

Children Exposed to Abuse and Neglect: The Effects of Trauma on the Body and Brain

by
Heather C. Forkey*

I. Introduction

Experiences in childhood, both positive and negative, have a significant impact on subsequent health and developmental trajectories. For those practicing family law, this will, no doubt, ring true. Yet, only now is science catching up, filling in the “why” of what is commonly seen with children who experience adversities. Research is explaining how childhood traumas such as abuse, neglect, and extreme household dysfunction, can alter children’s physiological functioning, damage their developing immunologic, neurologic, emotional, and cognitive systems, and cause poor emotional and physical health.¹ Trauma which leads to the frequent or prolonged activation of the stress response in the relative absence of protective relationships has been termed “toxic stress” in the pediatric literature.² Research has now clearly linked trauma with impairments in cognitive development, behavioral and psychological functioning, and physical health, consequences that should be considered in the care and protection of children and the practice of family law.³

* Associate Professor of Pediatrics, UMass Medical School.

¹ Andrew S. Garner & Jack P. Shonkoff, *Early Childhood Adversity, Toxic Stress, and the Role of the Pediatrician: Translating Developmental Science into Lifelong Health*, 129 PEDIATRICS e224 (2012); Jack P. Shonkoff & Andrew S. Garner, Committee on Psychosocial Aspects of Child and Family Health., et al., *The Lifelong Effects of Early Childhood Adversity and Toxic Stress*, 129 PEDIATRICS e232 (2012).

² Garner & Shonkoff, *supra* note 1, at e225; Shonkoff & Garner, *supra* note 1, at e236.

³ Garner & Shonkoff, *supra* note 1, at e225-26; Jack Shonkoff, W. Thomas Boyce & Bruce S. McEwen, *Neuroscience, Molecular Biology, and the Childhood Roots of Health Disparities: Building a New Framework for Health Promotion and Disease Prevention*, 301 JAMA 2252 (2009).

This article will review the current science of child trauma which may be useful in understanding and responding to the legal needs of children exposed to abuse and neglect. After a review of the demographics of at risk populations, Part III provides an overview of child neurodevelopment, laying the context for the impact of trauma on the child's brain and body. Children are not little adults. The rapid brain development of the first years of life and the impact of attachment to a committed attuned caregiver provide both an explanation for a child's vulnerability to adversity and an opportunity for resilience. Part IV summarizes recent medical advances in understanding how trauma impacts the pediatric brain and body. As this science has rapidly evolved, new diagnostic labels used by the medical and mental health community to describe these impacts have entered the lexicon. Currently, a variety of terms are being applied to describe traumatic insults and their resultant behavioral and developmental consequences, and it is useful for the legal community to understand how these various terms are being employed. Part V reviews the physical health, mental health, and developmental impacts of trauma, and provides some resources for best practice treatments. Thankfully, adversity is not destiny. Part VI and VII further describe the variable response to trauma, and steps that those in the legal community can take to partner with others in the community to promote best outcomes.

II. DEMOGRAPHICS

More than 3.4 million children are reported as potential victims of child abuse and neglect annually, and in 2015 more than 670,000 children spent time in foster care.⁴ Both populations have an extremely high prevalence of severe childhood trauma that includes, in addition to maltreatment, exposure to domestic violence and impaired parenting, which is often rooted in parental mental health and substance use disorders.⁵ While the trauma

⁴ Child Welfare Information Gateway, *Foster Care Statistics 2015*, U.S. DEP'T OF HEALTH & HUM. SERVS. (2107), <https://www.childwelfare.gov/pubs/factsheets/foster/>; U.S. Department of Health & Human Services, Administration for Children and Families, Children's Bureau, *Child Maltreatment 2015* (Jan. 19, 2017), <http://www.acf.hhs.gov/programs/cb/research-data-technology/statistics-research/child-maltreatment>.

⁵ Shonkoff & Garner, *supra* note 1, at e227.

of abuse and neglect can impact anyone, there are known risk factors which put children at increased jeopardy. Poverty, or near poverty, is a known risk factor for childhood abuse and affects about 43% of U.S. children.⁶ Children of racial/ethnic/religious minorities are also more likely to be poor and be exposed to both domestic and community violence.⁷ Like other minority youth, lesbian, gay, bisexual, transgendered, and questioning youth (LGBTQ) are more likely to experience discrimination, both overt and as a series of micro-aggressions that accumulate over time.⁸ Additionally, children of military families experience a high prevalence of trauma, abuse, grief, and loss.

III. CHILD NEURODEVELOPMENT

Critical to understanding the impact of abuse and neglect in children is an understanding of normal child brain development. To mature, children need an environment in which a responsive, attuned parent or caregiver meets their needs for adequate care, attention, and protection.⁹ In utero and extending through the first years of life, the human brain undergoes major neuronal changes. Starting from a single cell, billions of cells are created. After birth these neurons need to migrate to the parts of the brain where they will ultimately function (neuronal migration), branches and connections to facilitate communication between neurons are made (neuronal arborization and synaptogenesis), the most active neuronal connections are reinforced and the neurons not being used are removed (apoptosis), and finally, over the course of childhood, the neurons are encased in cellular insulation to improve the speed of the connections (myelination).

⁶ Sara B. Johnson et al., *State of the Art Review: Poverty and the Developing Brain*, 137 PEDIATRICS e20153075 (2016).

⁷ Daniel A. Hackman & Martha J. Farah, *Socioeconomic Status and the Developing Brain*, 13 TRENDS COGNITIVE SCI. 65 (Feb. 2009).

⁸ Andrea L. Roberts et al., *Pervasive Trauma Exposure Among US Sexual Orientation Minority Adults and Risk of Posttraumatic Stress Disorder*, 100 AM. J. PUB. HEALTH 2433 (2010).

⁹ Center for the Developing Child, Harv. Univ., *The Science of Neglect: The Persistent Absence of Responsive Care Disrupts the Developing Brain*, Working Paper 12 (2012), <https://developingchild.harvard.edu/resources/the-science-of-neglect-the-persistent-absence-of-responsive-care-disrupts-the-developing-brain/>.

This process of neuronal maturation is facilitated by environmental experience. Brain development occurs through “serve and return” with a caregiver.¹⁰ The cries or coos of a child are met by a responsive adult with soothing, stimulation, or support, and, as in a game of tennis, these exchanges go back and forth between the dyad.¹¹ The interactions with a committed attentive caregiver provide the feedback to the brain to create neuronal connections, and guides which connections are created and strengthened. For example, for a child to learn language, a child must be spoken to, their responses elicited, and communication shared. Serve and return, back and forth, this stimulation is what causes the language centers of the brain to develop.¹² In the first years of life, more than a million neuronal connections are made each second.¹³ In this way, the brain develops to meet the expectations and challenges of the environment. This development occurs in response to positive interactions with caregivers, but brain development is similarly impacted by traumatic interactions with caregivers, allowing the brain to develop in ways that allow the child to survive in the short term, but resulting in behavioral and health consequences in the long run.¹⁴

IV. EFFECT OF TRAUMA ON THE BRAIN AND BODY

For many people, the term *traumatic stress* conjures the image of veterans returning from battle with the psychological scars of that experience. Indeed, understanding of the impact of trauma on children has evolved since post-traumatic stress disorder was first defined to explain the effects on these young adult males, in whom it was first described. The type of traumas children experience and their responses are different than those of the soldier. The traumas that impact children usually result from insults within the caregiving relationship, and the absence of pro-

¹⁰ *Id.* at 1.

¹¹ *Id.*

¹² Center for the Developing Child, Harv. Univ., *Science of Early Childhood: Closing the Gap Between What We Know and What We Do* (2007), <https://developingchild.harvard.edu/resources/the-science-of-early-childhood-development-closing-the-gap-between-what-we-know-and-what-we-do/>.

¹³ *Id.* at 5.

¹⁴ *Id.* at 10.

tection and/or the frank injury by those who are the primary attachment figures. This type of injury occurs at a time when the brain is not yet developed, but is using each experience to mature.

Stress leads to a predictable cascade of neuroendocrine changes that enable the individual to deal with a threat, real or perceived. Under threat, the body produces adrenaline and cortisol to help the body to rise to the challenge. Evolved to allow humans to respond to predators in the environment, at the time of threat adrenaline and cortisol are produced by the brain, and stimulate increases in heart rate and the blood flow to muscles so people can respond by running or fighting. There are changes to the immune system so that people can respond to an injury or animal bite. There are changes to levels of consciousness and focus, so that people can attend to the threat without distraction. This body response is designed to last for about ten to twenty minutes, the time it takes for a human to run, fight . . . or be eaten by the predator. Thus, these same hormones feed back to the brain to shut the system down, restoring the body to its normal state. For children, any threatening situation should be buffered by a supportive caregiver, one who protects and soothes the child, allowing the child's system to return to normal.

When children live in situations of abuse and neglect, there can be chronic or frequent activation of the child's physiologic stress response system without the adequate response of a supportive responsive caregiver. Andrew Garner and Jack Shonkoff have labeled this *toxic stress*.¹⁵ Toxic stress leads, through the excessive or prolonged activation of physiologic stress response systems, to alterations in neurodevelopment, gene translation, and immune response, resulting in predictable behavioral, learning, and health issues. Those areas of the brain involved in cognition, rational thought, emotional regulation, activity level, attention, impulse control, and executive function are particularly vulnerable, especially in the young child.

¹⁵ Andrew S. Garner, *Home Visiting and the Biology of Toxic Stress: Opportunities to Address Early Childhood Adversity*, 132 PEDIATRICS S65 (2013); Shonkoff & Garner, *supra* note 1, at 1.

A. *Neurodevelopment Impacts*

Specific areas of the developing brain are particularly sensitive to impacts from toxic stress. These brain regions have a primary role in the normal response to threat, but the prolonged or severe impact from toxic stressors causes changes in the anatomy and function of these areas. These changes then impact behavior, development, and learning.

The limbic system of the brain is the interface between the lower brain, which is the most primitive part of the brain, responsible for unconscious functions and responses, and the upper brain, responsible for rational thought. The limbic system consists of structures that are responsible for motivation, emotion, learning, and memory. Two of the structures most impacted by trauma, the amygdala and the hippocampus, are part of the limbic system. The amygdala is the brain's alarm. Responsible for emotional memory, the amygdala helps develop aggressive or impulsive behaviors to protect the body whenever the lower brain perceives threat. Under constant stimulation from toxic stress, the amygdala will hypertrophy, or enlarge. As a result, children thus impacted can display aggressive behavior with minimal threat, and can have impulsivity that can mimic attention deficit, hyperactivity disorder (ADHD).

The hippocampus, which lies between the lower and upper brain, allows the brain to access information from other centers, functioning like a brain version of the search engines Google or Yahoo. The hippocampus is important in learning and memory. Under threat, the stimulation from the stress hormones limits neuron formation in the hippocampus, and the area atrophies. This results in a protective effect of some amnesia about prior trauma, but also limits learning and memory and negatively impacts educational attainment.

The prefrontal cortex is the part of the brain that controls executive function. Executive function includes working memory, impulse control, and cognitive flexibility. When functioning well, the prefrontal cortex suppresses impulses and emotion generated by the brain's limbic system, allowing for rational thought and action. With constant threat the prefrontal cortex develops slowed synaptic connectivity, rendering it less effective. Consequently, this results in a limited ability to suppress aggression and to think through consequences of actions, which means a child

can look like he or she has ADHD, aggression, or oppositional defiant disorder.¹⁶

B. *Epigenetic Changes*

A growing body of evidence demonstrates that toxic stress causes alterations in which genes are expressed, and that these changes can be passed down to subsequent generations, resulting in impacts to neuroanatomy, physiology, and behavior which are potentially multigenerational. Genetic code which lies in front of or “above” (thus “epi”) functional genes, controls which genes are turned on and which turned off, and thus controls which protein combinations are made or not made. In response to stress and trauma, these “promoter regions” are blocked or exposed. Studies looking at the impact of trauma have identified a growing list of hundreds of genes which appear to be thus impacted, including genes that code for proteins necessary for shutting down the fight or flight reaction, proteins involved in regulating weight, and proteins that have a role in depression and anxiety. Some of these epigenetic changes appear to be reversible with behavioral or pharmacologic interventions, and others are more permanent, but these findings begin to explain how trauma experienced by grandparents years ago can impact children today.¹⁷

C. *Immune Function*

When the body is under threat, the immune system needs to respond to address threat as well. Stress hormones increase the function of inflammatory mediators, the part of the immune system that responds to injury, a likely consequence of encountering a predator. Under normal circumstances, these inflammatory mediators are shut down after the threat has passed. Yet when

¹⁶ American Academy of Pediatrics, *Helping Foster and Adoptive Families Cope with Trauma* (2013), <http://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/healthy-foster-care-america/Documents/Guide.pdf>.

¹⁷ Lotte C. Houtepen, *Genome-wide DNA Methylation Levels and Altered Cortisol Stress Reactivity Following Childhood Trauma in Humans*, 7 NATURE COMM. 10967 (2016); Patrick O. McGowan, *Epigenomic Mechanisms of Early Adversity and HPA Dysfunction: Considerations for PTSD Research*, 4 FRONTIERS PSYCHIATRY 110 (Sept. 2013); Bao ZhuYang, et al., *Child Abuse and Epigenetic Mechanisms of Disease Risk*, 44 AM. J. PREVENTIVE MED. 101 (Feb. 2013).

the developing system is chronically pressed into action, that inflammatory response persists after it is no longer needed. This can result in diseases which result from excessive inflammation, such as asthma. Excessive cortisol also suppresses humoral immunity, the part of the immune system which is responsible for fighting infection. This makes sense when one considers that stress hormones such as cortisol prepare the body to respond to predators, not the flu! A consequence of this is that children experiencing toxic stress can be more susceptible to infection.

Additionally, under threat the body experiences the “sick syndrome.” This is the perception of feeling unwell, with headaches, stomachaches, and lethargy. Somatic perception is impaired under threat to increase the chances that one will feel so poorly that one might just lay low and avoid a predator, a very adaptive behavior. Because of toxic stress, however, children often feel chronically unwell.¹⁸ New studies also demonstrate that the inflammatory mediators, called cytokines, not only act on the brain to cause this sickness behavior, but can also continue to impact the brain to cause true major depressive disorder.¹⁹

D. *Diagnostic Terminology*

Currently, multiple terms are used to describe the physiologic response to traumas and the predictable behavioral effects of these traumas. Most people are familiar with the term *post-traumatic stress disorder* (PTSD), which is a formal psychiatric diagnosis that is made when specific criteria about the number, duration, and intensity of symptoms are met after a person has experienced, witnessed, or learned of a close family member experiencing an event involving actual or threatened death, serious injury, or sexual violation. This diagnosis applies to some children exposed to abuse and neglect, but does not encompass the range of impacts that can occur. The term *complex trauma* is de-

¹⁸ Sonja Entringer et al., *Prenatal Stress, Telomere Biology, and Fetal Programming of Health and Disease Risk*, 5 *SCI. SIGNAL* 248 (Oct. 2012); Sara B. Johnson et al., *The Science of Early Life Toxic Stress for Pediatric Practice and Advocacy*, 131 *PEDIATRICS* 319 (2013).

¹⁹ Christine Heim et al., *The Link Between Childhood Trauma and Depression: Insights from HPA Axis Studies in Humans*, 33 *PSYCHONEURO-ENDOCRINOLOGY* 693 (2008).

fined by the National Child Traumatic Stress Network as encompassing both a child's exposure to multiple interpersonal traumatic events and the broad, pervasive, and predictable impact this exposure has on the individual child.²⁰ Complex trauma can disrupt a child's bonding with caregivers, development, and a child's sense of himself.²¹ A proposed diagnosis, *developmental trauma disorder* (DTD) evidences that "children exposed to complex trauma are at risk for severe disruptions in their development in the domains of emotion, physical health, attention, cognition, learning, behavior, interpersonal relationships, and development of a clear sense of self."²² This diagnosis formally describes problems in self-regulation resulting from trauma and related developmental impairments.²³ Symptoms of DTD and PTSD often overlap or co-occur, but DTD is more strongly related to complex trauma and involves a wider range of types of dysregulation than PTSD.²⁴ This diagnosis was not included in the most recent version of the psychiatric Diagnosis and Statistical Manual (DSM), but is used by some researchers and providers in the mental health and medical communities.²⁵

V. HOW TRAUMA IMPACTS HEALTH

The interplay of toxic stress, physiologic response, and behavioral adaptations to stress impact the health of children in childhood and over the life course.²⁶ Published in 1998, the Ad-

²⁰ National Child Traumatic Stress Network, *Complex Trauma*, <http://www.nctsn.org/trauma-types/complex-trauma> (last visited Jan. 18, 2018).

²¹ *Id.*

²² National Child Traumatic Stress Network Integrated Care Collaborative Workgroup, *Glossary of Terms Related to Trauma-Informed, Integrated Healthcare*, <http://www.nctsn.org/products/glossary-terms-related-trauma-informed-integrated-healthcare> (last visited Mar. 12, 2018).

²³ *Id.*

²⁴ *Id.*

²⁵ Julian D. Ford et al., *Clinical Significance of a Proposed Developmental Trauma Disorder Diagnosis: Results of an International Survey of Clinicians*, 74 J. CLINICAL PSYCHIATRY 841 (2013); Bessel van der Kolk, *Developmental Trauma Disorder*, 35 PSYCHIATRIC ANN. 401 (2005).

²⁶ Robert Anda et al., *The Enduring Effects of Abuse and Related Adverse Experiences in Childhood: A Convergence of Evidence from Neurobiology and Epidemiology*, 256 EUR. ARCHIVES PSYCHIATRY & CLINICAL NEUROSCIENCE 174 (2006); Vincent J. Felitti et al., *Relationship of Childhood Abuse*

verse Childhood Experience (ACE) study made the link between childhood toxic stress and poor adult health outcomes, including cardiovascular and pulmonary disease, cancer, asthma, autoimmune disease, and depression.²⁷ This study was the first to report that adverse childhood experiences are common (nearly two-thirds of adults have had at least one) and that many people have had four or more ACEs (one in eight adults have had four or more ACEs); and the study demonstrated that the more adverse experiences a person has, the greater the risk for poor health outcomes.²⁸ Growing literature now elucidates how these adversities take their toll.²⁹ Immune response, epigenetic changes, and neurodevelopmental impacts as influenced by the neuroendocrine stress response lead to biologic changes and adaptations that can acutely and chronically lead to poor health outcomes.

A. *Physical Health*

Physical health appears to be impacted by both the toxic stressors and the individual child's physiologic response to stress. Studies over the last three decades document that children exposed to abuse and neglect have much higher rates of acute and chronic illness than same aged peers,³⁰ including higher rates of infection, asthma, and obesity. Some problems are the direct result of physical trauma (neurological sequelae of head trauma, for example). But much of the injury is due to the chronic toxic stress which forces the body to stay in alert mode continuously.

and Household Dysfunction to Many of the Leading Causes of Death in Adults. The Adverse Childhood Experiences (ACE) Study, 14 AM. J. PREVENTIVE MED. 245 (1998); Garner, *supra* note 15, at 1; Johnson et al., *supra* note 6.

²⁷ See generally Felitti et al., *supra* note 26.

²⁸ See *id.*

²⁹ See generally Anda et al., *supra* note 26; Vincent J. Felitti, *Adverse Childhood Experiences and Adult Health*, 9 ACAD. PEDIATRICS 131 (2009).

³⁰ See, e.g., Robin Chernoff et al., *Assessing the Health Status of Children Entering Foster Care*, 93 PEDIATRICS 594 (1994); Neal Halfon et al., *Health Status of Children in Foster Care. The Experience of the Center for the Vulnerable Child*, 149 ARCHIVES PEDIATRIC & ADOLESCENT MED. 386 (1995); Mark D. Simms, *The Foster Care Clinic: A Community Program to Identify Treatment Needs of Children in Foster Care*, 10 J. DEV. & BEHAV. PEDIATRICS 121 (June 1989); Julie S. Steele & Karen F. Buchi, *Medical and Mental Health of Children Entering the Utah Foster Care System*, 122 PEDIATRICS e703 (2008).

We see some of the resultant physical health impacts in childhood, but these injuries accumulate over time, and thus the health consequences are seen across the lifespan. Excessive cortisol keeps blood pressure and cholesterol levels high, leading to injury to the heart and blood vessels. Glucose levels are impacted, increasing the risk of diabetes. Other physical consequences are rooted in the impact of toxic stress on the immune response, and chronic inflammation. Upregulated to respond to the constant threat, the immune system is altered in ways that promote inflammation. Inflammatory mediators cause damage to joints and bones, can lead to depression, and can attack the body, leading to rheumatologic disease. The likelihood of having any of these consequences increases with the number of adversities a child experiences.

B. *Mental Health*

Mental illness is the most significant health concern for children exposed to abuse and neglect. These children have higher rates of mental health disorders, such as depression and ADHD, when compared to age matched peers, with a poorer recovery and prognosis.³¹ Diagnoses of ADHD, oppositional defiant disorder, anxiety, and depression are common, and more than 25% of adolescents leaving foster care have post-traumatic stress disorder (a rate higher than war veterans).³²

The high prevalence of mental health issues makes sense when considered in the context of toxic stress, brain development, and neuroscience. As noted above, trauma impacts parts of the brain responsible for attention, aggression, memory, and executive function. After chronic trauma the body has difficulty returning to the normal state, often because the epigenetic changes force the stress response to stay on even when the threat

³¹ Heim et al., *supra* note 19; Christine Heim et al., *Neurobiological and Psychiatric Consequences of Child Abuse and Neglect*, 52 *DEV. PSYCHOBIOLOGY* 671 (2010); Amy Heneghan et al., *Mental Health Problems in Teens Investigated by U.S. Child Welfare Agencies*, 52 *J. ADOLESCENT HEALTH* 634 (2013); Kristin Turney & Christopher Wildeman, *Mental and Physical Health of Children in Foster Care*, 138 *PEDIATRICS* e20161118 (2016).

³² Peter J. Pecora et al., *Improving Family Foster Care: Findings from the Northwest Foster Care Alumni Study* (Apr. 5, 2005), <https://www.casey.org/northwest-alumni-study/>.

has subsided. Over time, children become very sensitive to threat or trauma, and can be easily triggered with strong responses to events that don't impact others.

Because of this overlap of presentation, trauma symptoms may be confused with or be comorbid with other mental health disorders such as ADHD, oppositional defiant disorder, conduct disorder, and anxiety, and treated with psychotropic medications that may be ineffective. Many people thus affected turn to the abuse of drugs or alcohol as a form of self-medication.³³ As noted above, inflammatory effects of the trauma of abuse and neglect can lead to feeling ill (sick syndrome), and depression itself.³⁴ Thus depression seen in these patients can be a direct result of the inflammatory mediators on the brain, and not just a reaction to the circumstances of the abuse. Accurate diagnosis and treatment requires an understanding of the child's behaviors in the context of how trauma has impacted the developing brain, and education and support for their caregivers.³⁵

First line treatment for youths struggling with mental health concerns is psychosocial interventions. Evidence based, trauma informed therapeutic supports are essential for youths exposed to abuse and neglect given the high rates of traumatic experiences and symptoms of trauma seen in this population.³⁶ With the wide variety of treatments available, legal counsel can search the evidence base of a particular intervention through either the

³³ Mark Courtney et al., *Midwest Evaluation of the Adult Functioning of Former Foster Youth. Outcomes at 21* (2007).

³⁴ Robert Dantzer et al., *From Inflammation to Sickness and Depression: When the Immune System Subjugates the Brain*, 9 *NATURE REV. NEUROSCIENCE* 46 (Jan. 2008).

³⁵ See generally Garner, *supra* note 15.

³⁶ Heather Forkey et al., *Outpatient Clinic Identification of Trauma Symptoms in Children in Foster Care*, *J. CHILD & FAM. STUD.* 1 (2015); Heather Forkey & Moira Szilagyi, *Foster Care and Healing from Complex Childhood Trauma*, 61 *PEDIATRIC CLINICS N. AM.* 1059 (2014); Michael S. Hurlburt et al., *Contextual Predictors of Mental Health Service Use Among Children Open to Child Welfare*, 61 *ARCHIVES GEN. PSYCHIATRY* 1217 (2004); Samantha Schilling et al., *Medical Management and Trauma-Informed Care for Children in Foster Care*, 45 *CURRENT PROBS. PEDIATRIC & ADOLESCENT HEALTH CARE* 298 (Oct. 2015); Robert D. Sege & Lisa Amaya-Jackson, *Clinical Considerations Related to the Behavioral Manifestations of Child Maltreatment*, 139 *PEDIATRICS* (2017), <http://pediatrics.aappublications.org/content/early/2017/03/16/peds.2017-0100>.

National Registry of Evidence-Based Programs and Practices³⁷ or the California Evidence-Based Clearinghouse for Child Welfare,³⁸ to ensure their clients are receiving appropriate interventions. TABLE 1 lists well-established psychosocial interventions that have a strong evidence base.

C. Cognitive Development and Educational Attainment

Development and learning are also adversely impacted by complex childhood trauma. Children exposed to these traumas demonstrate developmental and educational delays at higher rates than their peers. Some of these consequences are the direct result of trauma's impact on parts of the brain responsible for attention, memory, and learning. Of children in foster care, nearly 60% of children younger than five years have delays in communication, problem solving, and social skills, and more than 40% of school-age children are in special education for cognitive and/or emotional issues.³⁹ Only about one-third of teens in foster care graduate from high school by the time they age out of foster care. Fewer than 2% go on to higher education.⁴⁰

VI. ADVERSITY IS NOT DESTINY

The associations between childhood experiences and life-course trajectories may be quite strong, but they are also imperfect, and past adversity is not destiny. For example, even in the ACE study, many adults with high ACE scores were able to avoid negative outcomes. Similarly, proponents of corporal punishment point to individual children who were raised under harsh

³⁷ Substance Abuse and Mental Health Services Administration, National Registry of Evidence-based Programs and Practices, <https://knowledge.samhsa.gov/ta-centers/national-registry-evidence-based-programs-and-practices> (last visited Mar. 11, 2018).

³⁸ California Evidence-Based Clearinghouse for Child Welfare, <http://www.cebc4cw.org/> (last visited Mar. 11, 2018).

³⁹ Sandra H. Jee et al., *Identification of Social-Emotional Problems Among Young Children in Foster Care*, 51 J. CHILD PSYCHOL. & PSYCHIATRY 1351 (2010); Sandra H. Jee et al., *Learning Difficulties Among Children Separated from a Parent*, 8 AMBULATORY PEDIATRICS 163 (May-June 2008).

⁴⁰ Peter Pecora, et al., *Educational and Employment Outcomes of Adults Formerly Placed in Foster Care: Results from the Northwest Foster Care Alumni Study*, 28 CHILD. & YOUTH SERV. REV. 1459 (2006).

conditions but grew up to be well-adjusted adults. Conversely, not all children raised without abuse do well.

The differential susceptibility to context model⁴¹ has begun to explain the strong but imperfect linkage between childhood experiences and developmental outcomes. According to this model, some children are genetically predisposed to being more sensitive or reactive to the environment (the so-called “orchids”), whereas others are simply less responsive or swayed by their experiences (the so-called “dandelions”). From an evolutionary perspective, both groups of children could have an advantage depending upon the context. Under adverse conditions (e.g., children exposed to abuse or neglect), the dandelions would have the advantage because their relative insensitivity to the environment may buffer them from on-going adversity. But under nurturing conditions, the orchids would have the advantage because their sensitivity and reactivity could drive them to be exceptionally creative and productive. What researchers have found is that there are alternative forms of genes or alleles that control various parts of the stress response. These various alleles could be an advantage or liability depending on the child’s early environment.

For example, children with one set of alleles for dopamine receptors are very aggressive if parenting is harsh, but respond very well to positive parenting.⁴² Similarly, children with one set of alleles for cortisol reactivity have difficulty managing their own behavior in early childhood school settings if they experi-

⁴¹ See generally W. Thomas Boyce & Bruce J. Ellis, *Biological Sensitivity to Context: I. An Evolutionary-Developmental Theory of the Origins and Functions of Stress Reactivity*, 17 DEV. PSYCHOPATHOLOGY 271 (2005); Bruce J. Ellis et al., *Biological Sensitivity to Context: II. Empirical Explorations of an Evolutionary-Developmental Theory*, 17 DEV. PSYCHOPATHOLOGY 303 (2005).

⁴² Marian Bakermans-Kranenburg & Marinus H. van Ijzendoorn, *Gene-Environment Interaction of the Dopamine D4 Receptor (DRD4) and Observed Maternal Insensitivity Predicting Externalizing Behavior in Preschoolers*, 48 DEV. PSYCHOBIOLOGY 406 (2006); Marian Bakermans-Kranenburg et al., *Experimental Evidence for Differential Susceptibility: Dopamine D4 Receptor Polymorphism (DRD4 VNTR) Moderates Intervention Effects on Toddlers’ Externalizing Behavior in a Randomized Controlled Trial*, 44 DEV. PSYCHOL. 293 (2008).

ence adversity, but do very well in early childhood settings if caregiving is nurturing.⁴³

VII. HOW TO RESPOND

Symptomatic children who have been exposed to trauma are best served if those in a position to impact outcomes change the inquiry from “what’s wrong with you?” to “what happened to you?” For many children and families impacted by trauma the message they receive is that they are, at best, damaged, and at worst, “bad kids.” Hearing instead that their bodies and brains have responded appropriately to situations involving danger and threat, and that their reactions are common and expected given their experiences, is validating and often the first step in recovery. The good news is that, especially for children, the brain is continually changing and growing, and can heal from these experiences.

This science also provides evidence that children can be impacted in positive ways through community supports and services. Social and family services can aid and grow the abilities of families, caregivers, and communities to support the safe, stable, and nurturing relationships that buffer toxic stress, provide early identification of children who are developing the expected but maladaptive responses to adversity, and collaborate with, or advocate for, the community response needed to heal past traumas and to promote resilience.⁴⁴ Legal counsel can partner with medical providers, schools, child welfare agencies, and mental health services, which are all becoming trauma informed, to meet the various needs of individual clients and families. Resources from the National Child Traumatic Stress Network⁴⁵ and the Harvard Center for the Developing Child⁴⁶ are available to inform and

⁴³ Jelena Obradović et al., *Biological Sensitivity to Context: The Interactive Effects of Stress Reactivity and Family Adversity on Socioemotional Behavior and School Readiness*, 81 *CHILD DEV.* 270 (2010).

⁴⁴ Andrew S. Garner et al., *Translating Developmental Science to Address Childhood Adversity*, 15 *ACAD. PEDIATRICS* 493 (2015).

⁴⁵ National Child Traumatic Stress Network, nctsn.org/ (last visited Mar. 11, 2018).

⁴⁶ Center for the Developing Child, Harv. Univ., <https://developingchild.harvard.edu> (last visited Mar. 11, 2018).

322 *Journal of the American Academy of Matrimonial Lawyers*

guide members of each discipline to bring best practices to impacted children and families.

Multiple studies demonstrate that resilience is not static nor innate, but rather a dynamic process of positive adaptation to or in spite of significant adversities. For children, the pathways to resilience are rooted in the give and take of safe, stable, and nurturing relationships that are continuous over time.⁴⁷ When everyone working with a child and family impacted by abuse and neglect is able to view the situation with a trauma lens and promote relationships that can best support resilience and recovery, best outcomes for these vulnerable children can be achieved.

⁴⁷ Ann S. Masten, *Ordinary Magic. Resilience Processes in Development*, 56 AM. PSYCHOL. 227 (2001).

Table 1: Evidence based psychosocial interventions for youth exposed to abuse and neglect

Name Intervention	Target Population	Brief Description	Key Concepts
Alternatives for Families-A Cognitive Behavioral Therapy (AF-CBT) ⁴⁸	Age: 5-17yo Sex: All Mode: Individual, Family	-Targets family where physical abuse and harsh, excessive punishment has been used -Methods are designed for use with physically abused children who present with behavior problems, notably aggressive behavior -The approach addresses caregiver-child conflicts.	-Divided into 3 components; Child-directed, caregiver directed, and family systems directed. -Each component provides psychoeducation, processing of past hostility/physical abuse, assesses thoughts around aggression, training in feeling identification, expression, and management skills. -Aims to help families develop prosocial management principles and problem solving to serve as alternatives to physical discipline.
	Length of Treatment 20 sessions 1-1.5 hours each		
Attachment, Self-Regulation and Competence (ARC) ⁴⁹	Age: 2-21yo; Sex: All. Mode: Individual, Family, Group, Systems	-Targets youth exposed to complex trauma -Based on attachment theory and early childhood development -Addresses how a child’s entire system of care can become trauma informed to better support trauma focused therapy and factors promoting resilience.	-Three primary domains: Attachment, Self-Regulation, and Competency; -Fourth domain, Trauma Experience Integration, draws from skills addressed in the first three. -Each domain identifies primary targets called “building blocks” for assessment and intervention
	Length of Treatment -Dependent on individual and mode of treatment -Number of sessions range 12-over 50.		

⁴⁸ David J. Kolko et al., *Implementation of AF-CBT by Community Practitioners Serving Child Welfare and Mental Health: A Randomized Trial*, 17 CHILD MALTREATMENT 32 (Jan. 2012).

⁴⁹ Kristine J. Kinniburgh et al., *Attachment, Self-Regulation, and Competency*, 35 PSYCHIATRIC ANN. 424 (2005).

324 *Journal of the American Academy of Matrimonial Lawyers*

Parent-Child Interaction Therapy (PCIT) ⁵⁰	Age: 2-12yo Sex: All Mode: Individual, family, systems	-Targets youth exposed to interpersonal complex trauma. -Uses highly specified, step-by-step, live coached sessions with both the parent/caregiver and the child. -Emphasis is on changing negative parent/caregiver child patterns.	-Two-stage approach aimed at relationship enhancement and child behavior management. -The caregiver is coached in relationship-building skills: Praise, Reflection, Imitation, Description, and Enthusiasm (PRIDE). -Caregiver and child participate in relationship-enhancement treatment sessions with a live coach -Parents are provided immediate feedback about their progress and mastery of skills. -The skills are gradually expanded for use in everyday situations.
	Length of Treatment 12-20 sessions		
Trauma-Focused Cognitive Behavioral Therapy (TF-CBT) ⁵¹	Age: 3-21yo Sex: All Mode: Individual & family	-Targets youth with emotional difficulties relating to one or more traumatic life events including complex trauma -Skills for regulating affect, behavior, thoughts, and relationships, trauma processing, and enhancing safety, trust, parenting skills, and family communication	-Uses skills taught to both caregiver and child to create an environment for the youth to retell their trauma narrative in a caring way. -Steps to implement therapy outlined in "PRACTICE" components: <u>P</u> sychoeducation to both parent & child, <u>R</u> elaxation skills parent & youth, <u>A</u> ffective modulation tailored to youth, <u>C</u> ognitive coping, <u>T</u> rauma narrative, <u>I</u> n vivo mastery of trauma reminders, <u>C</u> onjoint youth-parent session, <u>E</u> nhancing safety.
	Length of Treatment 12-25 sessions 60-90 min session divided between youth and caregiver		

⁵⁰ Rae Thomas & Melanie J. Zimmer-Gembeck, *Parent-Child Interaction Therapy: An Evidence-Based Treatment for Child Maltreatment*, 17 CHILD MALTREATMENT 253 (Aug. 2012).

⁵¹ Patrick Smith et al., *Cognitive-Behavioral Therapy for PTSD in Children and Adolescents: A Preliminary Randomized Controlled Trial*, 46 J. AM. ACAD. CHILD & ADOLESCENT PSYCHIATRY 1051 (2007).