

February 2025

Trauma-Informed Care Series

Trauma and the Effects on the Brain in Children and Youth – Part One

There's a lot happening in families, neighborhoods, and the world that can make everyday life feel overwhelming for children and youth. Early childhood trauma, especially complex trauma (multiple traumatic events in childhood), can cause neurobiological changes (changes in the nervous system) that impact human development and cause significant changes in brain function. These changes in brain structures are responsible for cognitive and physical functioning. Empirical evidence suggests that childhood trauma is associated with physical, mental, and emotional symptoms that can persist into adulthood.¹

Effects of Childhood Trauma on the Brain

- Triggering toxic stress
- Altering brain structures
- Adversely affecting attention, memory, and cognition
- Reducing a child's ability to focus, organize, and process information
- Interfering with effective problem solving and planning



¹ Dye, H. (2018) The impact and long-term effects of childhood trauma, *Journal of Human Behavior in the Social Environment*
Graphic Las Cruces Sun-News

Traumatic Experiences and Development

The brain develops from the bottom up. The bottom regions (i.e., brainstem and midbrain) control the simplest functions such as respiration, heart rate and blood pressure regulation. In contrast, the upper areas (i.e., limbic and cortex) control more complex functions such as thinking and regulating emotions. The most regulatory, bottom regions of the brain develop first; followed, in sequence, by adjacent but higher, more complex regions. This is often referred to as “sequential development.” The process of sequential development of the brain and, of course, the sequential development of function, is guided by experience. The brain develops and modifies itself in response to experience.²

With optimal (more positive) experiences, the brain develops in a healthy way with diverse and flexible capabilities. However, when there is disruption in the timing, intensity, quality, or quantity of normal developmental experiences, there may be devastating impact on neurodevelopment — and, thereby, function.³ This means that early exposure to Adverse Childhood Experiences (ACEs) from negative experiences that were too much, too soon, too often, and too long, impact a child or youth’s health through disrupted brain development. Exposure to stress and adversity early in life is particularly harmful, as 90% of a child’s brain development occurs in the first five years of life. Stress and trauma disrupt healthy brain development and children and youth are more likely to have poor academic and behavioral outcomes including poor literacy skills, social problems, attention issues, and aggression.⁴

Prevention and Intervention

Understanding the [impact of trauma on young brains](#)⁵ will benefit the development of targeted interventions and treatment strategies aimed at promoting recovery and mitigating long-term health consequences. By integrating this knowledge into practice, staff and caregivers can foster a safer and more supportive environment that validates a child or youth’s experiences that support environments that are safe and healing. The research underscores the importance of conducting comprehensive trauma-informed screening and assessments—and of developing trauma-responsive care and the interventions that address both psychological and neurological aspects of healing.

² Perry, B and Marcellus, J. [The impact of abuse and neglect on the developing brain.](#)

³ Perry, B and Marcellus, J. [The impact of abuse and neglect on the developing brain.](#)

⁴ Health Policy Institute of Ohio (2020). Adverse Childhood Experiences (ACEs), Health Impact on Ohio.

⁵ Ohio Department of Developmental Disabilities *Hand Brain* video



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By recognizing that traumatic experiences (ACEs) can alter brain development, function and neurochemistry, staff and caregivers can better appreciate why children and young adults exhibit symptoms such as hypervigilance (constant distracting awareness of surroundings), emotional dysregulation (difficulty controlling emotions/reactions), or difficulty forming trusting relationships. This awareness allows for more informed and empathetic care approaches.

We often hear, “children and young adults are resilient.” This is true since resilience is why their neurological system changes – to survive the experience, even if it will cause problems later in life. We also often hear, “they’ll just get over it, they didn’t even know what was happening.” Understanding trauma and its effects on brain and neurological development, would suggest this is not true. Children and youth are still affected, even though they don’t have memories of the experience(s). Staff and caregivers frequently misunderstand a child’s reaction, which sometimes observes the child or youth as unattached (having no attachment to someone) or hypervigilant (seeming distracted or highly agitated). Some elements of their emotional regulation, behavioral regulation, and cognition (learning and understanding) may potentially be diminished for a long time.

ACEs and their associated harms are preventable. Creating and sustaining safe, stable, nurturing relationships and environments for all children, youth and families can prevent ACEs and help all children and youth reach their full health and life potential. Building skills and strengthening connections to caring adults ensures that every child can thrive. Enhancing a variety of assets and resources can shield children and families from the well-documented harmful effects of toxic stress and adversity while promoting the ability to withstand, adapt and recover from trauma. Increasing these protective factors can lead to stronger families, better health, improved educational and employment outcomes, and benefits to society at large.

Multiple sectors, such as behavioral health, public health, health care, education, public safety, justice, social services, and business can all have a role in responding to the needs of children, youth, and families who have experienced ACEs or trauma. That work can begin by changing norms, environments, and actions in ways that can prevent ACEs from happening in the first place as well as to lessen the immediate and long-term harms of ACEs thereby promoting healing.

PLEASE NOTE: This is part one of a two-part series on Trauma and the Effects on the Brain in Children and Youth. Part Two will focus on “Responding to the Effects of Trauma on the Brain of Children and Youth.”



RESOURCES

988 Suicide and Crisis Lifeline

Ohioans who are experiencing a mental health or addiction crisis and their family members can call, chat, or text 988 to reach a trained counselor who can offer help and support.

Ohio Mental Health and Addiction Services

- Crisis Text Line – Text 4Hope to 741 741 for free, confidential conversation
[Crisis Text Line | Department of Mental Health and Addiction Services \(ohio.gov\)](#)
- Ohio MHAS Tool Free Bridge Line 877-275-6364 provides resource and referral information
[Toll Free Bridge Line | Department of Mental Health and Addiction Services](#)
- OhioMHAS Learn and Find Help for a variety of resources on support prevention, treatment, and recovery.
[Learn and Find Help | Department of Mental Health and Addiction Services \(ohio.gov\)](#)
- Resources
[Resources | Department of Mental Health and Addiction Services \(ohio.gov\)](#)

Ohio Department of Children and Youth (DCY)

Team members at DCY are committed to making Ohio the best place to start and raise a family. The team is focused on helping all children live up to their full potential by providing developmentally appropriate services and resources from before they are born through adulthood. [The mission](#) is to promote positive, lifelong outcomes for Ohio youth through early intervention, quality education, and family support programs. Caregivers are essential to a child's healthy growth and development. Whether you are looking for child care options, parenting tips, or resources for a healthy pregnancy, [For Families](#) offers families of all shapes and sizes with resources to meet their needs.

ZERO TO THREE

For babies 0-3, early trauma can impact lifelong learning, mental and physical health, and development. That's why it's critical to act early—because every child deserves the chance to grow up with safety and security. If babies experience too many traumatic events, their brains become primed to react to the world in fear. It rewires their neural pathways and can have a lifelong negative impact. When babies have the support of loving adults after traumatic events, the research shows they are more likely to recover without lasting damage.

[What does trauma do to a baby's brain? | ZERO TO THREE](#)



National Child Traumatic Stress Network

The National Child Traumatic Stress Network (NCTSN) was created by Congress in 2000 as part of the Children's Health Act to raise the standard of care and increase access to services for children and families who experience or witness traumatic events. This unique network of frontline providers, family members, researchers, and national partners is committed to changing the course of children's lives by improving their care and moving scientific gains quickly into practice across the U.S. [About Child Trauma](#) provides additional information and resources.

The Wellness Project

[The Wellness Project](#) is a collection of resources to support and enhance your wellness and resilience. The purpose of this website is to discover a variety of ways for supporting helping professionals, so they can show up as the "best version of themselves." It includes a holistic system of wellness activities such as reading, listening, watching, cooking, connecting, moving, breathing, and resting.

Goals are to give our workforce tools to practice self-care, build resilience, enhance caregiving and, ultimately improve the services and supports we provide.

What Happened to You? Conversations on Trauma, Resilience, and Healing: Bruce D.

Perry, M.D., Ph.D., and Oprah Winfrey. Flatiron Books: An Oprah Book, 2021.

Have you ever wondered "Why did I do that?" or "Why can't I just control my behavior?" Others may judge our reactions and think, "What's wrong with that person?" When questioning our emotions, it's easy to place the blame on ourselves, holding ourselves and those around us to an impossible standard. It's time we started asking a different question. Through deeply personal conversations, Oprah Winfrey and renowned brain and trauma expert Dr. Bruce Perry offer a groundbreaking and profound shift from asking "What's wrong with you?" to "What happened to you?"

The Body Keeps the Score: Brain, Mind, and Body in the Healing of Trauma: Bessel van der Kolk, M.D. Penguin Books, 2014.

Trauma is a fact of life. Dr. Bessel van der Kolk, one of the world's foremost experts on trauma, has spent over three decades working with survivors. In *The Body Keeps the Score*, he uses recent scientific advances to show how trauma literally reshapes both body and brain, compromising sufferers' capacities for pleasure, engagement, self-control, and trust. He



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explores innovative treatments—from neurofeedback and meditation to sports, drama, and yoga—that offer new paths to recovery by activating the brain’s natural neuroplasticity.