

Practitioner Review: Children in foster care – vulnerabilities and evidence-based interventions that promote resilience processes

Leslie D. Leve,¹ Gordon T. Harold,² Patricia Chamberlain,¹ John A. Landsverk,³ Philip A. Fisher,^{1,4} and Panos Vostanis²

¹Oregon Social Learning Center, Eugene, OR, USA; ²University of Leicester, School of psychology Leicester, UK;

³Child and Adolescent Services Research Center, San Diego, CA, USA; ⁴University of Oregon, Department of psychology Eugene, OR, USA

Background: An increasing number of children are placed in foster care (i.e., a kin or nonkin family home other than the biological parent) due to experiences of physical, sexual, emotional, or psychological abuse, and/or neglect. Children in foster care are at increased risk for a host of negative outcomes encompassing emotional, behavioral, neurobiological, and social realms. **Methods:** Areas of risk and vulnerability among foster children are described, including emotional and behavioral deficits, impaired neurobiological development, and social relationship deficits. Evidence suggesting the significance of family placement changes and prenatal exposure to substances as contributing mechanisms is presented. Based on a systematic search of the PsycINFO database (to March 2012), eight efficacious evidence-based interventions for foster families are summarized. **Findings:** Although the development of evidence-based interventions that improve outcomes for foster children has lagged behind the delivery of interventions in other service sectors (e.g., mental health and educational sectors), several interventions across childhood and adolescence offer promise. Service system constraints offer both challenges and opportunities for more routine implementation of evidence-based interventions. **Conclusions:** Given the increased likelihood of poor outcomes for foster children, increased efforts to understand the pathways to vulnerability and to implement interventions shown to be effective in remediating risks and improving outcomes for this population are indicated. Evaluation of efficacious interventions in countries outside of the United States is also needed. **Keywords:** foster care, maltreatment, intervention, parenting, psychosocial adjustment, resilience.

Introduction

International statistics suggest that an increasing number of children experience life in foster care (Fernandez & Barth, 2011). Children placed in foster care have typically experienced maltreatment in the form of physical, sexual, emotional, or psychological abuse, and/or general neglect. Approximately 1 million cases of abuse and neglect are substantiated in the United States annually (Horton & Cruise, 2001), with approximately one in two of these children (50%) referred to live in out-of-home care (U.S. Department of Health and Human Services Administration on Children Youth and Families, 2008). In the United Kingdom, approximately 60,000 children are in the care of local authorities at any time, excluding children in short-term respite placements, of whom 80% live with foster carers (UK National Statistics, 2008). In this review, we describe some of the common vulnerabilities seen among foster children, including emotional and behavioral deficits, brain and neurobiological impairment, and poor social relationships with parents and peers. Next, we

review eight evidence-based interventions shown to promote resilience among foster children, obtained via a systematic search of the PsycINFO database. Finally, we provide a discussion of implementation advances and challenges.

Of note, the authors of the present review have been conducting research and intervention work with children in foster care for the past 30 years, primarily in the United States, but more recently through international implementation efforts in Europe, Canada, and New Zealand. Four of the evidence-based interventions reviewed here were developed by one of the present authors; we have attempted to give equal coverage of all eight interventions in this review.

It is also important to acknowledge the different and evolving policy and legal definitions of children in foster or other types of public care across the world. In some countries, including the United States, foster care includes kinship caregivers (i.e., grandparents and other family members who follow the same formal approval and monitoring requirements). In the UK, kinship care can include different types of legal status (e.g., private arrangements or children looked after by local authorities, under a Residence or by a Special Guardianship Order); at present, such kinship caregivers tend to have less

Conflict of interest statement: No competing interests declared; potential conflicts of interest are disclosed in the Acknowledgement section.

access to support and training than foster caregivers, although there is a recent trend to enhance their support systems (Vostanis, 2010). Children in residential treatment centers are not included in this review, although children's homes, group residential care facilities, orphanages, and alternative units (for younger children) still operate in many countries. In addition, youth in such care arrangements were included as the control group in two of the interventions reviewed here. Similarly, we have not included studies of adopted children, despite the important parallels with foster children.

Areas of risk and vulnerability for foster children

Background

Foster children often experience marked vulnerabilities in a number of areas. Below, we describe three areas of vulnerability that research evidence has suggested to be common among this population.

Emotional and behavioral development. A primary area of vulnerability among foster children is their mental health, marked by disruptions in emotional and behavioral development. Some of the most definitive evidence of foster children's widespread mental health problems comes from the National Survey of Child and Adolescent Well-Being (NSCAW), a nationally representative sample of more than 6,200 children and families investigated by the child welfare system in the United States. Nearly half of these children show signs of emotional and behavioral problems, with even higher rates among children who were later placed into out-of-home care (Burns et al., 2004). In a separate US study with a large representative sample of 5- to 9-year olds, Briggs-Gowan, Horwitz, Schwab-Stone, Leventhal, and Leaf (2000) reported that the rates of childhood psychiatric disorders (e.g., major depression, conduct disorder, and attention deficit/hyperactivity disorder) were nearly three times higher in families where potential child abuse was indicated: 49% of the children in such families were diagnosed with a psychiatric disorder (vs. 17% of the full sample). Such mental health problems can increase the likelihood of the child experiencing additional adversities like placement disruptions (Chamberlain et al., 2006). Similarly, a mental health survey of children in Great Britain indicated that foster children had significantly higher rates of disorder than children living in deprived private households (ratio of 3.7:1), but lower rates than children living in residential care (Ford, Vostanis, Meltzer, & Goodman, 2007). Similar trends have been established in other countries, including Norway (Holtan, Ronning, Handegard, & Sourander, 2005) and Australia (Sawyer, Carbone, Searle, & Robinson, 2007).

Increased rates of mental health problems for foster children extend into adulthood. For example, in a

British study, adults with public care histories were nearly twice as likely to have seen a specialist for a mental health, drug, or alcohol problem after age 16 as compared with those who were never in the public care system (Viner & Taylor, 2005). Among US foster children who began participating in the NSCAW during adolescence, 17% had been arrested during the previous 12 months at a follow-up in young adulthood, with arrest rates more than four times the national rate for 18- to 24-year olds (Administration for Children and Families, 2008). Despite the widely documented and sustained mental health need and the associated high service costs, this population is generally underserved, particularly among ethnic minority foster children (Anyon, 2010), and this has been linked to a lack of joint care pathways and fragmentation of health and welfare services (Vostanis, Bassi, Meltzer, Ford, & Goodman, 2008).

Brain and neurobiological development. Foster children are also at elevated risk for disruptions in key areas of brain development. In one study of foster children and comparison children reared in low-income, nonmaltreating biological families, the foster children experienced deficits in a variety of neurocognitive functions, including poorer visuospatial processing, poorer memory skills, lower scores on intelligence tests, and less developed language capacities (Pears & Fisher, 2005). These deficits were related to specific aspects of their maltreatment history, including documented neglect or emotional abuse. Such deficits likely affect the children's performance in school and their cognitive development; more than half of the children in the welfare system have been identified as having cognitive delays (Landsverk, Davis, Ganger, Newton, & Johnson, 1996) while also evidencing prereading skill deficits (e.g., phonological awareness, alphabetic knowledge, and oral language ability) prior to school entry that are associated with poorer literacy skills once they begin school (Pears, Heywood, Kim, & Fisher, 2011).

Researchers examining brain development in foster children have identified at least two brain systems affected by early maltreatment experiences. First, the neuroendocrine stress response system, specifically the functioning of the hypothalamic-pituitary-adrenal (HPA) axis, has been shown to differ between foster and nonfoster children (Dozier et al., 2006; Fisher & Stoolmiller, 2008). Experiences of neglect and multiple caregiver transitions are particularly salient factors related to disruptions in the HPA system (Fisher, Gunnar, Dozier, Bruce, & Pears, 2006). Second, regions in the prefrontal cortex associated with executive functioning have been shown to be affected by maltreatment and placement in foster care. Executive functioning deficits include impulsive behavior and poor decision-making. The results from a study examining electrophysiological activity in the brain found that children in regular foster care (i.e., without any extra support services) showed a lack of respon-

siveness to feedback during an inhibitory control task relative to low-income control children or foster children who had received additional intervention services (Bruce, McDermott, Fisher, & Fox, 2009). Together, this body of evidence suggests that children with experiences of maltreatment and placement in foster care might have enduring brain and neurobiological vulnerabilities that could affect their ability to succeed in home, school, and other social contexts.

Social relationships with parents and peers. A third area of vulnerability is foster children's capacity to develop adaptive social relationships with caregivers and peers. Elevated levels of behavioral problems among foster children have been shown to predict elevated stress among caregivers (Chamberlain et al., 2006). Without additional supports, foster caregivers' stress levels remain high, and they show increased stress sensitivity to children's behavior problems over time (Fisher & Stoolmiller, 2008). Furthermore, foster children with backgrounds of neglect and/or disordered attachment have shown increased physiological reactivity during an attachment task with their foster caregivers (Oosterman, de Schipper, Fisher, Dozier, & Schuengel, 2010), indicating that the quality of relationships with current caregivers might be compromised by experiences of prior neglect that impede the children's abilities to regulate emotions in the context of environmental stress.

Emotional dysregulation might extend to other social contexts, including peers and difficulties establishing and maintaining positive peer relationships. For example, girls in foster care have significantly poorer peer relations at school entry than nonfoster care girls (Leve, Fisher, & DeGarmo, 2007). Furthermore, the results from several studies have shown that children with institutional or foster-care histories tend to be indiscriminately friendly toward others (i.e., they readily approach individuals with whom they do not know to engage in conversations or contact, showing little social reserve; Bruce, Tarullo, & Gunnar, 2009). The results from a study of preschoolers in foster care indicate that the number of foster caregiver transitions is a factor in predicting children's indiscriminate friendliness, with a greater number of caregivers leading to poorer inhibitory control and increased rates of indiscriminate friendliness (Pears, Bruce, Fisher, & Kim, 2010). Similarly, children adopted from institutional settings have been shown to have poorer peer and social relationships after a longer time in institutional care prior to adoption (Bruce, Tarullo, et al., 2009; Rutter et al., 2010).

Factors associated with foster children's increased vulnerabilities

An important starting point in examining early adverse influences is to recognize that not all children evidence expected negative outcomes; some show limited or relatively minor negative effects. What explains this

difference in adaptation? The essence of adaptation in the context of adversity is captured by the scientific field of resiliency research (Rutter, 2000). Resilience is recognized as a developmental feature that captures individual differences in adaptation to specific risk contexts or developmental hazards, including maltreatment and foster-care placement. The topic of individual resilience is one of considerable social, scientific, clinical, and policy importance, particularly in relation to policies that focus on the early identification, prevention, and treatment of mental health disorders and developmental impairment. Resiliency research differs from traditional concepts of risk and protection in its focus on individual variation in response to comparable experiences. Accordingly, the research focus and translation to policy application is on highlighting factors that explain individual differences in adaptation to adversity and the causal processes that they reflect, rather than on resilience as a general quality (Rutter, 2000). By highlighting the root cause of why some individuals prove resilient in the face of maltreatment, intervention studies might be directly informed by way of targeting mechanisms that facilitate adaptive responses.

Similarly, identifying the factors that explain why foster children are at elevated risk for poor psychosocial outcomes can help researchers and practitioners identify intervention opportunities. Two influences are reviewed here: placement disruptions and prenatal exposure to drugs and alcohol.

Placement disruptions. Placement and reunification failures are common, with between one third and two thirds of traditional (i.e., nonkin) foster-care placements disrupting within the first 1–2 years (Wulczyn, Hislop, & Chen, 2007). Data from the NSCAW indicate that, over an 18-month period, nearly 30% of foster children experience placement instability (Rubin, O'Reilly, Luan, & Localio, 2007). Placement instability often arises from a breakdown of the child–foster caregiver relationship, but it can also result from administrative needs and policies (e.g., siblings being removed from the biological home and placed into care), although research in this area often fails to distinguish the cause of placement changes. Regardless of the underlying reason for placement changes, multiple studies have shown that placement disruptions have negative consequences for children's emotional and behavioral development, with each change in foster home involving repeated discontinuity in caregiving experiences as well as social instability (e.g., school and peer changes); these factors are recognized as promoting negative psychological outcomes (Rubin et al., 2007).

Children's externalizing behaviors (e.g., aggressive, destructive, and oppositional behavior) have been associated with placement disruptions. In a US sample, Chamberlain et al. (2006) found that for each increase in the number of behavior problems above six per day, there was a 17% increase in the

risk of a placement disruption within the next 12 months. Furthermore, placement disruptions have been shown to contribute to the inhibitory control difficulties noted above (Pears et al., 2010). There is also evidence from UK studies that difficult children tend to induce negative reactions in their caregivers, which can lead to a placement breakdown (Sinclair, Wilson, & Gibbs, 2005). The associations between placement disruptions and behavior problems are likely bidirectional; interventions that decrease child behavior problems and increase foster family attachment and feelings of belonging might reduce the effect of behavioral problems, and increased caregiver support might reduce the number of placement disruptions (e.g., Chamberlain et al., 2008; Leathers, 2006).

Prenatal exposure to drugs and alcohol. A second factor associated with increased vulnerability among foster children is prenatal exposure to tobacco, drugs, and/or alcohol. Forrester (2000) noted that parental substance use is a concern in over half of child welfare families in England, with 24% exhibiting alcohol abuse and 16% exhibiting heroin abuse. More than 80% of children enter the US foster-care system due to parental substance abuse (Bailey et al., 2005). It has been widely documented that prenatal substance use exposure is linked to a host of poor outcomes from early childhood through adulthood. In a longitudinal study of children identified at birth with prenatal exposure, strong associations were noted between the timing, severity, and type of prenatal exposure and specific poor outcomes later in life (Fisher et al., 2011). Specifically, binge drinking during the first trimester was associated with severe long-term deficits in attention, memory, and cognitive processing. Similarly, maternal smoking during pregnancy had been linked to low birth weight, neurobehavioral deficits, cognitive deficits in learning and memory, and conduct problems (e.g., Cornelius, Taylor, Geva, & Day, 1995; Olds, 1997). A few researchers have found higher rates of attention deficit/hyperactivity disorder among children exposed to nicotine prenatally (e.g., Thapar et al., 2003) independent of prenatal stress. The results from studies of foster children who were prenatally exposed to substances show similar deleterious effects, including alterations in salivary cortisol response following a social stressor (e.g., giving a speech and performing mental arithmetic aloud in front of unfamiliar judges; Fisher, Kim, Bruce, & Pears, 2012).

Evidence-based interventions that improve outcomes for foster children

The studies reviewed above clearly demonstrate that interventions that improve the well-being of foster children and their families are desperately needed. In this section, we review interventions developed

and tested specifically with foster-care samples and have been shown to improve at least one child outcome. As noted in a recent systematic review using the Cochrane Collaboration's criteria (Turner & Macdonald, 2011), few evidence-based programs exist for foster families; their review identified only five studies. The results from a study by the Office of Victims of Crimes suggest that only 1 of 24 mental health interventions for children who had been abused is effective (Saunders, Berliner, & Hanson, 2004). Interventions for foster-care families are unique in several regards, predominantly because the children in care have been exposed to neglectful and/or abusive parenting from a former caregiver but not from the current foster caregiver who would be involved in the intervention and is currently parenting the child. In addition, because of their histories of maltreatment, foster children are more likely to exhibit constellations of behavioral, neurobiological, and relationship vulnerabilities that pose unique challenges to caregivers: Thus, standard parenting intervention programs might not be sufficient or appropriate for foster families.

Methodology

We conducted a PsycINFO literature search to identify intervention programs that have been tested with foster-care families and have been shown to be effective in improving children's outcomes.¹ We conducted the search in March 2012 using the terms *foster care* and *intervention* as the two required keywords in any field for all years available. All abstracts from journal articles on human populations ($n = 559$) were reviewed, and all articles that involved an evaluation of the efficacy of an intervention for foster children were acquired. The following inclusion criteria were applied to the results: (a) the study was a randomized controlled trial with foster children; (b) randomization occurred at the individual child level; (c) the study had a sample size of at least 15/group, making it sufficiently powered to detect replicable effects; and (d) the intervention produced at least one positive outcome for the intervention children relative to the control children. If an intervention was identified as meeting criteria (d), then all published studies of that intervention (whether showing positive or negative results) have been considered in the review. Eight interventions (most of which had multiple outcome publications) met all four inclusion criteria.

¹ Other evidence-based interventions, including Triple P, SafeCare, Parent-Child Interaction Therapy, and the Nurse-Family Partnership, have been shown to prevent incidents of maltreatment but are not included in this review because we could not find evidence of a randomized controlled trial comprised specifically of foster children with these interventions. Nonetheless, such programs complement foster-care interventions and serve as effective primary prevention programs aimed at preventing maltreatment.

Although each identified intervention applies a different model, they share a common set of characteristics: (a) a focus on reducing known risk factors and enhancing individual strengths, (b) sensitivity to child age and developmental level, and (c) built on evidence for the mediating role of parenting in linking early adversity with child outcomes. The eight identified interventions are reviewed below, with additional information provided in Table 1. Table 1 also includes summary information about the range of effect sizes for each study and outcome, using Cohen's effect size recommendations (*r* effects: small $\geq .10$, medium $\geq .30$, large $\geq .50$; *d* effects: small $\geq .20$, medium $\geq .50$, large $\geq .80$; Cohen, 1988). We provide these general small, medium, and large effect size indicators for each outcome but caution readers that the interpretation of effect sizes is always context specific, depending on the specific outcome and other study design issues such as the reliability of the measures (Ferguson, 2009); therefore, we encourage readers to refer to the original studies for more information. We did not initiate a meta-analysis given the heterogeneity of the study specifics included across our review. Rather, we summarize outcomes for each intervention separately and present general effect size information as included in the original publication or (in the absence of such information) using the data provided in the publication with an online effect size calculator (Wilson, 2001). The lack of a prespecified analysis plan in most of the studies reviewed and our method of selective reporting of positive effects from reported analyses means that there is likely to be a reporting bias toward positive effects in this review (i.e., less attention is given to what interventions did not achieve).

Early childhood

A primary developmental task during early childhood is the formation of a positive and secure attachment relationship with a supportive caregiver. This process can be disrupted when children experience maltreatment from their caregiver and multiple foster placements. Three independent interventions for young foster children demonstrate that, when foster caregivers are given appropriate support and training, children can develop healthy emotion and behavior regulation and positive, secure social relationships. One 10-session intervention, Attachment and Biobehavioral Catch-up (ABC), was designed to help caregivers facilitate healthy regulation of their child's behavior and stress responses by teaching caregivers to be highly responsive to the child's emotions and increasing caregivers' provision of nurturing care and promotion of attachment security (Dozier, Peloso, Lewis, Laurenceau, & Levine, 2008). This intervention has been successful in normalizing stress responses (i.e., cortisol reactivity) among foster children whose caregivers were

randomly assigned to the ABC intervention relative to children in a foster-care control intervention condition. The ABC children were also more often secure and less often disorganized in their attachments to caregivers than were the control children, with 32% of the ABC children (vs. 57% of the control children) having a disorganized attachment to their caregiver and 52% of the ABC children (vs. 33% of the control children) having a secure attachment approximately 1 month after the intervention (Bernard et al., 2012). Publications demonstrating positive effects of the ABC intervention on mental health outcomes are not yet available in the literature.

A second intervention, Multidimensional Treatment Foster Care for Preschoolers (MTFC-P), uses a behavior-management approach and intensively trains, supervises, and supports foster caregivers to provide positive adult support and consistent limit setting. MTFC-P includes coordinated interventions with the child's biological parents. Although this strength-based intervention is not focused specifically on attachment security, it has produced positive attachment outcomes. The MTFC-P children showed increased secure behavior and decreased avoidant behavior relative to the children in a regular foster-care control condition with small effect sizes; the MTFC-P children had a 10% increase (vs. 6% in the control children) in rates of secure behavior over a 12-month period (Fisher & Kim, 2007). In addition, MTFC-P outcomes include significant influences on stress response systems: the intervention effectively prevented the MTFC-P children from having blunted diurnal HPA axis function, with medium effect sizes (Fisher, Stoolmiller, Gunnar, & Burraston, 2007) and reduced caregiver stress (Fisher & Stoolmiller, 2008). Furthermore, the intervention improved placement stability outcomes across a 2-year period and mitigated the risk of multiple prior foster-care placements on children's subsequent placement failures (Fisher, Burraston, & Pears, 2005). Compared with the MTFC-P children, the control children were 3.6 times more likely to have a permanent placement failure. Furthermore, children with three or more prior placement failures were at even heightened risk of a permanent placement failure: the probability of an additional failed permanent placement was approximately three times larger for the control children. Similar to the ABC intervention, mental health outcomes resulting from the MTFC-P intervention are not yet available in the published literature.

A third early childhood intervention is the Bucharest Early Intervention Project (BEIP). In the BEIP, children who were institutionalized since birth were randomly assigned to continue living in an institutional setting or to be placed in foster care. The foster caregivers received ongoing support from social workers in managing challenging behavior, encouraging child-centered parenting, and organizing a support group. The intervention was focused

Table 1 Intervention programs tested in foster-care settings with efficacious child outcomes: program effects

Program name and primary references	N	Sample and intervention characteristics	Longest intervention outcome follow-up published	Effect size ^a			
				Mental health	Brain and neurobiological development	Relationships: parents and peers	Placement disruptions
Early childhood Attachment and Biobehavioral Catch-up (ABC) Dozier et al., 2008; Bernard et al., 2012	46 intervention; 47 control; 48 nonfoster-care controls	US sample of children aged 15–24 months old at outcome assessment. Control condition included developmental education intended to improve cognitive skills in foster children. Also included a nonfoster-care control group	Postintervention (unclear time period)	S			
Multidimensional Treatment Foster Care for Preschoolers (MTFC-P) Fisher & Kim, 2007; Fisher et al., 2007; Fisher & Stoolmiller, 2008; Fisher et al., 2005	60 intervention; 60 control	US sample of children aged 2–21 months old at enrollment. Control condition included developmental education intended to improve cognitive skills in foster children	1 month postintervention (or later for younger children)		M		
Bucharest Early Intervention Project (BEIP) Bos et al., 2011; Fox et al., 2011; Nelson et al., 2007; Zeanah et al., 2009	57 intervention; 60 control; 60 nonfoster-care controls	US sample of children aged 3–6 years. Control condition consisted of foster-care services as usual. Also included a nonfoster-care control group	2 years postbaseline	M		S	S
Middle childhood Modified Incredible Years (IY) Linares et al., 2006	68 intervention; 68 control; 72 noninstitutionalized controls	Intervention and control families recruited through an institutional setting in Romania when children were 5–31 months old. Control children remained in the institution at start of study (some were later placed). Also included a noninstitutionalized control group	Child age 8 years	S		L	
Keeping Foster Parents Trained and Supported (KEEPS) Chamberlain et al., 2008; Price et al., 2008	40 intervention; 24 control	US sample of primarily neglected children aged 3–10 years. Primarily Latino and African American sample. Control condition consisted of foster-care services as usual	3 months postintervention			SM	
	359 intervention; 341 control	US sample of children aged 5–12 years. Large Latino and African American subsamples. Control condition consisted of foster-care services as usual	11 months postbaseline			S	S

Table 1 Continued

Program name and primary references	N	Sample and intervention characteristics	Longest intervention outcome follow-up published	Effect size ^a			
				Mental health	Brain and neurobiological development	Relationships: parents and peers	Placement disruptions
Middle School Success (MSS) Kim & Leve, 2011; Smith et al., 2011	48 intervention; 52 control	US sample of girls transitioning to middle school (age 11). Control condition consisted of foster-care services as usual.	3 years postbaseline	SM			M
Fostering Individualized Assistance Program (FIAP) Clark et al., 1994, 1998	54 intervention; 78 control	US sample of children aged 7–15 years with or at risk for an emotional or behavioral disorder. Control condition consisted of foster-care services as usual	18 months postbaseline	S			S
Adolescence Multidimensional Treatment Foster Care for Adolescents (MTFC-A) Chamberlain & Reid, 1998; Kerr et al., 2009; Leve et al., 2009; Westermarck et al., 2010	37 intervention; 42 control	US sample of boys aged 12–17 years in juvenile justice who had been referred for out-of-home care. Control condition consisted of out-of-home care services as usual (typically, group care)	2 years postbaseline	M L		M	SM
	81 intervention; 85 control	2 US samples of girls aged 13–17 years in juvenile justice who had been referred for out-of-home care. Control condition consisted of out-of-home care services as usual (typically, group care)	2 years postbaseline	S M		M	
	20 intervention; 15 control	Swedish sample of youths aged 12–18 years diagnosed with conduct disorder who were at immediate risk of out-of-home placement. Control condition consisted of foster-care services as usual	2 years postbaseline	SM			

^aEffect sizes denote small (S), medium (M), and large (L) effects, using Cohen's effect size recommendations (*r* effects: small $\geq .10$, medium $\geq .30$, large $\geq .50$; *d* effects: small $\geq .20$, medium $\geq .50$, large $\geq .80$; Cohen, 1988).

on developing attachment relationships, facilitating language development, and providing foster parents with techniques for managing difficult child behavior (Nelson et al., 2007). This is an unusual intervention because intervention supports were provided until children were 54 months of age (a lengthy intervention), and the sample was institutionalized. Both of these design features may limit the generalizability of the findings from the BEIP to the general population. Nonetheless, a wide range of outcomes has been examined in the BEIP, up to 8 years later, with significant effects in multiple domains (Bos et al., 2011; Fox, Almas, Degnan, Nelson, & Zeanah, 2011; Nelson et al., 2007). First, the intervention children were more likely to have secure caregiver attachments: at the 42-month follow-up, 49% of the intervention children versus 18% of the control children were securely attached. Second, the intervention children exhibited improved cognitive outcomes (mean IQ score 5.3 points higher than the control children at age 8), higher levels of attention (small effect size), and greater positive affect (large effect size) at 30–42 months. The IQ effects were only marginal for full-scale IQ scores, and the age 8 IQ outcomes were not as strong as age 42- and 54-month outcomes (Fox et al., 2011). Third, the intervention children exhibited fewer internalizing disorders at 54 months: 22% of intervention children versus 44% of control children met diagnostic criteria. However, the intervention did not result in a reduction in total psychiatric symptoms for boys (Zeanah et al., 2009).

Middle childhood

Four interventions for foster families have been shown to be effective during middle childhood. First, the Incredible Years (IY) intervention, which has been shown to be effective in populations of young at risk children and children with conduct problems in the United States and United Kingdom (e.g., Hutchings et al., 2007), was modified and implemented in a middle-childhood foster-care sample. The modified IY intervention incorporated a coparenting component between foster and biological caregivers to expand their knowledge of each other and their child, practice open communication, and negotiate interparental conflict regarding topics, such as family visitation, family routines, and discipline (Linares, Montalto, Li, & Oza, 2006). Families assigned to the intervention condition exhibited improvements in positive discipline (small effects at the end of the intervention that became large effects at a 3-month follow-up) and coparenting skills (small effects at the end of the intervention only) relative to the control families, indicating the potential of IY programs that include coparenting components to ultimately reduce child mental health problems for foster children. However, the intervention did not yield significant effects on children's externalizing

problems, which was the targeted distal outcome of this intervention.

A second intervention for middle childhood is Keeping Foster Parents Trained and Supported (KEEP). In an RCT evaluation of KEEP, foster caregivers who were receiving a new placement were randomly assigned to foster-care services as usual or to the KEEP group intervention for 16 weeks. This included training, supervision, and support to foster parents in applying behavior-management strategies. The results suggested that KEEP was effective in reducing child behavior problems compared with the services-as-usual control condition. In addition, improvements in child behavior problems were associated with intervention-driven improvements in parenting (Chamberlain et al., 2008). The intervention improved placement stability in two ways: by increasing the likelihood of reunification with biological, relative, or adoptive families (9% of the control children vs. 17% of the KEEP children experienced a positive placement change); and by mitigating the risk-enhancing effects of previous multiple placements (Price et al., 2008). Specifically, each additional placement that the control children experienced corresponded to a 15% increase in subsequent placement disruptions, whereas there was no association between the number of prior placements and new placement disruptions for the KEEP children. Intervention effects were not found for the likelihood of negative exits (e.g., child runaways, placement in a different foster home).

A third intervention for middle childhood, Middle School Success (MSS), is a derivative of KEEP that specifically targeted youth exiting primary school. MSS included foster caregiver and youth components, with 6 sessions over the summer prior to middle school entry and ongoing weekly sessions over the 1st year of middle school. The foster caregiver sessions were group based and behavior-management oriented; the youth sessions were group based (summer) and individually based (school year) and were oriented toward skill building. Relative to a foster-care services-as-usual control group, MSS youths exhibited decreased externalizing and internalizing problems at a 6-month follow-up (Smith, Leve, & Chamberlain, 2011) and at 12- to 24-month follow-ups (Kim & Leve, 2011). For example, MSS girls displayed an average of 1.1 internalizing problems and 2.4 externalizing problems per day (vs. 1.5 and 2.9, respectively, in the control group) at the 6-month follow-up. Examination of intervention effects on prosocial behavior at 6 months were also examined but were nonsignificant. However, the MSS resulted in increased prosocial behavior and fewer placement changes at a 12-month follow-up (.76 placement changes for the control girls vs. .33 for the MSS girls) and reduced substance use at a 36-month follow-up, specifically reduced tobacco and marijuana use (Kim & Leve, 2011).

A fourth intervention for middle childhood is the Fostering Individualized Assistance Program (FIAP; Clark et al., 1994). The FIAP was focused on wrapping services around the child based on their individual and family needs with the goal of improving placement stability and reducing behavior and emotional problems. The intervention had four components, including a strength-based assessment, life-domain planning, clinical case management, and follow-along supports and services. Compared with the services-as-usual group, the FIAP children exhibited fewer attention, withdrawal, and total problems at an 18-month follow-up, assessed via caregiver report (Clark et al., 1994). For example, attention problem scores were 7.2 for the FIAP children and were 7.9 for the control children. In addition, the FIAP children had fewer runaways and spent less time incarcerated than the control children. Increased placement stability has been found for older FIAP children only (Clark et al., 1998). Although this evaluation noted numerous positive effects, many of these were specific to a subpopulation (e.g., boys or older children) or were not found when subscales or youth reports were examined.

Adolescence

One intervention has been shown to produce positive outcomes for foster adolescents: Multidimensional Treatment Foster Care for Adolescents (MTFC-A), a multicomponent program that involves individual placement with a specialized foster family (Chamberlain, 2003). In MTFC-A, youths are placed in community homes where foster caregivers are intensively trained, supervised, and supported to provide positive adult support and mentoring, close supervision, and consistent limit setting. MTFC-A placements typically last 6–9 months and involve coordinated interventions in the home, with peers, in educational settings, and with the adolescent's long-term placement resource. The results from MTFC-A trials in the United States have indicated its effectiveness in reducing arrest rates and deviant peer affiliations for boys and girls, placement disruption and parenting for boys, and pregnancy rates and school engagement for girls (Chamberlain & Reid, 1998; Kerr, Leve, & Chamberlain, 2009; Leve, Fisher, & Chamberlain, 2009). For example, between baseline and a 12-month follow-up, the MTFC-A youths had spent 53 (boys) and 22 (girls) days in lockup (e.g., a detention facility) versus 129 and 56 days, respectively, for the control youths. However, intervention effects were not found for girls' self-reported delinquency. In the 24 months following baseline, 26.9% of MTFC girls had a new pregnancy versus 46.9% of the control girls. International replication trials of MTFC-A have also shown positive results. The results from a trial in Sweden indicated significant reductions in youth-

reported externalizing and internalizing behavior relative to a services-as-usual control group (Westermarck, Hansson, & Olsson, 2010). Furthermore, depression scores were twice as high for the control youths compared with the MTFC-A youths at the 2-year follow-up.

Other noteworthy foster-care interventions

In addition to the eight interventions presented in Table 1, several interventions met most (but not all) of our inclusionary criteria; therefore, we note them here as promising programs that merit additional research. First, Bywater et al. (2011) implemented a randomized waitlist-control version of the IY program. Although their intervention-versus-control effects were not significant, their results indicated significant pre–post reductions in problem behaviors for the intervention foster children (but not for the control children). Second, Farmer, Burns, Wagner, Murray, and Southerland (2010) adapted elements of the MTFC-A model to supplement a statewide study of treatment foster care in the United States. They randomized at the agency level and augmented existing services with supervision/support of caregivers by the supervisory staff; proactive, teaching-oriented approaches to problem behaviors; preparation of the adolescent for adulthood; and treatment of previous trauma. Their results indicated that, compared with the control youths, the intervention youths showed significant improvements in symptoms, behaviors, and strengths at a 6-month follow-up (improvements sustained at 12 months for one of the outcomes scales but not the other two). Finally, an independent quasiexperimental replication of MTFC-A in England found that young offenders assigned to MTFC-A rather than to custody had significantly lower recidivism rates and were more likely to live with their families 1 year after entering the program, but long-term effects were not sustained (Biehal, Ellsion, & Sinclair, 2011). Several other foster-care interventions show promise internationally but have not yet been evaluated using randomized designs (e.g., McDaniel, Braiden, Onyekwelu, Murphy, & Hassan, 2011; Nilsen, 2007).

In addition, the results from at least two randomized controlled trials with foster children have indicated nonsignificant differences between treatment and control conditions across all of the key child outcomes examined (e.g., Macdonald & Turner, 2005; Minnis, Pelosi, Knapp, & Dunn, 2001), and other failures-to-replicate may exist in the unpublished literature. An analysis of the common intervention components that result in positive intervention outcomes across multiple studies could help further refine knowledge about the core intervention components that help to improve outcomes for foster children. In addition, all but two of the studies noted in Table 1 included children and families from the United States. Evaluations in new

locales with teams independent of the intervention developers are needed to examine whether these interventions remain effective when implemented outside of the original setting and across countries with varied foster-care practices. This has begun for MTFC-A and MTFC-P, but more widespread efforts are needed on the international level.

Limitations of prior research

Although the eight interventions identified in Table 1 offer promise for improving a range of outcomes for foster children, there are significant limitations in the research to date, and the results from the studies described above should be interpreted with caution, particularly given that the criteria used for selecting interventions to include in this review favored the reporting of positive intervention effects (rather than negative effects). Furthermore, a common limitation is the lack of long-term follow-up data. Three of the interventions do not have published follow-up data at 12 months or beyond (ABC, modified IY, and KEEP), making it difficult to discern whether the observed effects would sustain beyond the intervention period. In one of these interventions (modified IY), the effects dissipated quite quickly: 3 months after the intervention ended, only the positive discipline effect remained; coparenting effects were nonsignificant, and child behavior problems did not show a significant group difference at either assessment. Further undermining confidence in the sustainability of effects, the length of time between intervention termination and the follow-up assessment was often unclear from the published work. For example, the ABC samples had a wide child age range; therefore, the outcome assessment was delayed if the child was younger at the start of the study. In addition, some children in all of the studies experienced one or more placement changes prior to the outcome assessment. Together, these limitations make it difficult to ascertain whether the identified intervention effects sustain for most children well after the intervention has ended and the child is in a permanent placement setting with new caregivers. Long-term follow-up studies of the interventions included in this review are needed to better evaluate whether initial effects are maintained over time; only two of the interventions described above have published effects beyond 24 months (BEIP and MSS).

Another issue confounding the results from some of the studies noted above is that the data collection process was not fully blinded to study condition. For example, in the BEIP study, which relied in part on observational data, it would be readily apparent whether the child was assigned to remain in the orphanage or to be placed in foster care. Another limitation common to the results from several of these studies is the lack of baseline (preintervention) data on one or more of the outcome measures. For example, the two primary ABC intervention

outcomes were attachment and cortisol reactivity, neither of which was assessed preintervention. Although random assignment should remove preintervention differences, chance differences can be present and might confound conclusions about postintervention outcomes. Also, the effects found across studies did not consistently generalize to other measures. For example, the FIAP intervention effects on child mental health were present for caregiver reports but not for youth reports, and delinquency outcomes in MTFC-A were present for girls using days in locked settings data but not using self-reported delinquency data. The effects were also sometimes specific to subpopulations (e.g., one gender or older children; FIAP; MTFC-A) or to one set of hypothesized outcome constructs but not to another set (e.g., MSS, BEIP, and FIAP). These inconsistent findings, combined with the generally small effect sizes (and the failure to report effect sizes in many published reports), suggest that findings might not be as robust as hoped and/or might be specific to only certain outcomes.

A final limitation worth noting regarding the interventions and results noted above is that there is significant variation in the number of published outcome studies derived from each intervention. Some interventions resulted in only a single outcome article in which multiple outcomes were presented (modified IY), whereas other interventions resulted in three or more published outcome articles (BEIP; MTFC-P; MTFC-A). A related point is that evaluations of children's behavioral and mental health outcomes have not been published in several of the early childhood interventions (ABC and MTFC-P), and brain and neurobiological outcomes have not been published in any of the middle-childhood or adolescent interventions. It remains unclear whether such effects are not present (null findings) or whether they have not been examined.

In summary, we have presented the results from eight intervention programs that have been tested using randomized trial designs at the individual level and have been shown to be effective in improving one or more outcomes for foster children. The results from most of these studies have small to moderate effect sizes that typically decrease over time (MTFC-A and BEIP are two exceptions to this pattern, with more sustained effects and some evidence of large effect sizes). Overall, effective programs are attachment focused or have evolved from parenting interventions based on social-learning frameworks. The impact of these interventions might be mediated by the foster caregiver's skill base, past experience, training, and supports (Dorsey et al., 2008; Sinclair et al., 2005). These interventions offer great opportunity for more widespread implementation of effective services for foster children, ultimately improving their well-being and outcomes and reducing the intergenerational transmission of foster-care involvement; however, additional research with prespecified

outcome analyses could provide stronger evidence of generalizability to other populations and countries.

Implementation challenges and opportunities

Despite the availability of evidence-based interventions for foster families, the implementation of such interventions into routine services has been met with challenges. Because child welfare is a universal catchment system for all youth with documented maltreatment, the services population is quite diverse and covers a wide age range (birth through adolescence). Many foster families have multiple children in their care, and the original biological caregiving environment might continue to be less than optimal. These system conditions can pose inherent challenges to providing effective services. Child welfare systems are 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). Nonetheless, system challenges also present opportunities to improve children's well-being.

Issues related to racial and ethnic diversity

Ethnic minorities comprise a disproportionate number of foster children in some countries. Data from the NSCAW study indicate that the foster children in the United States are 45% African American, 31% White non-Hispanic, and 17% Hispanic (Administration for Children and Families, 2008). Furthermore, disparities persist in terms of services; African American children are less likely to receive mental health services than White children and are more likely to wait longer in foster care for permanent adoption (Anyon, 2010; Burns et al., 2004). In the United Kingdom, the Adoption Research Initiative suggests that some ethnic minority children wait longer than White children for permanence or do not achieve permanence at all. The UK government has urged adoption agencies to practice placement equality among all children regardless of whether or not the child shares the same racial or cultural background as their foster family. Government Ministers have stressed that if an adoptive family cannot be identified that closely matches the child's ethnicity and cultural heritage, then every effort should be made to find an alternative family. Similarly, in the United States, the Multiethnic Placement Act of 1994 and the Interethnic Adoption Provisions of 1996 aim to decrease the time that minority youths wait to be adopted, prevent discrimination in adoptive and foster placement decisions, and increase the number of foster and adoptive parents of ethnic minorities. Such policy-guided changes, along with ongoing cultural and diversity training, could

ultimately help remedy the disparities in service access and well-being for minority foster children.

Screening methods to increase opportunities for effective service implementation

Screening tools have been developed to help distinguish foster youth who would most benefit from enhanced intervention services targeting behavioral and mental health problems. Such screening tools could help practitioners allocate intervention services, particularly when resource and staffing budgets are limited. One tool, the Ages and Stages Questionnaire: Social Emotional has been shown to be more effective than a broad-based questionnaire or pediatric practitioner surveillance methods in identifying foster children with social-emotional problems (a sixfold increase in the detection of social-emotional problems; Jee et al., 2010). The questionnaire focuses on developmentally appropriate tasks such as attachment (ages 0–12 months), autonomy and self-development (12–20 months), and establishing peer relationships (30 months–7 years; Squires, Bricker, & Twombly, 2002). An expansive screening instrument has also been developed for use in the family court system in Wales aimed at identifying psychological impacts on children who are witnessing or have witnessed serious interparental conflict and violence in the context of parental separation and divorce (Harold, 2009). The objective of this instrument is to identify youth at psychological risk early in the process of parental separation to more effectively target family-level interventions aimed at reducing the negative psychological impacts of interparental conflict on children. Finally, a focus group study in Northern Ireland has suggested the relevance of the Strengths and Difficulties Questionnaire (Goodman, Ford, Corbin, & Meltzer, 2004) to inform caseworkers to the mental health needs of looked after children (Whyte & Campbell, 2008). Implementation of screening tools could improve services for foster families and reduce system-level costs by applying more refined and targeted services. However, tools should not be a substitute for clinical assessment; rather, they can assist the assessment process, particularly because widely used generic screening instruments might lack the specificity to detect mental health problems in foster children.

Linking child welfare workers with evidence-based practices

To support foster children, practitioners need to know what effective evidence-based treatment options are available in their community that map onto the needs of a specific child or family. Project Focus is one example of a program aimed at improving outcomes for foster families by facilitating a link, through child welfare workers, to appropriate and

effective mental health services (Kerns, Dorsey, Trupin, & Berliner, 2010). This involves investigating available evidence-based and promising practices in the community and teaching child welfare workers to provide support and training around the identification of mental health problems and available services. The implementation of such programs might ultimately help produce sustained positive effects for foster children and prevent the need for additional, more intensive and costly, service utilization.

System-level focus on safety, permanency, and well-being

Historically, child welfare systems have aimed to address child safety, permanence/stability, and well-being, with a primary focus on the first two and much less on the third; a child's well-being is often assumed to be addressed by mental health, developmental, and education services. A growing recognition of the importance of child well-being is driving policy development in the United States, which could lead to positive impacts on safety and program permanence. The significant impact of research findings on maltreated children is best exemplified by recent testimony by Bryan Samuels (2011), Commissioner of the Administration on Children, Youth and Families, who stated the following:

The research is clear that the experience of abuse and neglect leaves a particular traumatic fingerprint on the development of children that cannot be ignored if the child welfare system is to meaningfully improve the life trajectories of maltreated children, not merely keep them safe from harm.

Shifting to a more robust focus on a child's well-being and linking it to safety and permanence could set the stage for stronger emphasis on implementing evidence-based interventions in the child welfare system.

Summary and future directions

The evidence detailed in this review suggests that foster children are at elevated risk for negative

psychological, neurobiological, and behavioral outcomes. Although additional research is needed, the results from the eight intervention programs reviewed here suggest very promising avenues directed toward improving outcomes for foster children. The primary conclusion from this research is that when foster families receive support aimed at improving home-based experiences that addresses behavioral and neurobiological underpinnings and placement capacity, children do better. This research base has expanded substantially in the past decade, producing compelling findings on research-based models of risk and resilience for foster children and evidence-based interventions with strong promise to improve child well-being. Understanding how to more effectively implement these interventions in usual-care settings is now being driven by a new set of studies (Horwitz, Chamberlain, Landsverk, & Mullican, 2010) that argue for improving the implementation process of interventions into service settings. It has also led to the development of service guidelines for foster children beyond the United States (e.g., in the United Kingdom: National Institute of Health and Clinical Excellence, 2010). Ongoing developments in practice and policy domains will ultimately help raise care standards internationally and bring more consistency in foster care and related welfare systems.

Acknowledgement

Support for the writing of this report was provided by P30 DA023920 from the National Institute on Drug Abuse. The content of this report is solely the responsibility of the authors and does not necessarily represent the official views of the funding organization. P.C and P.A.F. are partners in TFCC, Inc., which disseminates Multidimensional Treatment Foster Care and is reviewed in this Practitioner Review. No other authors have a competing or potential conflict of interest.

Correspondence to

Leslie D. Leve, Oregon Social Learning Center, 10 Shelton McMurfey Blvd., Eugene, OR 97401, USA; Tel: +1 541 485 2711; Email: lesliel@oslc.org

Key points

- There are well-documented vulnerabilities for children in foster care.
- Known vulnerabilities have provided guidance for the development of interventions to improve child outcomes and promote resilience processes.
- Caregiver support and training has been found to be a key strategy to improve outcomes for foster children.
- Interventions that have been shown to decrease placement disruptions, improve child attachment to adults, reduce child behavioral and emotional problems, and increase child strengths should be implemented whenever feasible.
- There is, however, a paucity of non-US studies. Generalization of findings across countries should be pursued with caution until the international evidence base expands.
- Implementation of evidence-based interventions in child welfare systems is often complex and difficult, but feasible and essential.

Areas for future research

- Further identification of resilience-promoting factors among foster children, foster caregivers, and parents to increase the understanding of mechanisms that lead to adaptive versus maladaptive outcomes and underlying resilience-based processes.
- Long-term follow-up of children in foster care who receive intervention support to examine developmental outcomes and the remediation of intergenerational transmission of factors that lead to foster-care placement (e.g., physical abuse, maltreatment, harsh parenting).
- Replication of effective interventions in other contexts and settings, and internationally, by independent research teams.
- Implementation research to further understand how to increase the uptake of evidence-based programs for children in foster care as routine service provision via community service providers.

References

- Administration for Children and Families (2008). *Adolescents involved with child welfare: A transition to adulthood*. Washington, DC: Author.
- Anyon, Y. (2010). Reducing racial disparities and disproportionalities in the child welfare system: Policy perspectives about how to serve the best interests of African American youth. *Children and Youth Services Review*, 33, 242–253.
- Bailey, B.N., Sood, B.G., Sokol, R.J., Ager, J., Janisse, J., Hannigan, J.H., ... & Delaney-Black, V. (2005). Gender and alcohol moderate prenatal cocaine effects on teacher-report of child behavior. *Neurotoxicology and Teratology*, 27, 181–189.
- Bernard, K., Dozier, M., Bick, J., Lewis-Morrarty, E., Lindheim, O., & Carlson, E. (2012). Enhancing attachment organization among maltreated children: Results of a randomized clinical trial. *Child Development*, 83, 623–636.
- Biehal, N., Ellsion, S., & Sinclair, I. (2011). Intensive fostering: An independent evaluation of MTF in an English setting. *Children and Youth Services Review*, 33, 2043–2049.
- Bos, K., Zeanah, C.H., Fox, N.A., Drury, S.S., McLaughlin, K.A., & Nelson, C.A. (2011). Psychiatric outcomes in young children with a history of institutionalization. *Harvard Review of Psychiatry*, 19, 15–24.
- Briggs-Gowan, M., Horwitz, S.M., Schwab-Stone, M., Leventhal, J.M., & Leaf, P.J. (2000). Mental health in pediatric settings: Distribution of disorders and prevalence of service use. *Journal of the Academy of Child and Adolescent Psychiatry*, 39, 841–849.
- Bruce, J., McDermott, J.M., Fisher, P.A., & Fox, N.A. (2009). Using behavioral and electrophysiological measures to assess the effects of a preventive intervention: A preliminary study with preschool-aged foster children. *Prevention Science*, 10, 129–140.
- Bruce, J., Tarullo, A.R., & Gunnar, M.R. (2009). Disinhibited social behavior among internationally adopted children. *Development and Psychopathology*, 21, 157–171.
- Burns, B.J., Phillips, S.D., Wagner, H.R., Barth, R.P., Kolko, D.J., Campbell, Y., & Landsverk, J. (2004). Mental health need and access to mental health services by youth involved with child welfare: A national survey. *Journal of the American Academy of Child and Adolescent Psychiatry*, 43, 960–970.
- Bywater, T., Hutchings, J., Linck, P., Whitaker, C., Daley, D., Yeo, S.T., & Edwards, R.T. (2011). Incredible Years parent training support for foster carers in Wales: A multi-centre feasibility study. *Child: Care, Health, and Development*, 37, 233–243.
- Chamberlain, P. (2003). *Treating chronic juvenile offenders: Advances made through the Oregon multidimensional treatment foster care model*. Washington, DC: American Psychological Association.
- Chamberlain, P., Price, J., Leve, L.D., Laurent, H., Landsverk, J., & Reid, J.B. (2008). Prevention of behavior problems for children in foster care: Outcomes and mediation effects. *Prevention Science*, 9, 17–27.
- Chamberlain, P., Price, J.M., Reid, J.B., Landsverk, J., Fisher, P.A., & Stoolmiller, M. (2006). Who disrupts from placement in foster and kinship care? *Child Abuse and Neglect*, 30, 409–424.
- Chamberlain, P., & Reid, J. (1998). Comparison of two community alternatives to incarceration for chronic juvenile offenders. *Journal of Consulting and Clinical Psychology*, 66, 624–633.
- Clark, H.B., Prange, M.E., Lee, B., Boyd, L.A., McDonald, B.A., & Stewart, E.S. (1994). Improving adjustment outcomes for foster children with emotional and behavioral disorders: Early findings from a controlled study on individual services. *Journal of Emotional and Behavioral Disorders*, 2, 207–218.
- Clark, H.B., Prange, M.E., Lee, B., Stewart, E., McDonald, B., & Boyd, L.A. (1998). An individualized wraparound process for children in foster care with emotional/behavioral disturbances: Follow-up findings and implications from a controlled study. In M.D. Kutash, K. Kutash, & A. Duchnowski (Eds.), *Outcomes for children and youth with emotional and behavioral disorders and their families: Programs and evaluations best practices* (pp. 513–542). Austin, TX: PRO-ED.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd edn). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Cornelius, M.D., Taylor, P.M., Geva, D., & Day, N.L. (1995). Prenatal tobacco and marijuana use among adolescents: effects on offspring gestational age, growth, and morphology. *Pediatrics*, 95, 738–743.
- Dorsey, S., Farmer, E.M.A., Barth, R.P., Greene, K., Reid, J., & Landsverk, J. (2008). Current status and evidence base of training for foster and treatment foster parents. *Children and Youth Services Review*, 30, 1403–1416.
- Dozier, M., Melissa, M., Gordon, M.K., Peloso, E., Gunnar, M.R., Stovall-McClough, K.C., ... & Levine, S. (2006). Foster children's diurnal production of cortisol: An exploratory study. *Child Maltreatment*, 11, 189–197.
- Dozier, M., Peloso, E., Lewis, E., Laurenceau, J., & Levine, S. (2008). Effects of an attachment-based intervention on the cortisol production of infants and toddlers in foster care. *Development and Psychopathology*, 20, 845–859.
- Farmer, E.M.Z., Burns, B.J., Wagner, H.R., Murray, M., & Southerland, D.G. (2010). Enhancing 'usual practice' treatment foster care: Findings from a randomized trial on improving youth outcomes. *Psychiatric Services*, 61, 555–561.
- Ferguson, C.J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, 40, 532–538.
- Fernandez, E., & Barth, R. (Eds.). (2011). *How does foster care work? International evidence on outcomes*. London: Jessica Kingsley Publishers.

- Fisher, P.A., Burraston, B., & Pears, K.C. (2005). The early intervention foster care program: Permanent placement outcomes from a randomized trial. *Child Maltreatment, 10*, 61–71.
- Fisher, P.A., Gunnar, M., Dozier, M., Bruce, J., & Pears, K.C. (2006). Effects of a therapeutic intervention for foster children on behavior problems, caregiver attachment, and stress regulatory neural systems. *Annals of the New York Academy of Sciences, 1094*, 215–225.
- Fisher, P.A., & Kim, H.K. (2007). Intervention effects on foster preschoolers' attachment-related behaviors from a randomized trial. *Prevention Science, 8*, 161–170.
- Fisher, P.A., Kim, H.K., Bruce, J., & Pears, K.C. (2012). Cumulative effects of prenatal substance exposure and early adversity on foster children's HPA axis reactivity during a psychosocial stressor. *International Journal of Behavioral Development, 36*, 29–35.
- Fisher, P.A., Lester, B.M., DeGarmo, D.S., Lagasse, L.L., Lin, H., Shankaran, S., ... & Higgins, R. (2011). The combined effects of prenatal drug exposure and early adversity on neurobehavioral disinhibition in childhood and adolescence. *Development and Psychopathology, 23*, 777–788.
- Fisher, P.A., & Stoolmiller, M. (2008). Intervention effects on foster parent stress: Associations with children's cortisol levels. *Development and Psychopathology, 20*, 1003–1021.
- Fisher, P.A., Stoolmiller, M., Gunnar, M.R., & Burraston, B. (2007). Effects of a therapeutic intervention for foster preschoolers on diurnal cortisol activity. *Psychoneuroendocrinology, 32*, 892–905.
- Ford, T., Vostanis, P., Meltzer, H., & Goodman, R. (2007). Psychiatric disorder among British children looked after by local authorities. *British Journal of Psychiatry, 190*, 319–325.
- Forrester, D. (2000). Parental substance misuse and child protection in a British sample: A survey of children on the Child Protection Register in an inner London district office. *Child Abuse Review, 9*, 235–246.
- Fox, N.A., Almas, A.N., Degnan, K.A., Nelson, C.A., & Zeanah, C.H. (2011). The effects of severe psychosocial deprivation and foster care intervention on cognitive development at 8 years of age: Findings from the Bucharest Early Intervention Project. *Journal of Child Psychology and Psychiatry, 59*, 919–928.
- Glisson, C., & Green, P. (2006). The role of specialty mental health care in predicting child welfare and juvenile justice out-of-home placements. *Research on Social Work Practice, 16*, 480–490.
- Goodman, R., Ford, T., Corbin, T., & Meltzer, H. (2004). Using Strengths and Difficulties Questionnaires (SDQ) multi-informant algorithm to screen looked after children for psychiatric disorders. *European Child and Adolescent Psychiatry, 13*, 25–31.
- Harold, G.T. (2009). *The CAF/CASS CYMRU Child and Adolescent Welfare Assessment Checklist (CC-CAWAC)*. The Children and Family Court Advisory and Support Services in Wales (CAF/CASS CYMRU), Welsh Government, Cardiff, UK.
- Holtan, A., Ronning, J., Handegard, B., & Sourander, A. (2005). A comparison of mental health problems in kinship and non kinship foster care. *European Child and Adolescent Psychiatry, 14*, 200–207.
- Horton, C.B., & Cruise, T.K. (2001). *Child abuse and neglect: The school's response*. New York: Guilford.
- Horwitz, S.M., Chamberlain, P., Landsverk, J., & Mullican, C. (2010). Improving the mental health of children in child welfare through the implementation of evidence-based parenting interventions. *Administration and Policy in Mental Health and Mental Health Services, 37*, 27–39.
- Hutchings, J., Bywater, T., Daley, D., Gardner, F., Whitaker, C., Jones, K., ... & Edwards, R.T. (2007). Parenting intervention in Sure Start services for children at risk of developing conduct disorder: Pragmatic randomized controlled trial. *British Medical Journal, 334*, 678–682.
- Jee, S.H., Conn, A., Szilagy, P.G., Blumkin, A., Baldwin, C.D., & Szilagy, M.A. (2010). Identification of social-emotional problems among young children in foster care. *Journal of Child Psychology and Psychiatry, 51*, 1351–1358.
- Kerns, S.E.U., Dorsey, S., Trupin, E.W., & Berliner, L. (2010). Project Focus: Promoting emotional health and well-being for youth in foster care through connections to evidence-based practices. *Emotional & Behavioral Disorders in Youth, 10*, 30–38.
- Kerr, D., Leve, L.D., & Chamberlain, P. (2009). Pregnancy rates among juvenile justice girls in two RCTs of multidimensional treatment foster care. *Journal of Consulting and Clinical Psychology, 77*, 588–593.
- Kim, H.K., & Leve, L.D. (2011). Substance use and delinquency among middle school girls in foster care: A three-year follow-up of a randomized controlled trial. *Journal of Consulting and Clinical Psychology, 79*, 740–750.
- Landsverk, J., Davis, I., Ganger, W., Newton, R., & Johnson, I. (1996). Impact of child psychological functioning on reunification from out of home care. *Children and Youth Services Review, 18*, 447–462.
- Leathers, S. (2006). Placement disruption and negative placement outcomes among adolescents in long-term foster care: The role of behavior problems. *Child Abuse & Neglect, 30*, 307–324.
- Leve, L.D., Fisher, P.A., & Chamberlain, P. (2009). Multidimensional Treatment Foster Care as a preventive intervention to promote resiliency among youth in the child welfare system. *Journal of Personality, 77*, 1869–1902.
- Leve, L.D., Fisher, P.A., & DeGarmo, D.S. (2007). Peer relations at school entry: Sex differences in the outcomes of foster care. *Merrill-Palmer Quarterly, 53*, 557–577.
- Linares, L.O., Montalto, D., Li, M., & Oza, V.S. (2006). A promising parenting intervention in foster care. *Journal of Consulting and Clinical Psychology, 74*, 32–41.
- Macdonald, G., & Turner, W. (2005). An experiment in helping foster-carers manage challenging behavior. *British Journal of Social Work, 35*, 1265–1282.
- McDaniel, B., Braiden, H.J., Onyekwelu, J., Murphy, M., & Hassan, R. (2011). Investigating the effectiveness of the Incredible Years basic parenting programme for foster carers in Northern Ireland. *Child Care in Practice, 17*, 55–67.
- Minnis, H., Pelosi, A., Knapp, M., & Dunn, J. (2001). Mental health and foster carer training. *Archives of Disease in Childhood, 84*, 302–306.
- National Institute of Health and Clinical Excellence (2010). *Promoting the quality of life of looked after children and young people*. London: NICE Public Health Guidance 28.
- Nelson, C.A., Zeanah, C.H., Fox, N.A., Marshall, P.J., Smyke, A.T., & Guthrie, D. (2007). Cognitive recovery in socially deprived young children: The Bucharest Early Intervention Project. *Science, 318*, 1937–1940.
- Nilsen, W. (2007). Fostering futures: A preventive intervention program for school-age children in foster care. *Clinical Child Psychology and Psychiatry, 12*, 45–63.
- Olds, D. (1997). Tobacco exposure and impaired development: A review of the evidence. *Mental Retardation and Developmental Disabilities Research Reviews, 3*, 257–269.
- Oosterman, M., de Schipper, C., Fisher, P.A., Dozier, M., & Schuengel, C. (2010). Autonomic reactivity in relation to early adversity and attachment among foster children. *Development and Psychopathology, 22*, 109–118.
- Pears, K., Bruce, J., Fisher, P., & Kim, H. (2010). Indiscriminate friendliness in maltreated foster children. *Child Maltreatment, 15*, 64–75.
- Pears, K., & Fisher, P.A. (2005). Developmental, cognitive, and neuropsychological functioning in preschool-aged foster children: Associations with prior maltreatment and placement history. *Developmental and Behavioural Pediatrics, 26*, 112–122.

- Pears, K.C., Heywood, C.V., Kim, H.K., & Fisher, P.A. (2011). Prereading deficits in children in foster care. *School Psychology Review*, 40, 140–148.
- Price, J.M., Chamberlain, P., Landsverk, J., Reid, J.B., Leve, L.D., & Laurent, H. (2008). Effects of a foster parent training intervention on placement changes of children in foster care. *Child Maltreatment*, 13, 64–75.
- Rubin, D.M., O'Reilly, A.L.R., Luan, X., & Localio, A.R. (2007). The impact of placement stability of behavioral well-being for children in foster care. *Pediatrics*, 119, 336–344.
- Rutter, M. (2000). Resilience reconsidered: Conceptual considerations, empirical findings, and policy implications. In J.P. Shonkoff, & S.J. Meiseis (Eds.), *Handbook of early childhood intervention* (2nd edn, pp. 651–682). New York: Cambridge University Press.
- Rutter, M., Sonuga-Barke, E., Beckett, C., Castle, J., Kreppner, J., Kumsta, R., ... & Gunnar, M.A. (2010). *Deprivation-specific psychological patterns: Effects of institutional deprivation*. Boston, MA: Wiley Blackwell.
- Samuels, B. (2011) *Testimony before the Subcommittee of Human Resources, Committee on Ways and Means, U.S. House of Representatives*. Available from: http://waysandmeans.house.gov/UploadedFiles/Bryan_Samuels_Testimony.pdf [last accessed 20 June 2011].
- Saunders, B.E., Berliner, L., & Hanson, R.F. (Eds.). (2004). *Child physical and sexual abuse: Guidelines for treatment (Revised report: April 26, 2004)*. Charleston, SC: National Crime Victims Research and Treatment Center.
- Sawyer, M., Carbone, J., Searle, A., & Robinson, P. (2007). The mental health and wellbeing of children and adolescents in home-based foster care. *Medical Journal of Australia*, 186, 181–184.
- Sinclair, I., Wilson, K., & Gibbs, I. (2005). *Foster placements: Why they success and why they fail*. London: Jessica Kingsley.
- Smith, D.K., Leve, L.D., & Chamberlain, P.C. (2011). Preventing internalizing and externalizing problems in girls in foster care as they enter middle school: Immediate impact of an intervention. *Prevention Science*, 12, 269–277.
- Squires, J., Bricker, D., & Twombly, E. (2002). *Ages and Stages Questionnaire: Social-Emotional (ASQ:SE): A parent completed, child monitoring system for social-emotional behaviors*. Baltimore: Paul H. Brookes.
- Thapar, A., Fowler, T., Rice, F., Scourfield, J., van den Bree, M., Thomas, H., ... & Hay, D. (2003). Maternal smoking during pregnancy and attention deficit hyperactivity disorder symptoms in offspring. *American Journal of Psychiatry*, 160, 1985–1989.
- Turner, W., & Macdonald, G. (2011). Treatment foster care for improving outcomes in children and young people: A systematic review. *Research on Social Work Practice*, 21, 501–527.
- UK National Statistics (2008). *Children looked after statistics Scotland; England; and Wales*. Available from: <http://www.statistics.gov.uk/hub/search/index.html?newquery=looked+after+children>. [last accessed 28 June 2011].
- U.S. Department of Health and Human Services Administration on Children Youth and Families. (2008). *Child maltreatment 2006*. Washington, DC: Government Printing Office.
- Viner, R.M., & Taylor, B. (2005). Adult health and social outcomes of children who have been in public care: Population-based study. *Pediatrics*, 115, 894–899.
- Vostanis, P. (2010). Mental health services for children in public care, and other vulnerable groups: Implications for international collaboration. *Clinical Child Psychology and Psychiatry*, 15, 555–571.
- Vostanis, P., Bassi, G., Meltzer, H., Ford, T., & Goodman, R. (2008). Service use by looked after children with behavioural problems: Findings from the England survey. *Adoption and Fostering*, 32, 23–32.
- Westermarck, P.K., Hansson, K., & Olsson, M. (2010). Multidimensional treatment foster care (MTFC): Results from an independent replication. *Journal of Family Therapy*, 33, 20–41.
- Whyte, S., & Campbell, A. (2008). The strengths and difficulties questionnaire: A useful screening tool to identify mental health strengths and needs in looked after children and inform care plans at looked after children reviews? *Child Care in Practice*, 14, 193–206.
- Wilson, D.B. (2001). *Practical meta-analysis effect size calculator*. Available from: <http://www.campbellcollaboration.org/escalc/html/EffectSizeCalculator-Home.php> [last accessed 26 March 2012].
- Wulczyn, F., Hislop, K., & Chen, L. (2007). *Foster care dynamics 2000–2005: A report from the multistate foster care data archive*. Chicago: Chapin Hall Center for Children, University of Chicago.
- Zeanah, C.H., Egger, H.L., Smyke, A.T., Nelson, C.A., Fox, N.A., Marshall, P.J., & Guthrie, D. (2009). Institutional rearing and psychiatric disorders in Romanian preschool children. *American Journal of Psychiatry*, 166, 777–785.

Accepted for publication: 26 June 2012

Published online: 6 August 2012

Copyright of Journal of Child Psychology & Psychiatry is the property of Wiley-Blackwell and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.