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Mental Health Interventions for Children in Foster Care: A Systematic Review

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Abstract

Children in foster care have high rates of adverse childhood experiences and are at risk for mental health problems. These problems can be difficult to ameliorate, creating a need for rigorous intervention research. Previous research suggests that intervening with children in foster care can be challenging for several reasons, including the severity and complexity of their mental health problems, and challenges engaging this often transitory population in mental health services. The goal of this article was to systematically review the intervention research that has been conducted with children in foster care, and to identify future research directions. This review was conducted on mental health interventions for children, ages 0 to 12, in foster care, using ERIC, CINAHL, PsycINFO, PubMed, ProQuest’s Dissertation and Theses Database, Social Services Abstracts, and Social Work Abstracts. It was restricted to interventions that are at least “possibly efficacious” (i.e., supported by evidence from at least one randomized controlled trial). Studies were evaluated for risk of bias. Ten interventions were identified, with diverse outcomes, including mental health and physiological. Six interventions were developed for children in foster care. Interventions not developed for children in foster care were typically adapted to the foster context. Most interventions have yet to be rigorously evaluated in community-based settings with children in foster care. Little research has been conducted on child and family engagement within these interventions, and there is a need for more research on moderators of intervention outcomes and subgroups that benefit most from these interventions. In addition, there is not consensus regarding how to adapt interventions to this population. Future research should focus on developing and testing more interventions with this population, rigorously evaluating their effectiveness in community-based settings, determining necessary adaptations, and identifying which interventions work best for whom.

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Keywords

Foster care; interventions; treatment; systematic review; child maltreatment; engagement

Approximately 400,000 children in the US are in foster care each year (U.S. Department of Health & Human Services, 2014), and costs associated with foster care near \$30,000 per child, per year in some states (New York State Office of Children and Family Services, 2010). “Foster care” is used as an umbrella term in this paper, to refer simultaneously to traditional foster placements, relative and/or kinship care placements, group homes, and residential settings. Children are typically placed in foster care due to child abuse and neglect, and 70% of former foster children report over five adverse childhood experiences (ACEs; Bruskas & Tessin, 2013). Other than child abuse and neglect, ACEs for children in foster care include exposure to community violence (Garrido, Culhane, Raviv, & Taussig, 2010) and to domestic violence (Stein et al., 2001), transitions in primary caregivers that disrupt attachment relationships (Stovall McClough & Dozier, 2004), and in-utero exposure to drugs and alcohol (Smith, Johnson, Pears, Fisher, & DeGarmo, 2007).

Due to the risk factors experienced by children in foster care and their subsequent consequences, these children exhibit great mental health need. Between 50 and 80% of children in foster care meet criteria for a mental health disorder (Farmer et al., 2001; Leslie et al., 2005). Twenty-three percent meet criteria for more than one mental health disorder (Garland, Hough, McCabe, Yeh, Wood, & Aarons, 2001). Common mental health diagnoses among children in foster care include disruptive behavior disorders and Attention Deficit/Hyperactivity Disorder (54%, Garland et al., 2001), Posttraumatic Stress Disorder (20%; Kolko, Hurlburt, Zhang, Barth, Leslie, & Burns, 2010), other anxiety disorders (10%; Garland et al., 2001), and mood disorders (7%, Garland et al., 2001). There is also a high rate of developmental concerns, such as fetal alcohol spectrum disorders (~6%, Lange, Shield, Rehm, & Popova, 2013) and cognitive impairments (~25%; Casanueva et al., 2011). Given these high rates of social-emotional and developmental problems, children in foster care typically exhibit poor functioning throughout their lives, struggling with unemployment, incarceration, substance dependence, and early childbearing (Courtney et al., 2011).

Amidst the need for mental health intervention, however, is the reality that many children in foster care who receive mental health services do not get better (Bellamy, Gopalan, & Traube, 2010; McCrae, Barth, & Guo 2010). McCrae and colleagues used a nationally representative sample of children in foster care from the NSCAW database to compare behavioral and emotional symptoms of children who had received mental health services and children who had not. Using a propensity score matching design, they found that in the overall sample, behavioral and emotional problems decreased over time, but that in the sample of children who received mental health services, behavioral and emotional problems increased over time. Bellamy and colleagues (2010) had similar findings. They also used NSCAW data and a propensity score matching design. Results indicated that children who had been in “long term” foster care (or in care for at least a year) did not benefit from outpatient mental health “services as usual.” Both articles concluded that it is extremely

difficult to successfully treat children in foster care. Thus, they urged further intervention research to help inform best practices for intervention.

Beyond the severity and complexity of mental health and comorbid concerns, there are other challenges in treating children in foster care. First, children live in diverse and in many times transitory settings, spanning from traditional foster homes to group-care settings. Thus, some interventions, such as those originally developed for parent-child dyads, may not feel like a good fit to children and their families due to different relationship dynamics (Taussig & Raviv, 2014), or may not be plausible given a child's current living situation (e.g. frequent transitions between settings). Second, data from a repository of US State Child Welfare Data indicate that of school-aged youth who entered foster care in 2005–2009, nearly 60% had experienced two or more placements by the end of 2011, including 10% who had experienced six or more placements (National Working Group on Foster Care and Education, 2014). Placement changes occur even more frequently for children with significant behavioral problems (James, Landsverk, Slymen, & Leslie, 2004), and make continuity of mental health services tenuous. Third, foster caregivers are often overburdened with caring for multiple children in foster care, and thus it can be difficult for them to find time to engage in treatment or to transport children to treatment (Dorsey, Conover, & Cox, 2014). Finally, many foster families, particularly relatives of the child, may prefer to avoid the perceived stigma associated with engaging in mental health services (Kools, 1997). Two-thirds of children and families who are enrolled in outpatient mental health services do not complete more than seven sessions (Miller, Southam-Gerow, & Allin, 2008), and for children in foster care, this rate is likely to be much higher (see Burns et al., 2004; Dorsey, et al., 2014; Taussig & Raviv, 2014 for further discussion on engagement in this population).

A previous review of interventions for children in foster care (Leve et al., 2012), aimed at summarizing interventions specifically developed to address mental health and developmental concerns for children and adolescents in foster care, identified eight interventions. It focused on interventions supported by data from at least one randomized controlled trial (RCT; i.e., at least *possibly efficacious*, Chambless & Hollon, 1998). A major conclusion from this review was that many mental health problems experienced by children in foster care can be ameliorated with the use of targeted, research-informed and supported approaches. Another conclusion, however, was that increased efforts to understand how to best use these programs in real-world settings was necessary.

The current review extends findings from the previous review in a few ways. Similar to Leve and colleagues (2012), we only review interventions that are at least possibly efficacious (i.e., supported by findings from at least one RCT). However, in contrast to Leve and colleagues (2012), some of the possibly efficacious interventions that we review were not specifically developed for children in foster care, yet have been evaluated with children in foster care, although sometimes via less rigorous designs (e.g., pre-post pilot trials). This wider net of inclusion in our review is important. Generalizing interventions to the foster context is likely to require additional research, and we wanted to recognize interventions with preliminary work in this area. Second, this review reports what is known about child and family engagement (defined as enrollment rates and attendance) in these interventions, and the research on moderators or subgroups has been conducted. Engagement is often a

prerequisite to attaining mental health benefits from services (Chu & Kendall, 2004). Because of the many barriers to foster children and families' engagement in mental health services, it is important to know how well interventions are engaging foster families (Dorsey et al., 2014; Taussig & Raviv, 2014). Third, the current review diverges from the former review in that it highlights the status of the empirical support for each intervention within the foster population (e.g., controlled efficacy trial, controlled effectiveness trial, etc.), which can help identify what research is needed to delineate a specific intervention's utility with this population. Finally, the current review is limited to children ages 0 to 12. Age was restricted in our review due to the breadth of the interventions reviewed.

The focus of this paper is on interventions that can be delivered in outpatient settings. This focus, at times, naturalistically excludes children living in group homes or residential settings. We are aware of at least one intervention, however, that we reviewed that served some children who were living in residential or group care settings (Taussig & Culhane, 2010). As such, the results presented here are limited by service delivery site, not placement type, but are heavily weighted toward children living in traditional foster or relative and/or kinship placements. We chose to focus on the outpatient setting because outpatient settings serve a broad range of children, and because it is important to understand how to treat children in foster care within this context to help reduce reliance on residential settings.

The specific questions guiding this review were: (1) Which "possibly efficacious" interventions have been evaluated with foster populations in outpatient settings, and what are their characteristics? (2) What is the status of the empirical support for these interventions? (3) What are the outcomes, and what subgroup/moderator analyses of outcomes have been conducted? And, (4) What are the enrollment, retention, and attendance rates for these interventions? A narrative systematic review of the literature was employed to answer these questions.

Method

Inclusion Criteria

Methods outlined by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Statement (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009) were followed. A full review protocol is available from the corresponding author. Authors searched for peer-reviewed empirical studies of possibly efficacious interventions delivered to 0- to 12-year-old children in foster care. Additional inclusion criteria included: (1) Intervention evidenced at least one positive child mental health outcome for children in foster care; (2) Intervention could be delivered in-home or in outpatient/community settings; (3) Intervention was not solely enhanced foster care or wraparound services (as defined by having at least one specific therapeutic component unique to the intervention); (4) Outcomes or engagement rates were measured post-intervention, (5) Article reported on an evaluation of an intervention's efficacy or effectiveness (e.g., it was not a program evaluation); (6) Intervention could be delivered in English.

Search Strategy

ERIC, CINAHL, PsycINFO, PubMed, Social Services Abstracts, and Social Work Abstracts were selected as search engines for peer-reviewed articles. ProQuest's Dissertation and Theses Database was selected as the search engine for non-peer reviewed articles, to help guard against publication bias while maintaining a systematic search strategy (for similar search methods to address publication bias, see Weisz et al., 2013). Search terms were selected through consultation with University library staff to ensure that our search was broad enough to return the vast majority of relevant articles. Search terms were also shared with foster care researchers from several countries so that the authors could receive feedback regarding whether the terms were broad enough to capture research occurring in countries outside of the USA. The following search terms were entered into all search engines: ("foster care" OR "kin care" OR "relative care" OR "out-of-home care") AND (intervention OR treatment OR therapy OR training OR program) AND (children OR kids OR infants OR preschoolers OR toddlers). In PsycINFO, Title, Abstract, and Keyword were the search fields. In PubMed Title/Abstract was the search field. In ERIC, CINAHL, Social Services Abstracts, and Social Work Abstracts, Abstract was the search field. In the six aforementioned search engines, the review was restricted to empirical, peer-reviewed articles published since 1990. For the Dissertation and Theses Database, Keyword was the search field for the foster care and intervention-related terms, and Abstract for the child-related terms. This search was also restricted to dissertations completed since 1990. Searches were restricted to research conducted since 1990 in an effort to review interventions currently available to mental health providers and to expedite dissemination of findings (e.g., Ganann, Ciliska, & Thomas, 2010). Figure 1 shows the number of articles retrieved from each search engine, and the path by which articles ultimately came to be included in this review (Figure 1).

Study Selection

A team of three coders participated in the study selection process. All coders had a PhD in psychology and had expertise in both clinical child psychology and child abuse and neglect. First, two coders read the title, abstract, and keywords of each article/dissertation returned by the initial searches. One coder was part of both teams, and so reviewed each and every article/dissertation. Articles were excluded if it was determined that they did not meet inclusion criteria (see the Flow Diagram in Figure 1 for the exact numbers of articles/dissertations included/excluded at each step). When coders did not agree if a study met criteria, input from the third coder was sought. Following consensus from all three coders, a determination of eligibility was made (the study had to meet all 6 of the aforementioned inclusion criteria). Next, two coders read the full text of each of the remaining articles ($N=176$) and dissertations ($N=6$) to determine if, after a full reading of the article/dissertation, they still met all 6 inclusion criteria. Studies meeting criteria were assessed for risk of bias at the study level ($N=60$ articles, no dissertations met criteria). Risk of bias was defined as potential for systematic error based on study design and analyses, and was assessed using a coding scheme adapted from Goldman Fraser and colleagues (2013), who conducted a Comparative Effectiveness Review of interventions addressing child maltreatment for the Agency for Healthcare Research and Quality. The questions used to assess for bias are located in Table 1. Two coders assessed each article for bias and indicated whether the

answer to each question was Yes, No, or Uncertain. Following coding, studies were excluded if (1) 50% of the answers to the set of questions indicated some risk of bias, (2) There had never been an RCT conducted with this intervention (the RCT could have been conducted in a non-foster sample), or (3) If the only RCT conducted with this intervention contained less than 10 children in each group. Following these search and coding procedures, the authors referred to four seminal documents regarding foster care and child maltreatment interventions to ensure that relevant interventions reviewed by these articles were not overlooked: a Comparative Effectiveness Review of interventions addressing child maltreatment from the Agency for Healthcare Research and Quality (2013), a review of foster care interventions by Leve and colleagues (2012), a chapter on foster care interventions by Taussig & Raviv (2014), and a review of interventions used to treat child abuse and neglect by Shipman and Taussig (2009). No additional interventions met our inclusion criteria. In addition, the 36 articles that were included following bias-coding were hand-searched for references meeting our inclusion criteria. Three relevant articles were identified, and these are articles were also coded for bias and were ultimately included in this review.

The remaining articles ($N=39$) were categorized as efficacy trials, effectiveness trials, or other trials (e.g. pilot trials of adaptations). The process of categorization followed criteria established for distinguishing efficacy versus effectiveness trials published in a Technical Review by the Agency for Healthcare Research and Quality (Goldman Fraser et al., 2006), including inclusion criteria, study setting, and use of intent-to-treat analysis. Results of this categorization are shown in Table 2 and in the Supplemental Material. Finally, two coders coded each article for information on client characteristics (Supplemental Material), intervention characteristics (Table 3), and outcomes (Table 4).

Results

Ten possibly efficacious interventions were identified to have been evaluated with children ages 0 to 12 in foster care (Table 2) and found to yield positive mental health outcomes (Figure 2, Table 4): Attachment and Biobehavioral Catchup (ABC), Child Parent Psychotherapy (CPP), Fostering Healthy Futures (FHF), Incredible Years (IY), Keeping Foster Parents Trained and Supported (KEEP), Kids in Transition to School (KITS), Parent-Child Interaction Therapy (PCIT), Short Enhanced Cognitive-Behavioral Parent Training (CEBPT), Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), and Treatment Foster Care Oregon for Preschoolers (TFCO-P; formerly Multidimensional Treatment Foster Care for Preschoolers). Characteristics of each study included in this review (sample size, evaluation window, comparison groups) can be found in the Supplemental Material.

The interventions comprised diverse characteristics (Table 3). One intervention was child-only (FHF), three were caregiver only (CEBPT, IY, & KEEP, although one IY adaptation included children), and six were caregiver-child (except one IY adaptation). Seven contained group components (CEBPT, FHF, IY, KEEP, KITS, a PCIT adaptation, and TFCO-P), and one contained elements of wraparound care (TFCO-P). Three interventions were considered to be at least somewhat preventive in nature (FHF, IY, & TFCO-P). Theoretical frameworks included Behavioral, Cognitive Behavioral, Positive Youth Development, and

Psychodynamic. There was also diversity regarding service delivery site, with five interventions having at least part of their therapeutic elements delivered in the community or outside of typical health service delivery sites (FHF, KEEP, KITS, IY, & TFCO-P). Two interventions can be used with children younger than 2 years (ABC & CPP), seven with children 2 to 8 years (CPP, IY, KEEP, KITS, MTFC-P, PCIT, CEBPT, & TF-CBT), and five with preadolescents (children ages 9 to 12; FHF, IY, KEEP, TF-CBT, & CEBPT).

Table 2 summarizes the status of the evidence supporting the use of these interventions with children in foster care. Six interventions have been tested in randomized efficacy trials, while three have been tested via randomized effectiveness trials. Only one intervention has been evaluated in both a randomized efficacy and effectiveness trial in this population. No research has been conducted on the comparative effectiveness of interventions within this population. In general, there was a lack of rigorous effectiveness research, or research on how these interventions work when implemented in community settings.

Of the four interventions not originally created for foster care, three of them (IY, PCIT, & TF-CBT) were adapted to the foster context when evaluated, yielding positive outcomes. Two of these interventions (PCIT & TF-CBT) were also evaluated in non-adapted forms. The adaptation of PCIT was substantial (see Mersky, Topitzes, Grant-Savelle, Brondino & McNeil, 2014 for more details), yet was rigorously tested through a randomized design. The adaptations to IY and TF-CBT were arguably more minor, while also rigorously tested using randomization. The IY adaptations mostly involved adding information related to children in foster care to session content, and the TF-CBT adaptation added an engagement intervention (elements of TF-CBT delivery were not changed). No studies compared the effectiveness of adapted versus non-adapted interventions.

As a whole, the interventions address outcomes across behavioral, internalizing, cognitive/academic, and physiological domains, amongst others (Figure 2; Table 4). Several interventions address similar outcomes; for example, nine interventions reduce or prevent behavior problems, while five reduce or prevent internalizing problems, and five improve caregiving practices. No intervention has been identified to specifically reduce symptoms of anxiety other than symptoms of posttraumatic stress. Although symptoms of anxiety were often included in broad measures of internalizing symptoms, anxiety was never evaluated independently. Moderators of intervention outcomes have only been studied in three interventions (FHF, IY, & KEEP; Table 4). In FHF, severity of neglect did not moderate outcomes (Table 4). In IY, biological parents retained positive discipline practices to a greater degree than foster caregivers, and those who completed the IY intervention reported higher use of positive discipline than non-completers (Table 4). In KEEP, high risk children were more likely to exhibit behavioral improvement than low risk children, and caregiver engagement moderated placement disruption in Hispanic/Latino children (Table 4). Only two studies presented outcomes separately for different ethnic/racial groups (studies covering CPP, IY, and TF-CBT, Table 4). Several other studies found that age was associated with outcomes, either with younger children benefitting more (TFCO-P) or less (ABC). Although there are several interventions that address mental health and developmental concerns relevant to this population, there is only a small amount of empirical guidance

regarding which interventions work best for whom, given child, family, and system factors such as placement type, severity of mental health problems, race/ethnicity, age, etc.

Enrollment rates (defined as the rate of those enrolled in the research study, not necessarily of those who began the intervention) varied greatly (Table 3). KITS, the school-readiness intervention, had an enrollment rate of 57%, while FHF, the child-only intervention, had a rate of 91%. Reasons for low enrollment rates in KITS and high rates in FHF were not offered, but may be related to the fact that KITS requires a high level of caregiver involvement during a potentially busy time of year (the start of the school year), while FHF does not have a caregiver component. Enrollment was not reported in the CPP evaluation.

Reports of retention also varied widely across studies. Some studies reported how many children completed research assessments, others reported how many children completed the intervention, while still others reported the average or modal number of sessions completed by children or caregivers. Due to the difficulty comparing retention rates across studies given these differing metrics, we only report on attendance (Table 3). Reported attendance rates, however, are also difficult to compare, making it challenging to understand how well these interventions engage children and families. Only one intervention (PCIT) evaluated differences in engagement rates for different placement types, finding that more traditional foster families as opposed to kinship families were retained (Timmer, Sedlar, & Urquiza, 2004). A TF-CBT study found that when TF-CBT was augmented with an engagement intervention, enrollment and attendance rates were greater than when TF-CBT was delivered alone (Dorsey et al., 2014). This engagement intervention involved discussing caregiver perceptual barriers to engagement and caregiver goals for the child's treatment during the first two therapist contacts with the caregiver. Although it is likely difficult to engage foster children and families in interventions, there is little empirical guidance regarding how to best engage this population. The study by Dorsey and colleagues (2014), however, is an important first step.

Discussion

This review identified which at least “possibly efficacious” mental health interventions have been evaluated with foster populations in outpatient settings. It also evaluated their characteristics, the status of their empirical support, outcomes and moderators of outcomes, and engagement rates.

We found that there is a substantial bolus of research on interventions for children in foster care. This is exciting given the arduous yet critical nature of intervention research with this population. Specifically, our review identified 10 interventions that have been evaluated with children in foster care (Table 2): Attachment and Biobehavioral Catchup (ABC), Child Parent Psychotherapy (CPP), Fostering Healthy Futures (FHF), Incredible Years (IY), Keeping Foster Parents Trained and Supported (KEEP), Kids in Transition to School (KITS), Parent-Child Interaction Therapy (PCIT), Short Enhanced Cognitive-Behavioral Parent Training (CEBPT), Trauma-Focused Cognitive Behavioral Therapy (TF-CBT), and Treatment Foster Care Oregon for Preschoolers (TFCO-P).

Most of these interventions (6) were developed for the foster population, and four interventions that were not developed for foster care have been evaluated with this population (Table 2). This is promising, because despite the need for foster care specific interventions, which are developed with clinical and systemic issues pertinent to foster care in mind (Taussig & Raviv, 2014), there is also a need to understand how and when more “mainstream” interventions may be applicable. In addition, because interventions developed for foster care serve such a targeted population, outpatient community-based mental health service sites that are not specifically focused on serving children in foster care might be less apt to adopt foster care specific interventions over more widely applicable interventions. Finally, the available set of foster care interventions does not cover the gamut of potential mental health problems experienced by children in foster care, perhaps necessitating the use of mainstream interventions.

The diversity of intervention characteristics and theoretical frameworks amongst these interventions is also encouraging (Table 3). Some interventions were child only, some were caregiver only, and most included both the caregiver and the child. Interventions employed group, individual and dyadic components. Some interventions were lengthy, spanning the course of the school year (FHF) or lasting approximately 12 months (CPP), while others were delivered in targeted daylong workshops (a PCIT adaptation). Theoretical frameworks were also diverse, as was service delivery site. This diversity amongst intervention characteristics, frameworks, and delivery site indicate that in locations in which several of these interventions are available, it may be possible to match interventions to a patient’s preferences. There has been a recent uptick in interest in patient centered outcomes research, which is based on the notion that patients should have a voice in treatment planning (Patient Centered Outcomes Research Institute, 2013). Now that several disparate interventions have been identified as useful within this population, foster children – who rarely get to have a voice in what happens to them (Bessel, 2001) – might begin to have the ability to engage in their own treatment planning.

Despite the positives regarding the promise of available research, the status of the evidence for interventions for children in foster care was mixed. Of the six interventions developed for foster care, only one of them (KEEP) had been evaluated via a randomized effectiveness (as opposed to efficacy) trial (Table 2). A strength of the available evidence is that many interventions developed for foster care were preventive in nature (FHF, KITS, and TFCO-P), with enrollment criteria based on age, not diagnosis. As such, the children enrolled in efficacy trials likely met criteria for a range of diagnoses, thus making the samples studied closely approximate children who present for treatment in community-based settings. However, lack of rigorous effectiveness data remains a significant limitation, as evidence-supported interventions often do not confer expected outcomes in community-based settings in populations of high risk children (Weisz et al., 2013). It has been hypothesized that this lack of effectiveness is partly due to the complex mental health problems experienced by children in high-risk populations (Weisz et al., 2013), but also due to difficulties engaging these sometimes transitory children in services (Gopalan et al., 2011), amongst other implementation problems.

Of those interventions that were not developed for foster care, only two had been evaluated via randomized effectiveness trials (IY & PCIT; Table 2), and both trials were tests of adapted versions of these interventions. Adapting interventions to the foster care context demonstrates sensitivity to the needs of this unique population. However, it does not exactly inform how well these interventions may have performed without adaptation, or the extent of adaptation necessary to achieve expected outcomes. Furthermore, without manualization of such adaptations, it may be difficult for providers to know how to use these adaptations. Thus, testing adaptations is an important, while testing “how much adaptation is needed” and disseminating information about how to implement adaptations is also important.

Promisingly, two studies that were reviewed have begun to keenly test the utility of or necessity for adaptations. One study compared the effectiveness of two different PCIT adaptations (a brief versus extended version), which were both comprised of group-based caregiver training plus individual phone consultation, with a wait-list control condition (Mersky et al., 2014). Children’s behavior problems improved in both PCIT groups compared to the wait-list control, and the authors concluded that even brief adaptations of PCIT can be beneficial for this population. Another study supplemented TF-CBT with an engagement intervention, and found that children and caregivers who received the engagement intervention were more likely to complete at least four sessions, and were more likely to be retained until treatment completion (Dorsey et al., 2014). This study did not, however, find differences in outcomes across the two groups, potentially due to a relatively small sample size. Similar research, especially research showing that mental health outcomes are improved via the use of adaptations compared with intervention-as-usual, is needed.

The outcomes conferred by the 10 interventions identified by this review are broad (Figure 2, Table 4), spanning from behavioral, to emotional, to developmental, to physiological domains. Additionally, several interventions target the same outcomes. For example, nine interventions improve behavior problems, while five improve caregiver parenting skills. There has been a recent focus in federal funding agendas on comparative effectiveness research, or identifying which interventions work for whom under which circumstances (Conway & Clancey, 2009). Given the broad range of interventions that address similar outcomes within this population, it is time to begin conducting comparative effectiveness research on interventions for children in foster care. Many of the interventions that were identified by this review are likely costly, and knowing which intervention can best treat a specific child and/or family will ultimately help save time and money. It may also improve the relationship between foster children and families with mental health service providers, as getting a family the right referral, the first time, could increase their confidence in the mental health system, and even their willingness to engage.

Moderator and subgroup analyses could also help determine which interventions work best for whom (MacKinnon, 2011). These analyses are particularly warranted for children in foster care, given the diversity in placement setting, maltreatment type, severity of maltreatment or adverse childhood experiences, and mental health diagnoses within this population. Intriguing research on moderators and subgroup analyses for children in foster care was identified, perhaps signaling a need for more related research. For example,

severity of neglect did not moderate outcomes in FHF, suggesting that even though FHF is a preventive intervention that enrolls children with diverse maltreatment histories, children with severe neglect histories are just as likely to benefit from the intervention as those with less severe neglect histories (Taussig, Culhane, Garrido, Knudtson, & Petrenko, 2013). An analysis of the KEEP intervention found that children with greater behavior problems were more likely to benefit from the intervention than children with less severe behavior problems (Chamberlain et al., 2008), while another analysis of KEEP showed that when caregivers were more engaged, it moderated the risk of negative placement disruption for Hispanic children (DeGarmo, Chamberlain, Leve, & Price, 2009). In TFCO-P, attachment behaviors improved most for children who were enrolled at younger ages (Fisher & Kim, 2007), and an ABC study found that behavior problems improved for toddlers, not infants, as a result of intervention (Dozier et al., 2006). Finally, outcomes from a pre-post trial of CPP and TF-CBT were presented per racial/ethnic group, thus clarifying for which groups certain outcomes can be expected (Weiner, Schneider, & Lyons, 2009). It is likely that these findings are only the beginning of what can be learned about how these interventions benefit particular children and families, and the timing of when these interventions are most beneficial.

Findings regarding engagement were sparse and difficult to synthesize (Table 3). Most articles reported some information on engagement, such as enrollment rates, retention rates, or attendance rates. However, enrollment rates were often reported as who was enrolled into research studies, not who actually began the interventions. Similarly, retention was frequently reported as who was retained in the studies, not as who completed the interventions. Attendance rates, when reported, were also reported using varying metrics. For example, some authors reported the average number of sessions attended, while others stated that a certain percentage of participants completed “at least” a certain amount of sessions. Thus, it is difficult to understand how well specific interventions engaged children and families, which children and families were most engaged in specific interventions, and reasons for weak or strong engagement in specific interventions. Three studies did particularly highlight certain aspects of engagement, with important findings. Timmer, Sedlar and Urquiza (2004) found that kin caregivers were more likely than nonkin caregivers to complete a non-adapted version of PCIT. Degarmo and colleagues (2009) found that caregiver engagement decreased the likelihood of placement disruption for Hispanic children, and Dorsey and colleagues found that when TF-CBT is supplemented with an engagement intervention, families are more likely to be retained (2014). Yet, significant questions regarding engagement remain, including which children/families are best engaged in each intervention, whether engagement interventions improve mental health outcomes, and whether engagement interventions should supplement all interventions used with this population, or just those that were not developed for this population.

Now that there is evidence that a range of interventions are useful in ameliorating mental health problems experienced by children in foster care, it is time to identify which interventions work for whom, under which circumstances (Conway & Clancey, 2009; Weisz et al., 2013). For example, there is a need for research that can help providers determine whether a nine-year-old in foster care with some elevated symptoms of posttraumatic stress might be best suited for FHF or TF-CBT – the two interventions that reduce symptoms of

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- Children in foster care have high rates of adverse childhood experiences and are at risk for mental health problems.
- This review was conducted on mental health interventions for children, ages 0 to 12, in foster care.
- Ten interventions were identified, with diverse outcomes, including mental health and physiological.
- Most interventions have yet to be rigorously evaluated in community-based settings with children in foster care.
- Little research has been conducted on child and family engagement within these interventions, and there is a need for more research on moderators of intervention outcomes and subgroups that benefit most from these interventions.
- Future research should focus on developing and testing more interventions with this population, and identifying which interventions work best for whom.

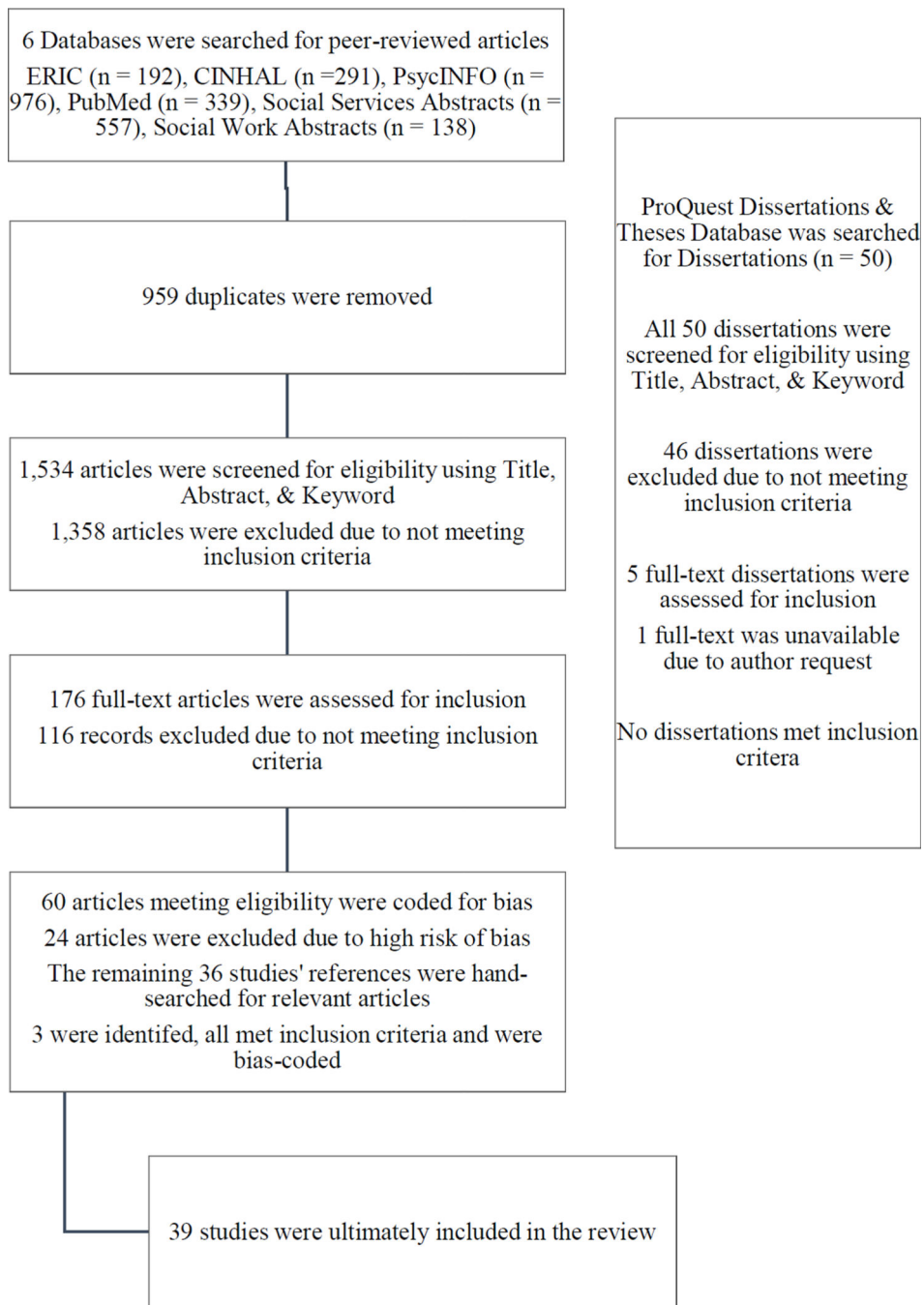


Figure 1.
Process of Identifying Articles for Inclusion

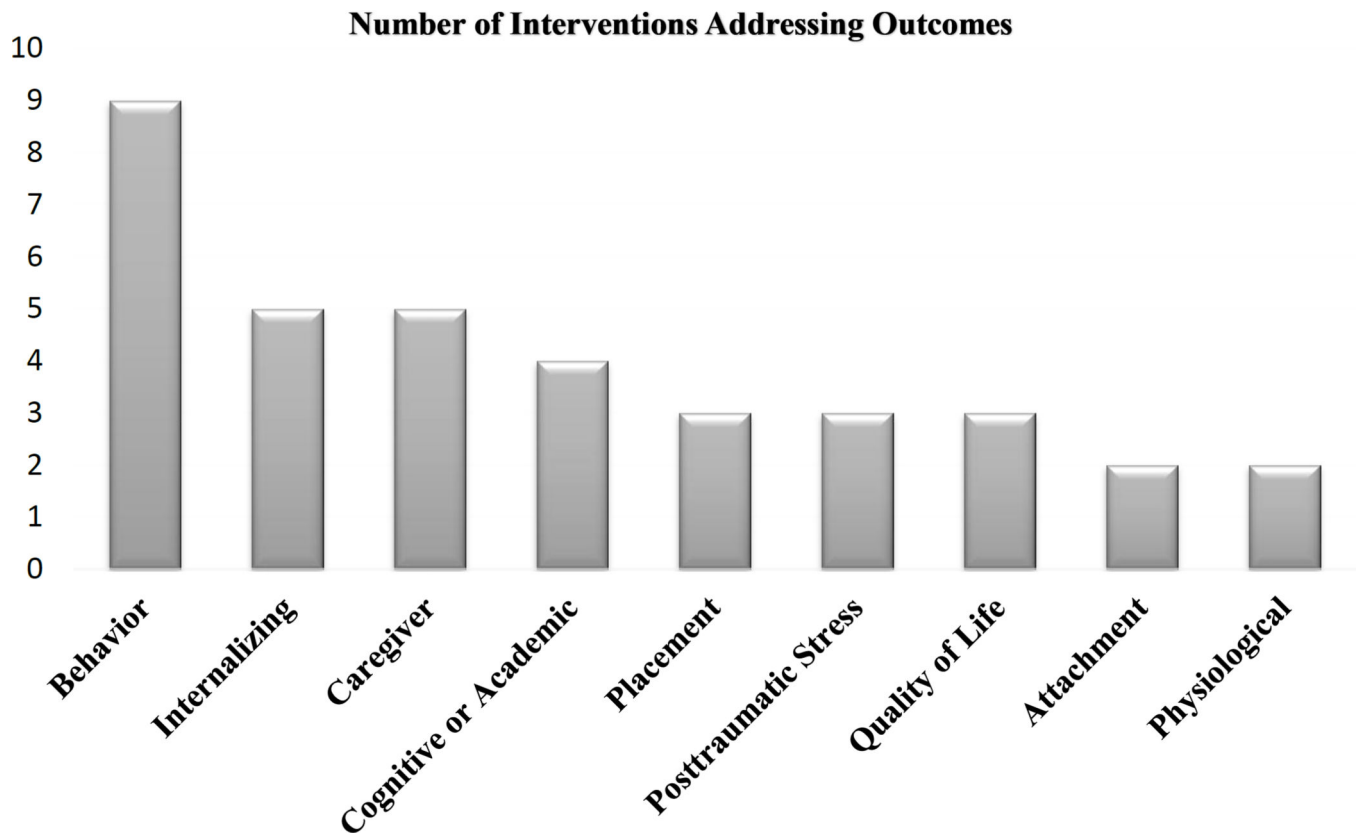


Figure 2.
Mental Health Outcomes Across all Interventions

Table 1

Questions used to determine risk of bias

-
1. Was the study design prospective?
 2. Were groups recruited from the same source population?
 3. Were identical inclusion and exclusion criteria used in both groups?
 4. Did investigators use appropriate randomization methods (blinded, randomization after baseline interviews)?
 5. Were groups similar at baseline?
 6. Were multiple reporters or data sources used to assess outcomes?
 7. Were outcome assessors unaware of which intervention the participants received (i.e., blinded?)
 8. Were measures taken to ensure fidelity to the intervention protocol?
 9. Do study authors report either attrition statistics or that all participants who started the study completed the study?
 10. Was the overall attrition for the study 30%?
 11. Was the differential attrition between groups 15%?
 12. Did investigators use an intent-to-treat analysis?
 13. Were baseline differences between groups taken into account in the statistical analysis?
 14. Were all prespecified outcomes reported in the results?
-

Note. Questions were rated Y (yes), N (no), U (uncertain), or NA (not applicable).

Table 2

Status of Evidence for Interventions for Children in Foster Care

<u>Intervention</u>	<u>Created for Foster Care</u>	<u>Adapted for Foster Care</u>	<u>Efficacy Trial in Foster Care</u>	<u>Efficacy Trial in Other Population</u>	<u>Effectiveness Trial in Foster Care</u>	<u>Other Study in Foster Care</u>
Attachment and Biobehavioral Catch-Up (ABC)	*		*			
Child-Parent Psychotherapy (CPP)				*		*
Fostering Healthy Futures (FHF)	*		*			
Incredible Years (IY)		*		*	*	*
Keeping Foster Parents Trained and Supported (KEEP)	*		*		*	
Kids in Transition to School Program (KITS)	*		*			
Parent-Child Interaction Therapy		*		*	*	*
Short Enhanced Cognitive-Behavioral Parent Training (CEBPT)	*		*			
Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)		*		*		*
Treatment Foster Care Oregon for Preschoolers (TFCO-P)	*		*			*

Table 3

Intervention Characteristics

<u>Delivery Setting</u>	<u>Placement Type</u>	<u>Framework</u>	<u>Components (e.g., group, caregiver-child)</u>	<u>Participants</u>	<u>Enrollment Rates</u>	<u>Attendance</u>	<u>Duration</u>
<u>Attachment and Biobehavioral Catchup (ABC) – Intervention</u>							
Home	Any non-congregate	Attachment Psychological Self-regulation	Parent Education Parent-child interaction (coached in-vivo)	Children ages 0 to 2 yrs & foster carers	88.6% foster & 99% biological carers consented; consent required from both	Not reported	10 weekly sessions
<u>Child-Parent Psychotherapy (CPP) – Intervention</u>							
Mental health service delivery sites	Any non-congregate	Attachment Psychodynamic Developmental Social learning Cognitive behavioral	Play therapy techniques to improve parent-child relationship Parent education	Children ages 0 to 6 & foster carers	Not reported	Not reported	Approximately one year
<u>Fostering Healthy Futures (FHF) – Preventive Intervention</u>							
Community	Any foster child	Cognitive Behavioral Positive Youth Development	Individual Mentoring Skills Groups	Children ages 9 to 11 yrs, recently placed in foster care	91%	Children completed an average of 25 of 30 group sessions & 26.7 of 30 mentoring visits	30 weekly individual mentoring visits 30 weekly skills groups
<u>Incredible Years (IY) Adaptations – Preventive Intervention</u>							

<u>Delivery Setting</u>	<u>Placement Type</u>	<u>Framework</u>	<u>Components (e.g., group, caregiver-child)</u>	<u>Participants</u>	<u>Enrollment Rates</u>	<u>Attendance</u>	<u>Duration</u>
Varied, included: Mental health service delivery site Child welfare agency Classroom-like setting	Varied, included: Non-kin & non-congregate Any non-congregate	Varied, included: Behavioral parent management training (2006, 2011) Social emotional learning Cognitive behavioral therapy (2012)	Varied, included: Parent Management Training Foster & biological carer collaborative parenting training Adaptation of IY Dina Program for Young Children Parenting group to promote children's skills use	Varied, included: Foster carers & biological parents with children 3 to 10 yrs old Foster carers and children 8 to 13 yrs old Children 5 to 8 yrs & foster carers	Ranged from: 81% to 75%	All carers completed 9 of 12 sessions offered	Varied, included: 12 weekly sessions 12 2h child group sessions, 3 2h parent groups
<u>Keeping Foster Parents Trained and Supported (KEEP) – Intervention</u>							
RCT: Community Varied across Mental health service delivery site Home	Any non-congregate	Behavior management parent training	Group parent training Homework	In RCT: Foster carer with child ages 5 to 12 yrs in their homes In adaptation: Foster carer with child ages 4 to 12 yrs in their homes	In RCT: 62% In Adaptation: 83%	In RCT: 75% of families attended at least 90% of sessions	16 90-min weekly sessions
<u>Kids in Transition to School (KITS) – Intervention</u>							

<u>Delivery Setting</u>	<u>Placement Type</u>	<u>Framework</u>	<u>Components (e.g., group, caregiver-child)</u>	<u>Participants</u>	<u>Enrollment Rates</u>	<u>Attendance</u>	<u>Duration</u>
Community	Any non-congregate	Cognitive Behavioral Social-emotional learning Behavioral parent management training	School readiness group Caregiver group Homework	Children entering Kindergarten & foster carers	57%	Children attended 69 to 74% of playgroup sessions 57 to 72% of children attended at least 75% of sessions Carers received 61 to 73% of sessions 55 to 73% received at least 75% of sessions	4 mo (2 mo prior to Kindergarten, 2 mo after) 24 child school readiness sessions, 12 caregiver workshops
<u>Parent Child Interaction Therapy (PCIT) – Intervention</u>							
Mental health service delivery sites	Varied across adaptations: Any non-congregate Non-relative	Behavioral parent management training Social learning theory Attachment theory	Non-adaptation: Individual caregiver sessions Caregiver-child sessions Homework Adaptation: Group caregiver sessions Telephone consultation Homework	Children ages 2 to 8 yrs and foster carers	Non-adaptation: 83% of kin & 80% of non-kin Adaptations: 83.05% 75% 82%	Not reported	Varied across adaptations: 14 hrs parent management training At least 4 weekly & 4 biweekly telephone consultations
<u>Short Enhanced Cognitive-Behavioral Parent Training (CEBPT) – Intervention</u>							

<u>Delivery Setting</u>	<u>Placement Type</u>	<u>Framework</u>	<u>Components</u> (e.g., group, caregiver-child)	<u>Participants</u>	<u>Enrollment Rates</u>	<u>Attendance</u>	<u>Duration</u>
Not specified	Any non-congregate	Cognitive Behavioral Caregiver emotion regulation	Group parent training (cognitive behavioral & caregiver emotion regulation) Homework	Foster carers who had children ages 5 to 18 yrs with externalizing problems in their homes	86%	79% of those allocated to intervention received all sessions	4 weekly 4-hr sessions with 3-mo to 4-hr follow-up session
<u>Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) – Intervention</u>							
Mental health service delivery sites	Any non-congregate	Cognitive Behavioral exposure therapy Family therapy	Child sessions Caregiver sessions Conjoint (child + caregiver) sessions	Children ages 6 to 15 yrs, <i>M</i> age = 8.4, and foster carers	Foster RCT: 89% Foster Pre-post study: Not reported	Foster RCT: 72.72% attended > 4 sessions (regular TF-CBT) 92% attended > 4 sessions (TF-CBT plus engagement intervention)	12–16 weeks
<u>Treatment Foster Care Oregon for Preschoolers (TFCO-P) – Intervention & Preventive Intervention</u>							
Conducted across multiple settings, including: Home Mental health service delivery sites Preschools	Any non-congregate	Developmental Behavioral parent management training Social skills training Cognitive behavioral	Foster caregiver individual & group training Individual foster caregiver consultation & support Child individual therapy Child group therapy Psychiatric or specialist	Children ages 3 to 6 yrs beginning new foster placement & foster carers	89%	Not reported	6 to 9 months, from new placement entry to transition to permanent placement

<u>Delivery Setting</u>	<u>Placement Type</u>	<u>Framework</u>	<u>Components</u> (e.g., group, caregiver-child)	<u>Participants</u>	<u>Enrollment Rates</u>	<u>Attendance</u>	<u>Duration</u>
			consultation as needed Individual parent management training for permanent placement				

Note: Data obtained from the published articles (cited in Supplemental Material) and intervention overview articles (cited in References). Unless noted, data are from studies with foster populations. RCT = randomized controlled trial. Enrollment rates reflect enrollment in research studies; may not reflect those who began interventions.

Table 4

Interventions for children in foster care: What works for whom?

<u>Post-traumatic Stress</u>	<u>Behavior</u>	<u>Internalizing</u>	<u>Attachment</u>	<u>Physiological</u>	<u>Placement</u>	<u>Cognitive or Academic</u>	<u>Caregiver</u>	<u>Quality of Life</u>
<u>Attachment and Biobehavioral Catch-up (ABC)</u>								
	Decreased behavior problems for toddlers, not infants (2006)		Decreased avoidance behaviors (2000) (2009) Decreased disorganized attachment, $d = .52$, (2012) Increased secure attachment, $d = .38$, (2012)	Cortisol improvements (2006) Cortisol improvements, $\beta = -.27$, (2008)		Improved cognitive flexibility, $d = 1.06$, (2012) Improved Theory of Mind, $d = 1.08$ (2012)	Improved carer sensitivity to infants, $\beta = .09$, (2013)	
<u>Child-Parent Psychotherapy (CPP)</u>								
Decreased posttraumatic stress for Hispanic, Black, & Biracial children (2009)	Improved behavioral functioning for Black, Hispanic & Biracial children (2009)	Improved emotional functioning for Black, Hispanic & Biracial children (2009)						Improved child strengths for Black & Biracial children (2009) Improved life domain functioning for Black, Hispanic & White children (2009)
<u>Fostering Healthy Futures (FHF)</u>								

Post-traumatic Stress	Behavior	Internalizing	Attachment	Physiological	Placement	Cognitive or Academic	Caregiver	Quality of Life
Decreased dissociative symptoms, $d = .39$, (2010)	Decreased physical aggression for boys (2012) Decreased intensity of behavior problems; between ~23 & 30% of children with "clinically significant" problems at baseline were no longer significant at f/u (2011)	Decreased composite internalizing problems, $d = -.51$, (2010)			Non-relative placements had: less placement changes (OR = .56), less residential placements (OR = .18), more permanency (OR = 5.14) (2012)			
<u>Incredible Years (IY)</u>								
							Foster carers increased use of positive discipline at intervention end ($d = .40$) and 3-month f/u ($d = .59$) & clear expectations at 3-month f/u ($d = .54$) (2006) Improved co-parenting between biological & foster carers at intervention end (d ranged from .42-.52) (2006)	
<u>Keeping Foster Parents Trained and Supported (KEEP)</u>								

Post-traumatic Stress	Behavior	Internalizing	Attachment	Physiological	Placement	Cognitive or Academic	Caregiver	Quality of Life
	Decreased behavior problems, $d = .26$ (2008 ^a) Decreased behavior problems, $\beta = -4.77$, (2011)	Decreased internalizing problems, $\beta = -5.95$, (2011)			Increased positive exits from care (e.g., adoption, reunification), $\exp(\beta) = 1.96$, (2008 ^b)		Increased foster carer use of positive reinforcement, $d = .29$ (2008 ^a)	
<u>Kids in Transition to School (KITS)</u>								
	Decreased oppositional and aggressive behaviors $d = .33$ (2012) Increased behavioral self-regulation, ES = .18 (2013)	Increased emotional self-regulation, ES = .18, (2013)				Improved early literacy skills, ES = .26, (2013)		
<u>Parent-Child Interaction Therapy (PCIT)</u>								
	Decreased externalizing problems, $\eta^2 = .27$, (2006) Decreased internalizing, externalizing and total problems, $\eta^2 = .13$, (2006) Decreases in overall severity of concerns, $\eta^2 = .13$,	Decreased internalizing problems, combined (both PCIT adaptation groups; 2014) $R^2 = .08$					Decreased foster carer parental distress, $\eta^2 = .05$, (2006) Decreased foster carer child abuse potential, $\eta^2 = .04$, (2006) Decreased foster carer total stress, both PCIT	

Post-traumatic Stress	Behavior	Internalizing	Attachment	Physiological	Placement	Cognitive or Academic	Caregiver	Quality of Life
(2006) Decreased externalizing problem intensity, (both PCIT adaptation groups; combined $R^2 = .04$) (2014) Decreased externalizing problem severity (both PCIT adaptations; combined $R^2 = .06$ & .09 for both problem severity measures) (2014)							adaptations, $d = .45$, (2015) * Decreased foster carer child-related parenting stress, $\eta^2 = .15$ (2006), $d = .47-.50$, (2015) * Increased labeled praise & positive parenting practices, decreased negative practices in both PCIT adaptations, d ranged 70-.92 (2015) *	
<u>Short Enhanced Cognitive-Behavioral Parent Training (CEBPPT)</u>								
Decreased externalizing problems, $d = .67$, (2011)							Decreased foster carer distress, $d = .69$ (2011) Improved foster carer parenting practices, $d = .97$ (2011)	
<u>Trauma-Focused Cognitive Behavioral Therapy (TF-CBT)</u>								

Post-traumatic Stress	Behavior	Internalizing	Attachment	Physiological	Placement	Cognitive or Academic	Caregiver	Quality of Life
less variable ($\beta = .09$) cortisol levels (2014 ^a)								

Note. Data in table obtained from the published articles cited in Supplemental Material (see year and intervention to locate parent reference), as well as intervention overview articles, cited in the References list. Unless noted, all data are from studies with foster populations. RCT = randomized controlled trial. Enrollment rates reflect those enrolled in studies; may not reflect number of individuals who began interventions. When clearly available, standardized effect sizes are presented in Betas (P), $exp(b)$, Cohen's d , R^2 or next to an ES for "effect size" or for "odds ratio" when this was the only description of the type of effect size provided by the authors.

Other notable outcomes: TFCCO was less costly than services as usual (2014^b); Severity of physical neglect did not moderate intervention outcomes in FHF; in KEEP, high risk children (with more than 6 behavior problems) improve > low risk children (2008^a), and carer use of positive reinforcement mediated intervention outcomes (2008^a); also in KEEP, carer engagement moderated risk of negative placement disruption for Hispanic children (2009) and risk of # of prior placements on increases in child behavior problems; in IY, biological parents retained positive discipline practices > foster carers (2006), while IY completers reported higher positive discipline than non-completers and African American parents reported more improvement in harsh discipline than Latino parents (2006).

* see Mersky, Topitzes, Janczewski, & McNeil, 2015 for information regarding differential effectiveness of the two PCTT adaptations.