individual parent, changing wording to simplify its presentation, combining some sessions, and deleting some material to shorten the overall length of some sessions. For each session, the core treatment components were identified (e.g., correct way to do time out; barriers to using time out; how to overcome barriers to use) and the presentation of these components was retained as much as possible. In the home visits, the visitor used the same DVD clips and handouts as in the group. Home visits were made by the group's primary facilitator and another home visitor (the second author) who has a master's in social work. She had no exposure to parent management training before beginning her position.

Training and Fidelity Monitoring

The group facilitator received approximately 30 hours of training prior to beginning the groups. Training included content on basic behavioral principles, the basis for parent management training, parent management training skills, group process, and how to manage group dynamics. The co-facilitator received 12 hours of training that included an overview of the same content. Additionally, before each of the first eight groups, the facilitators met with the principal investigator for consultations, as well as to role play the upcoming group with research assistants so that the facilitators could practice the entire session. The home visitor attended all formal trainings provided to both the facilitators.

All of the groups except one in which there were technical difficulties were audio recorded so that fidelity to the intervention could be monitored. The PI listened to the recording and noted any discrepancies between the presentation and related discussion and the manual's content. Each week minor suggestions were made to the facilitators to increase fidelity to either the manual or basic behavioral principles during the hour long group supervision with the PI. Weekly consultation meetings also focused on topics such as how to encourage foster parents to use specific techniques, how to create effective behavior charts, and how to address common issues such as a child lying or hoarding food. Because of the level of mental health needs in the sample, meetings included specific discussion of the use of the intervention with specific children and foster parents.

Treatment as Usual

Treatment as usual consisted of individual psychodynamic child treatment with no involvement of foster parents. All children, including those in the intervention group, were

involved in individual treatment, and most children (84%) received therapy on a weekly basis, as required for children placed in specialized foster care at this agency. The project did not include any type of coordination of services with children's individual therapists.

Measures

All measures were administered four times during the course of the study. Foster parents provided information about the child's behavior, medications that the child was taking, their parenting stress, and their parenting behaviors. The caseworker provided information about the mental health and school services that the child was receiving.

Child Behavior Problems—To assess child behavior problems, foster parents completed the Child Behavior Checklist (Achenbach, 2001). Although the primary outcome measure in the study was the externalizing subscale, the internalizing subscale was also analyzed to explore whether the intervention had an affect on internalizing behavior as well.

Parenting Behavior—Foster parents completed the Alabama Parenting Questionnaire (APQ; Shelton, Frick, & Wootton, 1996) to measure parenting behaviors. The APQ is a 42-item measure with six subscales that include involvement, positive parenting, poor monitoring/supervision, other discipline practices, inconsistent discipline, and corporal punishment. Previous studies have found this measure to differentiate between the parenting of children with disruptive behavior disorders and the parenting of children without a behavior disorder (Shelton et al., 1996.) This study used the telephone version of the measure, which asks parents the number of times in the past three days that a particular parenting behavior occurred. Some of the items (e.g., number of times praised the child) had high outliers, with the majority of parents reporting four or fewer times and 2–3 parents reporting this occurred more than 50 times, resulting in highly skewed subscales. To address this, all items were re-coded with all responses that were over 5 coded with a 5. In this study, items from the APQ were used to create subscales that were specific to the intervention targets, which included increasing encouragement of positive behaviors (*praise*), decreasing inconsistent discipline (*inconsistency*), increasing use of specific discipline techniques including timeout, privilege loss, and work chores (*project discipline*), and decreasing yelling and corporal punishment (*yelling and hitting*). The range for each of these measures was potentially from 0–5.

Praise included a subset of five items included in the positive parenting subscale and had good internal consistency (Cronbach's alpha = .83 at time 1). *Inconsistency* included five items from the inconsistent discipline subscale and had lower but adequate internal consistency (Cronbach's alpha = .65 at time one). *Project discipline* was created by summing the items related to timeout, privilege loss, and work chores. Use of these specific discipline techniques were not expected to be correlated, as a foster parent might use one technique successfully and so not need to use a different technique. However, because we expected overall use of one or more of the techniques to increase, we summed these items to create a single index. As expected, the internal consistency of this measure was low (Cronbach's alpha = .20). Similarly, the four items included in *yelling and hitting* were not expected to be correlated, given that these items had a very low frequency and parents might be more likely to report yelling than hitting, as corporal punishment by foster parents is prohibited. These items were summed to create an index to test the hypothesis that the intervention would decrease hitting, yelling, and harsh types of discipline that were not supported by the intervention.

Parent Understanding of the Intervention—The interventionists assessed understanding of the intervention at the end of the intervention for each parent in the

intervention group by rating the parent's understanding of how to appropriately use six different techniques, including encouragement, behavior charts, timeout, avoiding power struggles, and privilege removal. An anchored scale was used to rate understanding of each technique separately. These ratings were then averaged to create a single scale. The internal consistency of this scale was high among intervention parents (Cronbach's alpha = .91). Because interventionists had no contact with control group parents, there was no way to assess their understanding of the intervention, but given the level of understanding that foster parents had at the start of the intervention, it was assumed to be low. Thus, all parents in the control group were assigned the lowest value on the scale, indicating minimal understanding of how to appropriately use the intervention techniques.

Intervention dosage—The number of sessions of the intervention completed was calculated by counting the total number of sessions that were covered with the foster parent. For foster parents who completed the home visits, in some cases more than one session was covered during a home visit. In these cases, we calculated the number of sessions covered rather than the number of home visits.

Mental Health Services and Psychotropic Medication—Mental health services and use of medications for mental health disorders were measured using the Services for Children and Adolescent Parent Interview (SCAPI; Jensen et al., 2004), which was completed by caseworkers. Because all children received nearly the same mental health services (individual child treatment), mental health services were not included as a control variable. However, some children were not taking medication for all or some part of the study, and so this variable was used as a control variable in all initial multivariate analyses.

Data Analysis

Mixed-effects regression models (Hedeker & Gibbons, 2006; Hedeker, Gibbons, & Flay, 1994) were used to test differences in outcomes for the experimental and control groups over time. Mixed-effects models, also called random effects regression models and hierarchical linear models, provide two key advantages over other methods of analysis. First, these models do not rely on endpoint analysis; instead, they estimate both group and individual trend lines over three or more time points which allows for the estimation of changes over time and nonlinear effects. Additionally, random effects models use data from all individuals and are less restrictive regarding missing data than other longitudinal methods (Gibbons et al., 1993). Specifically, mixed regression models are designed for use with data with "ignorable" nonresponse, which includes covariate-dependent missing data and missing data related to known outcomes. This is another important consideration in this study given the potential for missing data for children who are lost to the study due to reunification and other moves.

We used PROC MIXED in SAS to test between-group differences in the individual growth curves of each of the outcomes through the third point of data collection. Measurement at each of these points occurred at approximately even intervals and so time was coded 0–2. The fourth data point could not be used in the regression analyses because of excessive missing data, so these data are only presented descriptively. Missing data occurred primarily due to reunification, the child's move to a different placement, and difficulty with scheduling an interview time; no overt refusals to complete interviews contributed to the missing data.

Results

Preliminary Analyses

Behavior problems—Children's level of behavior problems was high; 73% of the children had externalizing behavior problems in the clinical range at baseline. Forty-eight percent had internalizing problems in the clinical range. Externalizing behavior problems in the intervention and control groups were similar at baseline (M = 67.5, SD = 8.8, and M = 66.77, SD = 10.91, respectively), as were internalizing problems (M = 61.67, SD = 13.48, and M = 61.46, SD = 10.82). By the third time point, two months after the completion of the intervention, externalizing scores had diverged in the two groups (M = 61.38, SD = 10.48, and M = 69.17, SD = 5.6, intervention and control groups respectively; see Figure 1). Similarly, by the third interview, internalizing scores also were reduced in the intervention group, but not the control group (M = 52.38, SD = 11.59, and M = 59.33, SD = 11.22).

At the fourth time point, five months after the completion of the intervention for most children, loss of subjects due to reunifications, moves to new placements, and adoption resulted in too few children in each group (n = 6 and n = 11 in control and intervention groups, respectively) to reliably estimate level of behavior problems, but a slight increase in the average level of problems was observed. At this time point, level of externalizing behaviors was 62.27 (SD = 11.6) in the intervention group and 69.17 (SD = 5.6) in the control group; internalizing behaviors were 55.27 (SD = 11.88) and 59.5 (SD = 9.69) in each group.

Understanding of the intervention—Foster parents in the intervention group who participated in the intervention group were rated as having a level of understanding of 1.67 (SD = .43) on a scale that ranged from 0 to 2, indicating that the majority had a high level of understanding of how to use the intervention.

Parenting—At the start of the intervention, about half (48%) of the foster parents reported yelling at their foster child in the past three days. None reported slapping their child. Fifty-eight percent reported inconsistent parenting (such as when a child was given a consequence and the foster parent did not follow through). All reported praising the child at least once in the past three days, and more than half (61%) used discipline that included time out, privilege loss, or a work chore.

Intervention dosage and attrition—Five parents attended the group and six parents received the intervention through home visits. Parents in the intervention group received an average of 6 sessions of the intervention, with 4 parents (27%) receiving none of the intervention and one parent receiving all sessions. By the sixth session, the majority of the intervention techniques had been presented for the first time, including encouragement and effective praise, behavior charts, use of time out, privilege removal, work chores, and active ignoring. The four parents who received no services did not think that they needed the intervention, did not have time to receive them, or in one case, had too far a distance to travel to attend the group. Very little attrition occurred among foster parents who started the intervention. Among foster parents who began receiving services, only one foster parent dropped out of services. This foster parent attended the group just once, but was believed to be a better candidate for an individualized home visiting intervention due to her difficulty with the group format and her schedule conflicts. However, she had difficulty in finding time for the home visits, and received just part of the intervention through home visits although she stated that she was interested in receiving more. No other attrition occurred, although two of the six foster parents receiving home visits were only interested in receiving

some parts of the intervention and so received four or fewer sessions that covered the content that they were interested in.

Psychotropic medications and other services—Most children (80%) were taking psychotropic medications, including stimulants (60%); anti-psychotics, most commonly Risperdol or Abilify, (47%); and antidepressants (17%). Most (84%) were also in individual therapy.

Multivariate Analyses

Behavioral outcomes—Results from the mixed-effects regression analyses indicate that over time a significant decrease in externalizing problems occurred in the intervention group relative to the control group. At baseline, no significant difference was observed, but at each of the subsequent time points, an average decrease of 4.77 points was estimated for the intervention group (Table 2). Age, gender, and use of medication did not predict change in behavior problems and did not affect the results, and so were removed from the model. The intervention effect size on externalizing problems was .70 (Cohen's kappa; comparison of time one and time three scores) for externalizing behavior problems.

Internalizing behavior problems were also significantly lower over time in the intervention group, with a decrease of 5.95 points at each time point estimated (Table 3). Again, age, gender, and use of medication were removed from the model as they did not affect the results and were nonsignficant.

Intervention Dosage—The number of intervention sessions received was nonsignficant and did not mediate the association between the intervention group and either externalizing or internalizing outcomes, suggesting that dosage of the intervention received was not a factor that explained the effect of the intervention. Additionally, the coefficients for change in externalizing and internalizing behavior problems over time did not change after this variable was included in each model.

Parent understanding of the intervention—In contrast, the interventionist's assessment of the parent's understanding of how to appropriately use the intervention was a significant predictor of externalizing behavior problems, as shown in Table 2. Parents who had greater understanding of how to use the intervention reported fewer externalizing behavior problems over time. The coefficient for externalizing problems over time was also slightly lower after including this variable. However, this was only the case for externalizing behaviors; understanding of the intervention was not significantly associated with change in level of internalizing problems (Table 3).

Parenting outcomes—Foster parents in the intervention group reported less inconsistent discipline and less hitting and yelling relative to the control group over time, but these changes only approached significance, as shown in Table 4. Level of praise and use of project taught discipline methods did not significantly change in the intervention group relative to the control group. None of the parenting outcomes mediated the effect of the intervention on either externalizing or internalizing behavior problems; after entering each parenting behavior in a series of random effect regression models, the coefficient and significance level for the intervention X time variable were unchanged.

Discussion

Results from this pilot study support the efficacy of an enhanced KEEP intervention with urban, primarily African American foster parents caring for children with clinically

significant behavior problems. These results are consistent with the findings of Chamberlain and Price's larger study in San Diego County, in which this intervention was effective in reducing problem behaviors (Chamberlain et al, 2008; Price et al, 2008). This study extends support for the effectiveness of KEEP with a population that is distinct in two ways: first, in its demographics, and second, in the severity of mental health needs among the included children. While Chamberlain's study targeted all children newly placed in any type of foster home, this study focused on children in specialized foster care who had a moderate level of emotional and behavioral problems. This suggests that an adaptation of KEEP that involves weekly consultation by a practitioner trained in behavioral interventions could potentially reduce the level of behavior problems in this high risk population of foster children. This version of the intervention is much less intensive than Chamberlain's Multidimensional Treatment Foster Care (MTFC) model (see Chamberlain, Fisher, & Moore, 2002), as it only requires group and home visiting interventionists and clinical supervisors. For children with a moderate level of emotional and behavioral needs who do not need the intensity of MTFC, an "intermediate level" intervention could significantly enhance the treatment of children in specialized foster care.

The study's positive outcomes among a predominantly African American sample of foster parents are also encouraging. In the large study of KEEP as a universal intervention, no significant racial differences in outcomes within the intervention group were found (DeGarmo, et al., 2009). Although our study's sample size precludes generalizing its findings, its results provide additional support for the use of the KEEP intervention with African American parents caring for children with a significant level of behavior problems. The intervention used in this study did not have any specific cultural adaptations, but the group interventionists were both African American and consultation included an ongoing consideration of how racial differences in parenting might be affecting foster parents' attitudes and use of the intervention. Future research focused on the processes through which diverse families are effectively engaged in parenting interventions would help clarify how to provide effective services to different groups.

Although the positive behavior outcomes for children were encouraging in this study, the processes expected to account for these changes were only partially supported. Parents' reports of inconsistent discipline and yelling and hitting were reduced in the intervention group relative to the control group, although these differences only approached significance. Additionally, the interventionist's assessment of the parent's understanding of how to apply behavioral techniques predicted fewer externalizing and internalizing behavior problems over time. These findings are consistent with the hypothesis that the intervention decreased behavior problems by changing parents' use of discipline and increasing their understanding of how to effectively respond to children's behavior problems, and with Price and colleagues' (2008) finding that reductions in behavior problems were associated with increased use of behavior management strategies among parents in their intervention group.

However, these process outcomes and the intervention dosage, or number of sessions covered with each foster parent, did not account for the positive effect of the intervention over time. The lack of association between intervention dosage and the effect of the intervention could be explained by the high number of home visits completed with some parents who continued to struggle with their child's behavior problems throughout the study. In some cases, visits were extended because of the parent's lack of success in using the techniques and only slight improvements were observed in the child's behavior.

Additionally, no changes in levels of praise for positive behaviors or use of the discipline taught in the intervention occurred in the intervention group relative to the control group. The lack of association between the intervention group and use of the intervention discipline

techniques could be attributed to a lack of specificity in the measures of these techniques. For example, many foster parents use privilege removal, but this is often in a manner that is inconsistent with how this technique is taught in the intervention, as when a child is "grounded" for a week or more. Similarly, levels of praise might not correspond to the most effective use of praise, which might have been influenced by the intervention. The finding that understanding how to appropriately use the intervention techniques *was* associated with changes in level of externalizing behavior problems is consistent with this notion that appropriate use is key, rather than any use at all. That this effect was specific to externalizing behaviors and was *not* found for internalizing behaviors, also provides support for the particular relevance of parent management training in the treatment of externalizing behavior problems.

This study included any child whose foster parents received a specialized foster care rate, rather than focusing solely on children with behavior problems. This strategy resulted in the inclusion of some children who had complicated presentations of symptoms that included behavior problems secondary to other diagnoses. Future research is needed to understand the role of parent management training in the treatment of foster children presenting different constellations of symptoms. Understanding the role of adaptations of parent management training in the treatment of symptoms presenting in children with co-morbid disorders and histories of severe abuse, for example, would be a significant contribution to our understanding of how to best treat foster children's mental health problems. Integration of trauma-informed interventions (see Cohen, Berliner, Mannarino, 2010; Cohen, Mannarino, Berliner, Deblinger, 2000) with foster parent training might enhance both interventions. However, the finding that understanding of the intervention techniques was not associated with change in internalizing disorders raises the question of what the active components of the intervention leading to a reduction in internalizing problems might be. This is an important question to pursue in future, larger studies.

Limitations

Findings from this study need to be considered in the context of its limitations. The small sample size restricted detection of smaller effects and more comprehensive tests of meditation and moderation processes. We were also unable to assess the relative effectiveness of providing the intervention in groups versus home visits with the sample size. Additionally, foster parents were not randomly assigned in the study; their assignment to the case work teams that were selected for the intervention and control groups was based on case openings, and so the groups are unlikely to be different in terms of services or foster parent characteristics, but unmeasured differences in the groups might have lead to the differences in outcomes. However, no differences between the groups were found and the services provided to foster parents by both teams were minimal, providing some assurance that a difference in services did not account for the results. The small sample size could also have affected the generalizability of the findings. The small sample size allowed for an intensive involvement by the research staff and the principal investigator. The principal investigator was available to provide ongoing consultation to the interventionists on their work with each foster parent and child, and this level of involvement would not be possible in a larger study.

However, the consultation process in this study might also indicate the level of support to interventionists needed to provide effective services to children with a high level of need and often complex trauma histories. Although the intervention used in the study was manualized, manuals do not generally provide information on how to modify presentations of techniques for foster parents or children with complex needs, or how to address issues such as a parent's reluctance to use a new approach. Ongoing consultation focused on each

parent's progress and use of different techniques may be essential to successfully treat foster children with a moderately severe level of behavior problems.

Other limitations of this study include its lack of long-term follow up data, the averaging of sibling data due to the inability to model sibling effects with the small sample size, the inclusion of only one agency, the lack of assessment of parenting and child behavior through direct observation, lack of children's reports of internalizing symptoms, and the assessment of parent understanding of the intervention through questions that the interventionist completed at the end of the intervention. Additionally, although moves to new homes, reunifications, and adoptions were the primary reason that many foster parents could not complete the final interview to assess long term outcomes, this study was too small to assess effects of the intervention on different placement outcomes. Addressing these limitations in larger studies will provide a more definitive test of the intervention and the processes through which it affects parenting and children's behavior.

Study Implications

The study's promising results and the high level of foster parent participation suggest that providing this intervention through a combination of groups, home visits, and telephone calls could be an effective way to provide services to urban African American foster parents who are caring for children with behavior problems. If replicated in a larger trial, these findings would support dissemination of this type of service model to children with significant behavior problems. Child welfare systems present many opportunities for service development because of child welfare's mandate to provide services to ensure child wellbeing, but obstacles to providing effective services are also significant. Understanding what could benefit children is only the first step; this study and most previous studies in this area are only early stage effectiveness studies, and have not yet addressed how to implement and sustain effective interventions into existing services (Schoenwald & Hoagwood, 2001). To address this issue, child welfare agencies will need to work closely with researchers to understand how to develop and study effective service delivery models that can be sustained over time.

This study's results also indicate that foster parents are likely to need ongoing training and support as they care for children with moderate to severe behavior problems. The changes in behavior problems that occurred were statistically significant and the average externalizing score in the intervention group at the third time point was below the clinical range, but the score was still within a "borderline" range that suggests ongoing difficulties. For foster parents to be successful in maintaining use of their new skills, they may need an ongoing intervention rather than time-limited treatment. Future studies should focus on developing intervention models that focus on initial training and ongoing support through less formal mechanisms and booster training sessions to address the needs of families that are caring for children whose mental health issues may continue into adulthood.

Acknowledgments

This research was supported by NIMH K01 MH070580. The views expressed in this paper solely reflect the views of the authors and do not reflect the views of the National Institutes of Health.

References

Aarons GA, James S, Monn AR, Raghavan R, Wells RS, Leslie LK. Behavior problems and placement change in a national child welfare sample: A prospective study. Journal of the American Academy of Child and Adolescent Psychiatry. 2010; 49:70–80. [PubMed: 20215928]

Achenbach, TM. Integrative Guide to the 1991 CBCL/4-18, YSR, and TRF Profiles. Burlington, VT: University of Vermont, Department of Psychology; 2001.

Assemany AE, Macintosh DE. Negative treatment outcomes of behavioral parent training programs. Psychology in the Schools. Special Issue: Development, evaluation, and treatment of students with behavior disorders. 2002; 39:209–219.

Atkins MS, Frazier SL, Leathers SJ, Talbott E, Graczyk PA, Jakobsons LJ, Adil JA, Marinez-Lora A, Bell CC, Gibbons RB, Demirtas H. Teacher Key Opinion Leaders and the Diffusion of Innovation in Urban Low-Income Schools. Journal of Consulting and Clinical Psychology. 2008; 75:905–908. [PubMed: 18837608]

Barth RP, Lloyd EC, Green RL, James S, Leslie L, Landsverk J. Predictors of placement moves among children with and without emotional and behavioral disorders. Journal of Emotional and Behavioral Disorders. 2007; 15:46–55.

Barth RP, Landsverk J, Chamberlain P, Reid JB, Rolls JA, Hurlburt MS, Farmer EMZ, James S, McCabe KM, Kohl PL. Parent-training programs in child welfare services: Planning for a more evidence-based approach to serving biological parents. Research on Social Work Practice. 2005; 15:353–371.

Burns BJ, Phillips SD, Wagner HR, Barth RP, Kolko DJ, Campbell Y, Landsverk J. Mental Health Need and Access to Mental Health Services by Youths Involved With Child Welfare: A National Survey. Journal of the American Academy of Child & Adolescent Psychiatry. 2004; 43:960–970. [PubMed: 15266190]

Chaffin M, Silovsky JF, Funderburk B, Valle LA, Brestan EV, Balachova T, Jackson S, Lensgraf J, Bonner B. Parent-child interaction therapy with physically abusing parents: Efficacy for reducing future abuse reports. Journal of Consulting and Clinical Psychology. 2004; 72:500–510. [PubMed: 15279533]

Chamberlain, P.; Fisher, PA.; Moore, K. Multidimensional treatment foster care: Applications of the OSL intervention model to high-risk youth and their families. In: Reid, JB.; Patterson, GR.; Snyder, J., editors. Antisocial behavior in children and adolescents: A developmental analysis and model for intervention. Washington, DC: American Psychological Association; 2002. p. 203-218.

Chamberlain P, Price JM, Reid JB, Landsverk J, Fisher PA, Stoolmiller M. Who disrupts from placement in foster and kinship care? Child Abuse & Neglect. 2006; 30:409–424. [PubMed: 16600372]

Chamberlain P, Price J, Leve LD, Laurent H, Landsverk JA, Reid JB. Prevention of behavior problems for children in foster care: Outcomes and mediation effects. Prevention Science. 2008; 9:17–27. [PubMed: 18185995]

Chamberlain P, Moreland S, Reid K. Enhanced services and stipends for foster parents: Effects on retention rates and outcomes for children. Child Welfare: Journal of Policy, Practice, and Program. 1992; 71:387–401.

Chamberlain P, Reid JB. Parent observation and report of child symptoms. Behavioral Assessment. 1987; 9:97–109.

Chamberlain, P.; Fisher, PA.; Moore, K. Multidimensional treatment foster care: Applications of the OSLC intervention model to high-risk youth and their families. In: Reid, JB.; Patterson, GR.; Snyder, J., editors. Antisocial behavior in children and adolescents: A developmental analysis and model for intervention. Washington, DC: American Psychological Association; 2002. p. 203-218.

Cohen JA, Berliner L, Mannarino A. Trauma focused CBT for children with co-occurring trauma and behavior problems. Child Abuse & Neglect. 2010; 34:215–224. [PubMed: 20304489]

Cohen JA, Mannarino AP, Berliner L, Deblinger E. Trauma-focused cognitive behavioral therapy for children and adolescents: An empirical update. Journal of Interpersonal Violence. 2000; 15:1202–1223.

Courtney, ME.; Roderick, M.; Smithgall, C.; Gladden, RM.; Nagaok, J. The Educational Status of Foster Children. Chicago, IL: Chapin Hall Center for Children; 2004.

DeGarmo DS, Chamberlain P, Leve LD, Price J. Foster parent intervention engagement moderating child behavior problems and placement disruption. Research on Social Work Practice. 2009; 19:423–433. [PubMed: 20072708]

Dorsey S, Farmer EM, Barth RP, Greene KM, Reid J, Landsverk J. Current status and evidence-base of training for foster and treatment foster parents. Children and Youth Services Review. 2008; 30:1403–1416.

Fees BS, Stockdale DF, Crase SJ, Riggins-Caspers K, Yates AM, Lekies KS, Gillis-Arnold R. Satisfaction with foster parenting: Assessment one year after training. Children and Youth Services Review. 1998; 20:347–363.

Fisher PA, Chamberlain P. Multidimensional treatment foster care: A program for intensive parenting, family support, and skill building. Journal of Emotional and Behavioral Disorders. 2000; 8:155–164.

Fisher PA, Burraston B, Pears K. The early intervention foster care program: Permanent placement outcomes from a randomized trial. Child Maltreatment. 2005; 10:61–71. [PubMed: 15611327]

Forehand R, Kotchick BA. Cultural diversity: A wake-up call for parent training. Behavior Therapy. 1996; 27:187–206.

Gibbons R, Hedeker D, Elkin I, Waternaux C, Kraemer H, Greenhouse J, Shea M, Imber S, Sotsky S, Watkins J. Some conceptual and statistical issues in analysis of longitudinal psychiatric data: Application to the NIMH treatment of depression collaborative research program dataset. Archives of General Psychiatry. 1993; 50:739–750. [PubMed: 8357299]

Glisson C, Green P. The effects of organizational culture and climate on the access to mental health care in child welfare and juvenile justice systems. Administration and Policy in Mental Health and Mental Health Services Research. 2006; 33:433–448. [PubMed: 16240076]

Harris MS, Courtney ME. The interaction of race, ethnicity, and family structure with respect to the timing of family reunification. Children and Youth Services Review. Special Issue: The overrepresentation of children of color in the child welfare system. 2003; 25:409–429.

Hedeker D, Gibbons RD, Flay BR. Random-effects regression models for clustered data with an example from smoking prevention research. Journal of Consulting and Clinical Psychology. 1994; 62:757–765. [PubMed: 7962879]

Hedeker, D.; Gibbons, RD. Longitudinal data analysis. Hoboken, NJ: Wiley-Interscience; 2006. Wiley Series in Probability and Statistics.

Herschell AD, Calzada EJ, Eyberg SM, McNeil CB. Parent-child interaction therapy: New directions in research. Cognitive and Behavioral Practice. 2002; 9:9–15.

Hill, R. An Analysis of Racial/Ethnic Disproportionality and Disparity at the National, State, and County Levels. Washington, D.C: Casey-CSSP Alliance for Racial Equity in Child Welfare, Annie E. Casey Foundation; 2007.

Hood KK, Eyberg SM. Outcomes of parent-child interaction therapy: Mothers' reports of maintenance three to six years after treatment. Journal of Clinical Child and Adolescent Psychology. 2003; 32:419–429. [PubMed: 12881030]

James S, Landsverk J, Slymen DJ. Placement movement in out-of-home care: Patterns and Predictors. Children and Youth Service Review. 2004; 26:185–206.

Jensen PS, Hoagwood KE, Roper M, Arnold LE, Odbert C, Crowe M, Molina BSG, Hechtman L, Hinshaw SP, Hoza B, Newcorn J, Swanson J, Wells K. The Services for Children and Adolescents-Parent Interview: Development and performance characteristics. Journal of the American Academy of Child and Adolescent Psychiatry. 2004; 43:1334–1344. [PubMed: 15502592]

Kazdin AE. Parent management training: Evidence, outcomes, and issues. Journal of the American Academy of Child & Adolescent Psychiatry. 1997; 36:1349–1356. [PubMed: 9334547]

Kearney KA, McEwin E, Bloom-Ellis B, Jordan N. Performance-based contracting in residential care and treatment: Driving policy and practice change through public-private partnership in Illinois. Child Welfare. 2010; 89:39–55. [PubMed: 20857879]

Landsverk JA, Burns BJ, Stambaugh LF, Reutz JA. Psychosocial interventions for children and adolescents in foster care: Review of research literature. Child Welfare: Journal of Policy, Practice, and Program. 2009; 88:49–69.

Leathers SJ, Atkins MS, Spielfogel JE, McMeel LS, Wesley JM, Davis R. Context-specific mental health services for children in foster care. Children and Youth Services Review. 2009; 31:1289–1297. [PubMed: 20160885]

Lee JH, Holland TP. Evaluating the effectiveness of foster parent training. Research on Social Work Practice. 1991; 1:162–174.

Leslie LK, Hurlburt MS, James S, Landsverk J, Slymen DJ, Zhang J. Relationship between entry into child welfare and mental health service use. Psychiatric Services. 2005; 56:981–987. [PubMed: 16088016]

Linares LO, Montalto D, Li M, Oza VS. A promising parenting intervention in foster care. Journal of Consulting and Clinical Psychology. 2006; 74:32–41. [PubMed: 16551141]

Lochman JE, Salekin RT, Haaga DA. Prevention and intervention with aggressive and disruptive children: Next steps in behavioral intervention research. Behavior Therapy. Special Issue: Behaviorally oriented interventions for children with aggressive behavior and/or conduct problems. 2003; 34:413–419.

Lundahl G, Risser HJ, Lovejoy C. A meta-analysis of parent training: Moderators and follow-up effects. Clinical Psychology Review. 2005; 26:86–104. [PubMed: 16280191]

McKay MM, Atkins MS, Hawkins T, Brown C, Lynn CJ. Inner-city African American parental involvement in children's schooling: Racial socialization and social support from the parent community. American Journal of Community Psychology. 2003; 32:107–114. [PubMed: 14570440]

McNeil CB, Capage LC, Bahl A, Blanc H. Importance of early intervention for disruptive behavior problems: A comparison of treatment and waitlist-control groups. Early Education and Development. 1999; 10:445–454.

McNeil CB, Herschell AD, Gurwitch RH, Clemens-Mowrer L. Training foster parents in parent-child interaction therapy. Education and Treatment of Children. 2005; 28:182–196.

Nilsen W. Fostering futures: A preventive intervention program for school-age children in foster care. Clinical Child Psychology and Psychiatry. 2007; 12:45–63. [PubMed: 17378079]

Orme JG, Buehler C. Foster family characteristics and behavioral and emotional problems of foster children: A narrative review. Family Relations. 2001; 50:3–15.

Owens PL, Hoagwood K, Horwitz SM, Leaf PJ, Poduska JM, Kellam SG, Ialongo NS. Barriers to children's mental health services. Journal of the American Academy of Child & Adolescent Psychiatry. 2002; 41:731–738. [PubMed: 12049448]

Pacifici, C.; Chamberlain, P.; White, L. Off Road Parenting. Oregon: Northwest Media, Inc; 2002.

Petra M, Kohl P. Pathways Triple P and the child welfare system: A promising fit. Children and Youth Services Review. 2010; 32:611–618. [PubMed: 20419078]

Price JM, Chamberlain P, Landsverk J, Reid JB, Leve LD, Laurent H. Effects of a foster parent training intervention on placement changes of children in foster care. Child Maltreatment. 2008; 13:64–75. [PubMed: 18174349]

Price JM, Chamberlain P, Landsverk J, Reid J. KEEP foster-parent training intervention: Model description and effectiveness. Child & Family Social Work. 2009; 14:233–242.

Prinz RJ, Sanders MR, Shapiro CJ, Whitaker DJ, Lutzker JR. Population-based prevention of child maltreatment: The U.S. triple P system population trial. Prevention Science. 2009; 10:1–12. [PubMed: 19160053]

Puddy RW, Jackson Y. The development of parenting skills in foster parent training. Children and Youth Services Review. 2003; 25:987–1013.

Raghavan R, Inkelas M, Franke T, Halfon N. Administrative barriers to the adoption of high-quality mental health services for children in foster care: A national study. Administration and Policy in Mental Health and Mental Health Services Research. 2007; 34:191–201. [PubMed: 17211714]

Sanders MR. The triple P Positive Parenting Program: Towards an empirically validated multi-level parenting and family support strategy for the prevention of behavior and emotional problems in children. Clinical Child and Family Psychology Review. 1999; 2:71–90. [PubMed: 11225933]

Sanders, MR.; Bor, W. Working with families in poverty: toward a multilevel, population-based approach. In: Crane, DR.; Heaton, TB., editors. Handbook of families and poverty: Interdisciplinary perspectives. New York: Wiley; 2008. p. 442-456.

Sanders MR, Cann W, Markie-Dadds C. The triple P-positive parenting programme: A universal population-level approach to the prevention of child abuse. Child Abuse Review. 2003; 12:155–171.

Sanders MR, McFarland M. Treatment of depressed mothers with disruptive children: A controlled evaluation of cognitive behavioral family intervention. Behavior Therapy. 2000; 31:89–112.

Saunders, BE.; Berliner, L.; Hanson, RF., editors. Child Physical and Sexual Abuse: Guidelines for Treatment (Revised Report: April 26, 2004). Charleston, SC: National Crime Victims Research and Treatment Center; 2004.

Scherr TG. Educational experience of children in foster care. School Psychology International. 2007; 28:419–436.

Schoenwald SK, Hoagwood K. Effectiveness, transportability, and dissemination of interventions: What matters when? Psychiatric Services. 2001; 52:1190–1197. [PubMed: 11533392]

Shelton KK, Frick PJ, Wootton J. Assessment of parenting practices in families of elementary school-age children. Journal of Clinical Child Psychology. 1996; 25:317–329.

Social Security Website. Social Security Act- Title IV. Retrieved January 15, 2010 from www.ssa.gov/OP_Home/ssact/title04/0400.htm

Stone S. Child maltreatment, out-of-home placement and academic vulnerability: A fifteen-year review of evidence and future directions. Children and Youth Services Review. 2007; 29:139–161.

Timmer SG, Urquiza AJ, Zebell N. Challenging foster-caregiver maltreated child relationships: The effectiveness of parent-child interaction therapy. Children and Youth Services Review. 2005; 28:1–19.

Trout AL, Hagaman J, Casey K, Reid R, Epstein MH. The academic status of children and youth in out-of-home care: A review of the literature. Children and Youth Services Review. 2008; 30:979–994.

Webster-Stratton C. The incredible years: Parents, teachers, and children training series. Residential treatment for children and youth. Special Issue: Innovative mental health interventions for children: Programs that work. 2001; 18:31–45.

Webster-Stratton C. Preventing conduct problems in Head Start children: Strengthening parenting competencies. Journal of Consulting and Clinical Psychology. 1998; 66:715–730. [PubMed: 9803690]

Webster-Stratton C. Advancing videotape parent training: A comparison study. Journal of Consulting and Clinical Psychology. 1994; 63:583–593. [PubMed: 8063985]

U.S. Department of Health and Human Services, Administration for Children and Families, Children's Bureau. The AFCARS Report No. 14: Preliminary FY 2006 Estimates as of January 2008. Washington DC: 2008.

Zima BT, Bussing R, Freeman S, Yang X, Belin TR, Forness SR. Behavior problems, academic skill delays and school failure among school-aged children in foster care: Their relationship to placement characteristics. Journal of Child and Family Studies. 2000; 9:87–103.

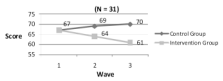

Figure 1.
Mean CBCL Externalizing T-Scores

Table 1

Demographic Information for Children and Foster Parents

Variable	*M (SD)*	%
Child (*N* = 31)		
Age at baseline	8.58 (2.41)	
Male gender		72
African American		97
Foster parent (*N* = 25)		
Age at baseline	49.09 (11.21)	
Female gender		100
African American		96
Employment		
Full time		36
Part time		12
Not working		52
Income		
0–$20,000		20
$21,000–$40,000		32
$41,000–$60,000		20
Over $60,000		24

Table 2

Mixed Effects Regression Models Predicting Externalizing Behavior Problems

	Without mediator		With mediator	
Predictor	***B***	***SE***	***B***	***SE***
Intercept	65.96**	2.66	65.96**	2.66
Intervention group	1.90	3.44	7.96[a]	4.29
Time trend	1.83	1.70	1.81	1.69
Intervention time trend	−4.77*	2.19	−4.36[a]	2.19
Understanding of intervention			−4.84*	2.24

Note.

[a] $p < .10$.

* $p < .05$.

** $p < .01$.

Variance component in each model included a random intercept (without Understanding of Intervention, 31.54, SE = 14.29, $p < .05$; with Understanding of Intervention, 24.00, SE = 12.09, $p < .05$).

Table 3

Mixed Effects Regression Models Predicting Internalizing Behavior Problems

	Without mediator		With mediator	
Predictor	***B***	***SE***	***B***	***SE***
Intercept	60.36**	3.18	60.36**	3.14
Intervention group	3.12	4.12	6.55	5.44
Time trend	1.07	1.80	1.07	1.80
Intervention time trend	−5.95*	2.31	−5.95*	2.32
Understanding of intervention			−2.76	2.91

Note.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Variance component in each model included a random intercept (without Understanding of Intervention, 57.86, SE = 22.10, $p < .01$; with Understanding of Intervention, 55.02, SE = .2.34, $p < .01$).

Table 4

Mixed Regression Results: Intervention X Time Coefficients Predicting Parenting Outcomes

Outcome	*B*	*SE*
Inconsistent Discipline	−.21[a]	.16
Hitting/yelling	−.51[a]	.29
Praise	.08	.21
Use of project discipline	−.14	.30

Note.

[a] $p < .10$.