

# Review: Adoption, fostering, and the needs of looked-after and adopted children

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**Background:** This review of the literature examines adoption, fostering, and the needs of looked-after and adopted children. Three domains of research about looked-after children are examined. **Findings:** There is extensive evidence that early adverse experiences affect psychological and neurobiological development in looked-after and adopted children. There is also evidence that some looked-after and adopted children show remarkable resilience in the face of adversity; intervention research provides evidence of the ability to reduce risks and promote positive outcomes in this population. The intervention studies have revealed not only the potential for improved behavioral trajectories but also the plasticity of neurobiological systems affected by early stress. **Conclusion:** Foster and adopted children face many challenges, but scientific knowledge also provides reason for hope and information about how to maximize positive outcomes.

## Key Practitioner Message

- Existing contradicting beliefs about foster and adopted children have the potential to impact the services and resources available to children and their biological, foster, and adoptive families.
- Foster and adopted children are at risk for many negative outcomes, including mental health, developmental, and neurobiological difficulties. They also sometimes show resilience in the face of adversity.
- In addition to addressing past trauma, practitioners should be aware that children who have experienced severe neglect and/or many placement transitions may be at risk for poor outcomes. Evidence-based approaches are available in the United Kingdom, the United States, and elsewhere for addressing the needs of looked-after and adopted children and their families.
- More work is needed to understand the long-term outcomes for foster and adopted children into adulthood. Also, more evidence-based programs for adopted children are needed.

**Keywords:** Fostering; adoption; children looked after; risks; negative outcomes; mental health disorders; adversity; resilience; systematic interventions

## Introduction

In the United States, the United Kingdom, and Europe, children who lack parental care have long been a matter of concern. Children in such circumstances have typically experienced significant early life adversity and face many challenges in their development. It can be difficult to make sense of the numerous contradictory beliefs that exist among professionals, policy makers, and the general public about looked-after and adopted children, and to separate fact from fiction (Harvel, 2006). For example, in terms of adoption, strong Dickensian notions persist that suggest that many parentless children are 'diamonds in the rough', just waiting for the right family in which to achieve their remarkable potential; yet, equally common are biologically deterministic beliefs that adopted children are on a genetically predetermined path that may lead to acts of violence and antisocial behavior regardless of the quality of their adoptive family environment (Miall, 1987, 1996). Within the foster care system, similar conflicting beliefs are common (Kufeldt, 1993). Foster carers are both canonized for their

altruism and vilified for being motivated by financial gain. The fairly infrequent instances in which foster parents commit acts of abuse toward their children receive sensationalized attention in the media, just as do instances in which foster children behave poorly. Yet, in the same publications in which we vilify foster carers and children, we also celebrate tales of foster children who rise above the great adversity they have experienced to attend college, become financially successful, and 'give back' to society.

In truth, foster care and adoption are neither hopelessly flawed nor a cure-all for addressing the needs of looked-after children. Rather, both institutions may best be thought of as having an amplifying quality, that is, they have the potential to either positively alter life course trajectories and promote individual and social change or, alternatively, to make matters worse. In spite of the murky and at times conflicting perceptions that exist about them, foster care and adoption at a minimum provide a social safety net that prevents the most vulnerable in our societies from being left without any source of nurturing and care. Moreover, an extensive scientific

knowledge base about looked-after and adopted children can provide a lens for understanding individual, familial, and community variables that are associated with increased or diminished vulnerability, and for clarifying what can be done to maximize the chances for positive outcomes for children in these populations.

The primary purpose of this review was to help increase understanding about foster and adopted children by drawing a distinction between the children themselves and the institutions in which they exist. The extent to which foster and adopted children fare poorly and experience health and mental health disparities when compared with the general population must be contextualized not only in terms of the children's experiences in care but also with respect to the adversity to which they have been exposed prior to involvement in the systems. That is, rather than view outcomes as stemming exclusively from the adoption and foster care experience, we must shift the focus to include understanding how the circumstances that lead children to be looked-after in the first place can compromise or greatly alter their developmental life course. Even in the instances when having been in foster care (or in institutional settings, as in the case of some internationally adopted children) does appear to increase the likelihood of negative outcomes, science can inform us about the specific dimensions of that experience (such as having numerous transitions among caregivers) that are most strongly associated with increased vulnerability, and can inform us about how to take preventive measures.

This review has three sections. First is a review of the empirical literature about the effects of early adversity on healthy development among looked-after and adopted children. The second section highlights the extent to which, in spite of these great challenges faced by many looked-after children and adopted children, some still manage to emerge from very difficult circumstances virtually unscathed. The third section reports what is known about the manner in which systematic interventions have the potential to mitigate the risks conferred by early adversity on these children and the potential to promote positive outcomes across the developmental span from infancy through adolescence.

Throughout the review, I draw from three literatures: research on foster children and foster care; research on domestic adoption; and research on internationally adopted children. It is important to acknowledge that, although these children share similar vulnerabilities, the experiences of foster and domestically adopted children differ from those of internationally adopted children. In particular, international adoptees (especially those reared in institutional 'orphanages') typically experience severe neglect but fewer other types of maltreatment than do children in the other two groups. To help clarify the distinctions between the three groups, I am specific about the population from which the cited studies in the review have been drawn.

## The effects of early adversity

Extensive evidence confirms that foster and adopted children may manifest the long-term effects of exposure to early life stress (Dance, Rushton, & Quinton, 2002; Gunnar, Fisher, & The Early Experience, Stress, and Prevention Science Network, 2006). Initial evidence

came from large-scale surveys of children in these populations. These studies showed that their rates of psychopathology and maladjustment were considerably higher than rates among the general population (Burns et al., 2004). Some surveys found that foster children had rates of mental health problems comparable to those of clinical populations. Similarly, research about adopted children has found high rates of psychopathology (Gagnon-Oosterwaal et al., 2012).

Following the publication of initial studies concerning the effects of early adversity, more precise work began to be published that documented specific domains in which problems among this population were found to exist. This research revealed that foster and adoptive children have especially high rates of internalizing disorders, especially anxiety and posttraumatic stress disorders, but also depressive disorders. The research also found high rates of a number of externalizing disorders, particularly the disruptive behavior disorders of ADHD, oppositional defiant disorder, and conduct disorder (Ford, Vostanis, Meltzer, & Goodman, 2007; Lawrence, Carlson, & Egeland, 2006).

Research also has found that the children in these populations have several related areas of difficulty. For example, and not surprisingly, many foster children exhibit difficulties with attachment to caregivers (Dozier, Chase Stoval, Albus, & Bates, 2001). Similar problems have been observed in adopted children (O'Connor & Rutter, 2000). Observed in both populations is a concurrent pattern of behavior that is sometimes (and not entirely accurately) referred to as *indiscriminate friendliness*, in which children approach and are physically affectionate with strangers and casual acquaintances. Notably, in two separate studies (Bruce, Tarullo, & Gunnar, 2009; Pears, Bruce, Fisher, & Kim, 2010), both insecure attachment and social disinhibition were present in adopted and foster children, but the two were not correlated. Rather, in both studies disinhibition was related to problems with inhibitory control.

Looked-after children have been found to have greater problems with school adjustment, in terms of academic achievement (Pears, Fisher, Bruce, Kim, & Yoerger, 2010) and peer relationships (Hodges & Tizard, 1989). Meta-analysis did not reveal these deficits to be associated with lower IQ (van IJzendoorn, Juffer, & Klein Poelhuis, 2005). Looked-after children also tended to have high-risk trajectories toward problems that required youth justice system involvement, such as substance abuse and criminal behavior (Johnson-Reid & Barth, 2000).

Several studies in recent years have found that looked-after children in the United States are also more likely to be prescribed psychotropic medications (Zima, Bussing, Crecelios, & Belin, 1999). One study found that medication for depression, inattention and impulsivity, and psychosis was prescribed to foster children at much higher rates than it was prescribed to children in the general population (Zito et al., 2008). The same study revealed a proclivity toward simultaneous use of multiple classes of these medications and for there to be little connection between diagnosis and the medications children received.

Perhaps, because the number of young looked-after children (particularly age birth to 3 years) increased dramatically in the United States in the 1990s, research has

begun to emphasize developmental status. Several studies have found significant delays among looked-after children (Judge, 2003). These delays span cognitive development, language development, and emotional development. One study (Pears & Fisher, 2005a) surveyed preschool-age foster children and found deficits in expressive and receptive language, visuospatial processing, and verbal- and performance-related cognitive skills. Similarly, Pollack et al. (2010) found that internationally adopted children performed poorly on tests of visual memory and attention and in visually mediated learning and inhibitory control. In addition, foster children have been found to have deficits in emotional development and display poorer performance on tests of emotion understanding and theory of mind than do non-maltreated community children (Pears & Fisher, 2005b).

Delays in the psychological development of looked-after children are paralleled by delays in their physical development. Numerous studies of children adopted following institutional care in developing countries have found that the children may experience 'failure to thrive' syndrome (Gunnar & Vazquez, 2001). These children tend to be smaller in stature and weight than would be expected for their age and to have diminished head circumference (van IJzendoorn, Bakermans-Kranenburg, & Juffer, 2007). Delayed physical growth has also been observed among children in foster care. Pears and Fisher (2005b) found that foster preschoolers showed significantly shorter stature for age and smaller head circumference than did nonmaltreated children of the same age who were from low-income families. However, they did not have diminished height-to-weight ratios, suggesting that the cause was not inadequate caloric intake.

Recent research about looked-after children has (a) examined how early stressful experiences of children get 'under the skin' to affect pertinent areas of biology, such as neuroendocrine functioning and brain development (McEwen, 2012), and (b) sought to 'parameterize' the effects of specific types of early adversity on specific areas of development and functioning (Fisher & Gunnar, 2010; Fisher, Gunnar, Dozier, Bruce, & Pears, 2006). Some of the earliest work examining the neurobiological effects of adversity in foster and in adopted children (Carlson & Earls, 2006) focused on altered functioning of the hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis is a hormonal system designed to help the body respond to real or perceived stressors. Research dating back nearly a century has consistently found that although the HPA axis is exquisitely well designed to help the body respond to acute stress, chronic activation of the system leads to a host of negative outcomes, including risk for physical disease and an increased likelihood of psychological symptomatology (Sapolsky, 2000).

Research about looked-after children has found evidence of alterations in the functioning of the HPA axis (Lupian, McEwen, Gunnar, & Heim, 2009). However, the nature of these alterations in looked-after children differs from that of many other populations when they experience stress. Specifically, whereas it is common to observe elevated levels of cortisol (which indicate increased activation of the HPA axis) in individuals experiencing many types of chronic stress, looked-after children more commonly display a pattern of blunted cortisol production (Kertes, Gunnar, Madsen, & Long, 2008). This phenomenon has been most evident in

studies that have examined patterns of diurnal cortisol production in these children. Among typically developing individuals, cortisol levels reach their diurnal peak shortly after awakening in the morning. These levels then decrease rapidly throughout the morning and are extremely low by bedtime. In contrast, the characteristic pattern of HPA dysregulation for looked-after children involves low morning cortisol levels that remain low throughout the day (Bruce, Fisher, Pears, & Levine, 2009). The specific mechanism of low levels of cortisol is not fully understood, but it may be a 'down regulation' of the system as a protective response to the absence of responsive care (van der Vegt, van der Ende, Kirschbaum, Verhulst, & Tiemeier, 2009).

In addition to alterations in neuroendocrine functioning, children in foster care have been found to exhibit alterations in the development of areas of the prefrontal cortex involved in executive functioning. Research from two groups has found that on neuropsychological tests that tap domains of executive functioning, such as working memory and inhibitory control, foster children perform poorly (Lewis, Dozier, Ackerman, & Sepulveda-Kozakowski, 2007; Pears, Kim, & Fisher, 2008). One study used neuroimaging to investigate these differences and found differential patterns of brain activation for foster and for nonmaltreated children on a computer task that requires children to exhibit inhibitory control (Bruce et al., 2013). Another study used event-related potential methods to examine brain activity during an error-monitoring task and found lower levels of activation in the prefrontal cortex among foster children, in response to feedback (Bruce, McDermott, Fisher, & Fox, 2009). However, the results of these studies must be considered preliminary in that the studies were conducted with relatively small samples.

As noted previously, recent research has also sought to parameterize the effects of specific adverse experiences on looked-after children's development. Rather than treat the entire population as a high-risk group, this research attempted to determine specific classes of experience that seemed to be associated with specific vulnerabilities. One of the most important conclusions drawn from this research is that in addition to the pervasive and troublesome effects of physical and sexual abuse, other experiences that are often considered less traumatic may also exert a lasting influence on development. For example, several studies have found that neglect has numerous negative effects, including increased academic and behavioral problems (Kendall-Tackett & Eckenrode, 1996). Problems have also been documented at the neurobiological level (De Bellis, 2005). Specifically, the aforementioned pattern of blunted diurnal cortisol has been found to be most prevalent in those looked-after children who have experienced high levels of neglect (Bruce et al., 2009). This finding is robust, having been observed in another sample of foster children (Dozier et al., 2006). This has led some researchers to conclude that not only the presence of noxious stimuli, such as trauma, can affect development but also the absence of expected supportive care is a so-called toxic stressor (Shonkoff, Garner, & The Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, & Section on Developmental and Behavioral Pediatrics, 2012).

The effects of placement transitions or changes in primary caregivers on children's development are another area in which researchers have attempted to parameterize the effects of early experience. It is important to acknowledge that not all placement transitions are negative. Some involve moves from a less adequate caregiving environment to a better one. Nevertheless, this research has found that as the number of these transitions increases, the likelihood that various negative outcomes will occur also increases. Specifically, undergoing more placement transitions is associated with higher rates of mental health problems and developmental delays (Newton, Litrownik, & Landsverk, 2000). Although placement transitions appear to be associated with problems in executive functioning (and particularly with inhibitory control tasks; Pears et al., 2010), the causal association between transitions and problems with executive functioning is not clearly established. It may be that transitions compromise the development of these skills, but it also may be that the children with poorer executive functioning are more likely to be disrupted by placements.

### Resiliency in the face of adversity

Resiliency has been a topic of considerable research interest in recent years (Rutter, 2006). This research is based on the notion that not all individuals exposed to adverse experiences end up displaying negative outcomes. The question of what might lead some individuals to emerge from difficult experiences relatively unscathed, or even strengthened, while others experience lasting effect has been a matter of considerable speculation (e.g. DuMont, Spatz Widom, & Czaja, 2007). Cultural beliefs suggest that some individuals' innate strength of character enables them to 'pull themselves up by their bootstraps' and be successful even in the most difficult times (Masten, 2001). However, the science of resilience is considerably more developed and nuanced than these beliefs. Emphasis has been placed upon defining variables within the individual, such as personality characteristics (Flores, Cicchetti, & Rogosch, 2005) and genetic polymorphisms (Rutter, 2003), as well as variables in the environment, such as strong relationships with caregivers (Flores et al., 2005) and supportive parenting (DeGarmo & Forgatch, 1999), that are most associated with positive outcomes.

Although research about looked-after children tends to highlight negative outcomes, it also offers substantial evidence of the resiliency of children in this population (Samuels & Pryce, 2008). For example, although rates of psychopathology are considerably elevated, they are not universal. Similarly, the neurobiological effects of early life stress that have been documented in this population most certainly do not occur in all looked-after children. For instance, research about altered cortisol levels among foster children has found that the dysregulated direct pattern of activity occurs approximately three times as often in foster children than it does in the general population. Nevertheless, this pattern is represented in only about 30% of all foster children, relative to about 10% of the general population (Bruce et al., 2009; Dozier et al., 2006). In other words, 70% of foster children show typical cortisol production.

Further evidence of resilience in looked-after children can be found in the numerous studies of 'catch-up' that occurs among children adopted following early institutional rearing (e.g. Rutter & the English and Romanian Adoptees Study Team, 1998). A remarkable meta-analysis was conducted that included a synopsis of more than 270 studies with a total of more than 230,000 adopted and nonadopted children and their parents (van IJzendoorn & Juffer, 2006). This meta-analysis found strong evidence for developmental catch-up in physical and in emotional/psychological domains, especially for children adopted early. Although catch-up was in many instances incomplete relative to that of nonadopted peers, adopted children consistently fared far better than did children left behind in institutions. Interestingly, a different study found that catch-up in postinstitutionalized adoptees was associated with longitudinal improvements in the quality of the adoptive parent-child relationship (Croft, O'Connor, Keaveney, & Groothues, 2001).

The literature about specific predictors of resilience in looked-after and adopted children is surprisingly sparse. One study found that favorable outcomes, such as emotion regulation and academic adjustment in middle childhood, were more likely in children who during the preschool years had had typical developmental status, particularly with respect to attention and executive functioning, and who had lacked environmental stress during early-childhood foster care experiences (Healey & Fisher, 2011). Although more research in this area is clearly needed, it is plausible that much of the research about predictors of resilience in the general population might apply to looked-after and adopted children as well. In sum, it is clear that although they may face increased risk for numerous negative outcomes, many foster and adopted children also display very high rates of resilience, especially when removed from circumstances of ongoing adversity and placed in stable, supportive, family-based care.

### Interventions for looked-after and adopted children

What can be done in the way of systematic interventions to maximize the likelihood that looked-after and adopted children's outcomes will be as positive as possible? Given the clear documentation of risk in these children, it is especially noteworthy that rigorous research about interventions specifically targeted at this population is somewhat limited. It is also interesting that most of the existing literature focuses on foster children. In spite of the documented need for adoption support interventions and in spite of the fact that some promising approaches have been implemented (Rushton, 2013; Rushton, Monck, Leese, McCrone, & Sharac, 2010; Welsh, Viana, Petrill, & Mathias, 2007), relatively little empirical research has been done on interventions specifically designed for adopted children. This is not to say that interventions without an evidence base are not employed in the United Kingdom and elsewhere – but rather that at present it is not clear whether these approaches are effective.

Leve et al. (2012) reviewed the interventions for foster children that have been found to produce positive outcomes for children, for carers, and/or for both. Their study's inclusion criteria specified use of a randomized

clinical trial to evaluate the intervention, sample size of a minimum of 15 participants in each group, and an indication that a positive outcome was achieved through the intervention. These criteria were considered crucial in that many publications describe interventions and/or general intervention strategies for foster children, but many lack the scientific rigor to establish a sound base of empirical evidence. Leve et al.'s review noted only eight interventions in the literature that met their inclusion criteria; they also noted that several intervention trials had produced multiple peer-reviewed publications.

All the interventions included in the Leve et al. study focused not only on the child but also on consistent and supportive caregiving as targets of the intervention. This approach is noteworthy in that the interventions emanated from quite varied theoretical perspectives, ranging from attachment (Dozier, Peloso, Lewis, Laurenceau, & Levine, 2008) to social learning theory (Fisher, Ellis, & Chamberlain, 1999). Notably, these theories have considerable complementarity in their perspectives. Indeed, Patterson and Fisher (2002) emphasized the extent to which attachment- and social learning-based formulations about high-risk children and families, although they invoke different language, are based upon the notion that healthy development requires consistent and nurturing care from a primary caregiver and that the absence of such predictable, contingent support represents a threat to the well-being of the individuals.

Despite the similar emphasis on caregiving and on the child's needs described in the extant evidence base about interventions for looked-after children, studies have reported a range of positive outcomes. This may, to a certain degree, be related to the age and developmental stage of the focal group. For example, Leve et al. noted that there are three evidence-based interventions for infants and preschoolers: the Attachment and Biobehavioral Catch-Up (ABC) intervention developed by Dozier and colleagues (Bernard et al., 2012; Dozier et al., 2008), the Multidimensional Treatment Foster Care-Pre-school (MTFC-P) intervention developed by Fisher and colleagues (Fisher et al., 1999), and the Bucharest Early Intervention Project (BEIP; Nelson et al., 2007). All three have been found to have an impact on child attachment-related behaviors, as indexed by the likelihood that children will seek out their caregiver when they are distressed (Dozier et al., 2009; Fisher & Kim, 2007; Fisher et al., 2006; Smyke, Zeanah, Fox, Nelson, & Guthrie, 2010). In addition, the ABC and MTFC-P interventions have reported positive outcomes on children's salivary cortisol levels: Children who received these interventions have shown more typical patterns of diurnal cortisol production (Dozier et al., 2008; Fisher, Stoolmiller, Gunnar, & Burraston, 2007). Although the specific mechanism of increased neuroendocrine regulation is not fully understood, a possible explanation was described by Fisher and Stoolmiller (2008), who found intervention effects on caregiver stress levels that were associated with children's cortisol levels.

Leve et al. also identified four interventions for looked-after children in middle childhood that use randomized designs and have obtained positive outcomes. They include an adaptation of the Incredible Years (Linares, Montalto, Li, & Oza, 2006), Keeping Foster Parents Trained and Supported (KEEP; Chamberlain et al.,

2008; Price et al., 2008), Middle School Success (MSS; Kim & Leve, 2011), and Fostering Individualized Assistance Programme (FIAP; Clark et al., 1998). Positive outcomes for these interventions include increased prosocial behavior (Kim & Leve, 2011) and reductions in child negative externalizing and internalizing behaviors (Chamberlain et al., 2008; Clark et al., 1994; Kim & Leve, 2011). In that these interventions emphasize supporting caregivers' use of positive and consistent parenting, it is interesting to note that reductions in child behavior problems were associated with improvements in the targeted areas of parenting (Chamberlain et al., 2008).

Only one intervention for foster adolescents was identified in the Leve et al. review: Multidimensional Treatment Foster Care for Adolescents (MTFC-A; Chamberlain & Reid, 1998; Westermarck, Hansson, & Olsson, 2010). Similar to the middle childhood interventions, MTFC-A has been reported to reduce negative externalizing and internalizing behavior (Westermarck et al., 2010). MTFC-A was also associated with reductions in association with deviant peers, lower arrest rates, and reductions in placement disruptions. In an adaptation of MTFC-A specifically targeting adolescent foster females, decreased depression and pregnancy rates have been reported, along with increases in school attendance (Chamberlain & Reid, 1998; Harold et al., 2013; Leve, Fisher, & Chamberlain, 2009). Notably, a subsequent evaluation of the MTFC-A intervention in England did not produce the same positive outcomes, which led the authors to question the efficacy of the intervention (Green et al., 2014). However, a subsequent commentary (Harold & DeGarmo, 2014) noted a number of significant limitations of the Green et al. study, including failure to achieve randomization and target recruitment numbers, both of which compromised the scientific integrity of the study, and use of an alternative quasi-experimental design that failed to match intervention and comparison participants on key variables. As such, the Green et al. study provides documentation of the challenges of conducting rigorous intervention science research much more than it represents an independent evaluation of MTFC-A.

In combination, the evaluation studies that met Leve et al.'s criteria for inclusion in their review provide a solid foundation of evidence that developmentally specific positive outcomes can be achieved in the domains of functioning known to be affected by early adversity in foster children. These studies lend credence to the idea that behavioral and biological systems that have been negatively affected by stressful experiences remain pliable to some degree throughout the course of development. Furthermore, they suggest that supporting caregivers to provide the developmentally sensitive care needed to promote positive development is key to fostering resiliency in looked-after children.

## Conclusion

This literature review about the effects of early adverse experiences on foster and adoptive children highlights the particular needs of this population. It focuses on the knowledge base that has documented the impact of early life stress on behavioral and neurobiological development. Also noted are the dimensions of early adversity

over and above traumatic experiences of physical and sexual abuse that seem to be associated with negative outcomes – specifically, there is scientific evidence that neglect and numerous caregiver transitions can adversely impact development. As discussed, these types of adversity, which represent deviations from expected supportive care, produce lasting imprints on behavioral and biological development that are no less significant than those produced by trauma.

The review also describes sources of evidence that show that, in spite of the risks looked-after and adopted children face, resilient outcomes are possible. The evidence includes information about the sizable proportion of children in all studies of these populations who lack mental health, developmental, or neurobiological deficits. It also includes evidence from studies of the phenomenon of catch-up among children adopted following institutional rearing. Although it may not be possible to recover completely from early stressful experiences, the research in this area suggests that adoption, especially early in life, maximizes the chances for a positive life course trajectory.

It is noteworthy that much of the systematic peer-reviewed longitudinal research about looked-after and adopted children does not extend beyond early adulthood. As such, it is not entirely clear whether the outcomes observed in the literature continue later into life. This is an important area for future studies.

The review concludes with a description of the results of experimental studies that have used the highest standard of scientific evidence to evaluate interventions: randomized clinical trials. The interventions with the most promising results (largely from foster care rather than adoption research) span the theoretical spectrum from attachment theory to social learning theory but are unified in their joint emphasis on child vulnerabilities and positive caregiving practices. These interventions have shown that it is possible to significantly mitigate the effects of early stress on biobehavioral development and to promote positive outcomes. However, much of the evidence base in this area comes from research about foster care; more work is needed to understand the strategies that are most effective for adoptive children and families.

Beyond the domains of research and practice, attention must be devoted to policy changes that support the scale-up of effective interventions in community settings. It is clear that policies of this nature are justified by the needs of looked-after children. It is also clear that effective programs exist. Policies that reduce barriers to access and increase the availability of such programs are a critical next step in meeting the needs of foster and adoptive children.

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## References

- 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.
- Bruce, J., Fisher, P.A., Graham, A.M., Moore, W.E., III, Peake, S.J., & Mannering, A.M. (2013). Patterns of brain activation in foster children and nonmaltreated children during an inhibitory control task. *Development and Psychopathology, 25*, 931–941.
- Bruce, J., Fisher, P.A., Pears, K.C., & Levine, S. (2009). Morning cortisol levels in preschool-aged foster children: Differential effects of maltreatment type. *Developmental Psychobiology, 51*, 14–23.
- Bruce, J., McDermott, J.M., Fisher, P.A., & Fox, N.A. (2009). Using behavioural 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 youths involved with child welfare: A national survey. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*, 960–970.
- Carlson, M., & Earls, F. (2006). Psychological and neuroendocrinological sequelae of early social deprivation in institutionalized children in Romania. *Annals of the New York Academy of Sciences, 807*, 419–428.
- 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., & 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 behavioural disorders and their families: Programs and evaluations best practices* (pp. 513–542). Austin, TX: PRO-ED.
- Croft, C., O'Connor, T.G., Keaveney, L., & Groothues, C. (2001). Longitudinal change in parenting associated with developmental delay and catch-up. *Journal of Child Psychology and Psychiatry, 42*, 649–659.
- Dance, C., Rushton, A., & Quinton, D. (2002). Emotional abuse in early childhood: Relationships with progress in subsequent family placement. *Journal of Child Psychology and Psychiatry, 43*, 395–407.
- De Bellis, M.D. (2005). The psychobiology of neglect. *Child Maltreatment, 10*, 150–172.
- DeGarmo, D.S., & Forgatch, M.S. (1999). Contexts as predictors of changing maternal parenting practices in diverse family structures: A social interactional perspective of risk and resilience. In E.M. Hetherington (Ed.), *Coping with divorce, single parenting, and remarriage: A risk and resiliency perspective* (pp. 227–252). Mahwah, NJ: Lawrence Erlbaum.
- Dozier, M., Chase Stoval, K.C., Albus, K.E., & Bates, B. (2001). Attachment for infants in foster care: The role of caregiver state of mind. *Child Development, 72*, 1467–1477.
- Dozier, M., Lindhiem, O., Lewis, E., Bick, J., Bernard, K., & Peloso, E. (2009). Effects of a foster parent training program

- on young children's attachment behaviors: Preliminary evidence from a randomized clinical trial. *Child and Adolescent Social Work Journal*, 26, 321–332.
- Dozier, M., Manni, 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.-P., & 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.
- DuMont, K.A., Spatz Widom, C., & Czaja, S.J. (2007). Predictors of resilience in abused and neglected children grown-up: The role of individual and neighborhood characteristics. *Child Abuse and Neglect*, 31, 255–274.
- Fisher, P.A., Ellis, B.H., & Chamberlain, P. (1999). Early intervention foster care: A model for preventing risk in young children who have been maltreated. *Children's Services: Social Policy, Research, and Practice*, 2, 159–182.
- Fisher, P.A., & Gunnar, M.R. (2010). Early life stress as a risk factor for disease in adulthood. In R.A. Lanius, E. Vermetten & C. Pain (Eds.), *The impact of early life trauma on health and disease* (pp. 133–141). New York: Cambridge University Press.
- Fisher, P.A., Gunnar, M., Dozier, M., Bruce, J., & Pears, K.C. (2006). Effects of therapeutic interventions for foster children on behaviour 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 behaviours from a randomized trial. *Prevention Science*, 8, 161–170.
- Fisher, P.A., & Stoolmiller, M. (2008). Intervention effects on foster parent stress: Associations with child 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.
- Flores, E., Cicchetti, D., & Rogosch, F.A. (2005). Predictors of resilience in maltreated and nonmaltreated Latino children. *Developmental Psychology*, 41, 338–351.
- Ford, T., Vostanis, P., Meltzer, P., & Goodman, R. (2007). Psychiatric disorder among British children looked after by local authorities: Comparison with children living in private households. *British Journal of Psychiatry*, 190, 319–325.
- Gagnon-Oosterwaal, N., Cossette, L., Smolla, N., Pomerleau, A., Malcuit, G., Chicoine, J.-F., & Séguin, R. (2012). Pre-adoption adversity, maternal stress, and behaviour problems at school-age in international adoptees. *Journal of Applied Developmental Psychology*, 33, 236–242.
- Green, J.M., Biehal, N., Roberts, C., Dixon, J., Kay, C., Parr, E., ... & Sinclair, I. (2014). Multidimensional Treatment Foster Care for adolescents in English care: Randomised trial and observational cohort evaluation. *British Journal of Psychiatry*, 204, 214–221.
- Gunnar, M.R., Fisher, P.A., & The Early Experience, Stress, and Prevention Science Network (2006). Bringing basic research on early experience and stress neurobiology to bear on preventive intervention research on neglected and maltreated children. *Development and Psychopathology*, 18, 651–677.
- Gunnar, M.R., & Vazquez, D.M. (2001). Low cortisol and a flattening of expected daytime rhythm: Potential indices of risk in human development. *Development and Psychopathology*, 13, 515–538.
- Harold, G.T., & DeGarmo, D.S. (2014). Concerns regarding Green et al. *British Journal of Psychiatry*. Available from: <http://bjp.rcpsych.org/content/204/3/214.short/reply#content-block>.
- Harold, G.T., Kerr, D.C.R., Van Ryzin, M., DeGarmo, D.S., Rhoades, K.A., & Leve, L.D. (2013). Depressive symptom trajectories among girls in the juvenile justice system: 24-month outcomes of an RCT of Multidimensional Treatment Foster Care. *Prevention Science*, 14, 437–446.
- Harvel, A.D. (2006). *The myth of the unknown child: Creating a new face for adoption in America*. (Master's thesis). Available from ProQuest Information and Learning Company. (UMI No. 1437827).
- Healey, C.V., & Fisher, P.A. (2011). Young children in foster care and the development of favorable outcomes. *Children and Youth Services Review*, 33, 1822–1830.
- Hodges, J., & Tizard, B. (1989). Social and family relationships of ex-institutional adolescents. *Journal of Child Psychology and Psychiatry*, 30, 77–97.
- van IJzendoorn, M.H., Bakermans-Kranenburg, M.J., & Juffer, F. (2007). Plasticity of growth in height, weight, and head circumference: Meta-analytic evidence of massive catch-up after international adoption. *Developmental Behavioral Pediatrics*, 28, 334–343.
- van IJzendoorn, M.H., & Juffer, F. (2006). The Emanuel Miller Memorial Lecture 2006: Adoption as intervention. Meta-analytic evidence for massive catch-up and plasticity in physical, socio-emotional, and cognitive development. *Journal of Child Psychology and Psychiatry*, 47, 1228–1245.
- van IJzendoorn, M.H., Juffer, F., & Klein Poelhuis, C.W. (2005). Adoption and cognitive development: A meta-analytic comparison of adopted and nonadopted children's IQ and school performance. *Psychological Bulletin*, 131, 301–316.
- Johnson-Reid, M., & Barth, R.P. (2000). From placement to prison: The path to adolescent incarceration from child welfare supervised foster or group care. *Children and Youth Services Review*, 22, 493–516.
- Judge, S. (2003). Developmental recovery and deficit in children adopted from Eastern European orphanages. *Child Psychiatry and Human Development*, 34, 49–62.
- Kendall-Tackett, K.A., & Eckenrode, J. (1996). The effects of neglect on academic achievement and disciplinary problems: A developmental perspective. *Child Abuse and Neglect*, 20, 161–169.
- Kertes, D.A., Gunnar, M.R., Madsen, N.J., & Long, J.D. (2008). Early deprivation and home basal cortisol levels: A study of internationally adopted children. *Development and Psychopathology*, 20, 473–491.
- 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.
- Kufeldt, K. (1993). Listening to children: An essential for justice. *The International Journal of Children's Rights*, 1, 155–164.
- Lawrence, C.R., Carlson, E., & Egeland, B. (2006). The impact of foster care on development. *Development and Psychopathology*, 18, 57–76.
- 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., Harold, G.T., Chamberlain, P., Landsverk, J.A., Fisher, P.A., & Vostanis, P. (2012). Practitioner review: Children in foster care—Vulnerabilities and evidence-based interventions that promote resilience processes. *Journal of Child Psychology and Psychiatry*, 53, 1197–1211.
- Lewis, E.E., Dozier, M., Ackerman, J., & Sepulveda-Kozakowski, S. (2007). The effect of placement instability on adopted children's inhibitory control abilities. *Developmental Psychology*, 43, 1415–1427.
- 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.
- Lupian, S.J., McEwen, B.S., Gunnar, M.R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behavior and cognition. *Nature Reviews Neuroscience*, 10, 434–445.
- Masten, A.S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, 56, 227–238.
- McEwen, B.S. (2012). Brain on stress: How the social environment gets under the skin. *Proceedings of the National Academy of Sciences of the United States of America*, 109, 17180–17185.

- Miall, C.E. (1987). The stigma of adoptive parent status: Perceptions of community attitudes toward adoption and the experience of informal social sanctioning. *Family Relations*, 36, 34–39.
- Miall, C.E. (1996). The social construction of adoption: Clinical and community perspectives. *Family Relations*, 45, 309–317.
- 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.
- Newton, R.R., Litrownik, A.J., & Landsverk, J.A. (2000). Children and youth in foster care: Disentangling the relationship between problem behaviors and number of placements. *Child Abuse and Neglect*, 24, 1363–1374.
- O'Connor, T.G., & Rutter, M. (2000). Attachment disorder behavior following early severe deprivation: Extension and longitudinal follow-up. *Journal of the American Academy of Child and Adolescent Psychiatry*, 39, 703–712.
- Patterson, G.R., & Fisher, P.A. (2002). Recent developments in our understanding of parenting: Bidirectional effects, causal models, and the search for parsimony. In M. Bornstein (Ed.), *Handbook of parenting: Practical and applied parenting* (2nd edn, vol. 5, pp. 59–88). Mahwah, NJ: Erlbaum.
- Pears, K.C., Bruce, J., Fisher, P.A., & Kim, H.K. (2010). Indiscriminate friendliness in maltreated foster children. *Child Maltreatment*, 15, 64–75.
- Pears, K.C., & Fisher, P.A. (2005a). Developmental, cognitive, and neuropsychological functioning in preschool-aged foster children: Associations with prior maltreatment and placement history. *Journal of Developmental and Behavioral Pediatrics*, 26, 112–122.
- Pears, K.C., & Fisher, P.A. (2005b). Emotion understanding and theory of mind among maltreated children in foster care: Evidence of deficits. *Development and Psychopathology*, 17, 47–65.
- Pears, K.C., Fisher, P.A., Bruce, J., Kim, H.K., & Yoerger, K. (2010). Early elementary school adjustment of maltreated children in foster care: The roles of inhibitory control and caregiver involvement. *Child Development*, 81, 1550–1564.
- Pears, K.C., Kim, H.K., & Fisher, P.A. (2008). Psychosocial and cognitive functioning of children with specific profiles of maltreatment. *Child Abuse and Neglect*, 32, 958–971.
- Pollack, S.D., Nelson, C.A., Schlaak, M.F., Roeber, B.J., Wewerka, S.S., Wiik, K.L., & Gunnar, M.R. (2010). Neurodevelopmental effects of early deprivation in postinstitutionalized children. *Child Development*, 81, 224–236.
- 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.
- Rushton, A. (2013). Support for adoptive families: A review of current evidence on problems, needs and effectiveness. *Adoption and Fostering*, 27, 41–50.
- Rushton, A., Monck, E., Leese, M., McCrone, P., & Sharac, J. (2010). Enhancing adoptive parenting: A randomised controlled trial. *Clinical Child Psychology and Psychiatry*, 15, 529–542.
- Rutter, M. (2003). Genetic influences on risk and protection: Implications for understanding resilience. In S.S. Luthar (Ed.), *Resilience and vulnerability: Adaptation in the context of childhood adversities* (pp. 489–509). New York: Cambridge University Press.
- Rutter, M. (2006). Implications of resilience concepts for scientific understanding. *Annals of the New York Academy of Sciences*, 1094, 1–12.
- Rutter, M. & the English and Romanian Adoptees Study Team (1998). Developmental catch-up, and deficit, following adoption after severe global early privation. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39, 465–476.
- Samuels, G.M., & Pryce, J.M. (2008). 'What doesn't kill you makes you stronger': Survivalist self-reliance as resilience and risk among young adults aging out of foster care. *Children and Youth Services Review*, 30, 1198–1210.
- Sapolsky, R.M. (2000). Stress hormones: Good and bad. *Neurobiology of Disease*, 7, 540–542.
- Shonkoff, J.P., Garner, A.S., The Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, & Section on Developmental and Behavioral Pediatrics (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*, 129, e232–e246.
- Smyke, A.T., Zeanah, C.H., Fox, N.A., Nelson, C.A., & Guthrie, D. (2010). Placement in foster care enhances quality of attachment among young institutionalized children. *Child Development*, 81, 212–223.
- van der Vegt, E.J.M., van der Ende, J., Kirschbaum, C., Verhulst, F.C., & Tiemeier, H. (2009). Early neglect and abuse predict diurnal cortisol patterns in adults: A study of international adoptees. *Psychoneuroendocrinology*, 34, 660–669.
- Welsh, J.A., Viana, A.G., Petrill, S.A., & Mathias, M.D. (2007). Interventions for internationally adopted children and families: A review of the literature. *Child and Adolescent Social Work Journal*, 24, 285–311.
- 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.
- Zima, B.T., Bussing, R., Crecelios, A.K., & Belin, T.R. (1999). Psychotropic medication treatment patterns among school-aged children in foster care. *Journal of Child and Adolescent Psychopharmacology*, 9, 135–147.
- Zito, J.M., Safer, D.J., Sai, D., Gardner, J.F., Thomas, D., Coombes, P., & Mendez-Lewis, M. (2008). Psychotropic medication patterns among youth in foster care. *Pediatrics*, 121, e157–e163.

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