Child Maltreatment and Brain Development: A Primer for Caregivers

Children's brains—and children themselves—are resilient, which means they can thrive even after negative experiences. Child abuse and neglect—also known as child maltreatment—can change how a child's brain develops and cause long-lasting behavioral, emotional, academic, and other issues. Learning about how the brain develops and the effects of maltreatment on brain development can help you better understand the children in your care and focus on ways to support them.

This factsheet provides caregivers—including parents, kin caregivers, foster parents, and others—with important information on brain development and how it may be affected by abuse and neglect. It also describes some ways you may notice impaired brain development in your child. Finally, the factsheet talks about how to work with your caseworker and others to make sure your child—and your family—receive appropriate services and supports.

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Key Takeaways

- The development of a child's brain is a mix of "nature" (our genes) and "nurture" (our experiences).
- Children experience rapid growth in their brains during their first 3 years.
- Our brains continue to grow and develop until we are in our 20s.
- Child maltreatment and other stressful experiences can negatively affect the structure of and activity in children's brains, including their behaviors, how they relate to others, how they process their emotions, their ability to learn, and their overall health.
- Even after changes have taken place in a child's brain due to maltreatment, you can still help that child heal and thrive through the following:
  - Making sure children in need receive early intervention services
  - Spending time with the children in your care, talking with them, and responding to their needs in a nurturing way
  - Learning about child development and having realistic expectations for children in your care

HOW THE BRAIN DEVELOPS

The development of a child's brain is a mix of "nature" (our genes) and "nurture" (our experiences). Our genes set us up to develop in certain ways, but our experiences, including our interactions with others, have much to do with how our genes are expressed. The first areas of the brain to develop—starting before birth—control bodily functions, such as breathing and heartbeat. When children are born, those functions are well developed, but their "higher-level" functions, such as managing emotions, understanding language, and thinking abstractly (e.g., pretend play, understanding someone else's point of view), are still very basic and continue to grow rapidly during their first 3 years.

As a child's brain develops, the higher-level functions build on the foundation of the more basic functions. (Think of the saying, "You have to learn to walk before you run.") Because of that, a child's experiences when they are very young can have a large impact on their brain development years later. Our brains can learn and adapt later in life to help us make up for missed experiences. However, it is more difficult than if the experiences occurred earlier. For example, although people can learn a second language as young adults or beyond, they generally should start to learn that language before they reach age 12 if they want to speak it fluently.

Both positive and negative experiences influence brain development. For example, caregivers can promote healthy brain development when they react positively or lovingly and reliably to their babies' babbles, gestures, or cries. These positive interactions—sometimes called "serve and return"—help strengthen the pathways in babies' brains for social interactions and getting their

needs met. When children's living situations are chaotic or threatening, or their caregivers don't respond to their needs, their brains may become hyperalert for danger (e.g., constantly scanning for or expecting it) or not fully develop.

Our brains continue to grow and develop until we are in our 20s. Teens, who may appear physically mature, are still developing the areas of the brain that allow them to reason and think logically. That is why teens sometimes act impulsively, using a "gut reaction" that may lead to poor decisions and risk-taking.

HOW MALTREATMENT AFFECTS BRAIN DEVELOPMENT

Child maltreatment and other types of adverse childhood experiences (e.g., witnessing domestic violence, having a parent with substance use issues) can negatively affect the structure of children's brains and the activity in the brain. Each child is affected differently when they experience child abuse or neglect. This can range from no impact to lifelong negative effects on health and well-being. These effects may depend on how old the child was when they experienced maltreatment, whether it occurred once or multiple times, who was responsible for the maltreatment, how severe it was, and other factors.

Scientists have shown that the brains of children who have been maltreated are different than those of other children. Certain brain regions may be bigger or smaller, the regions may communicate with each other differently, and chemical levels may be different. Additionally, physical abuse can cause immediate and direct damage to the structure of a child's brain, such as swelling and bleeding.

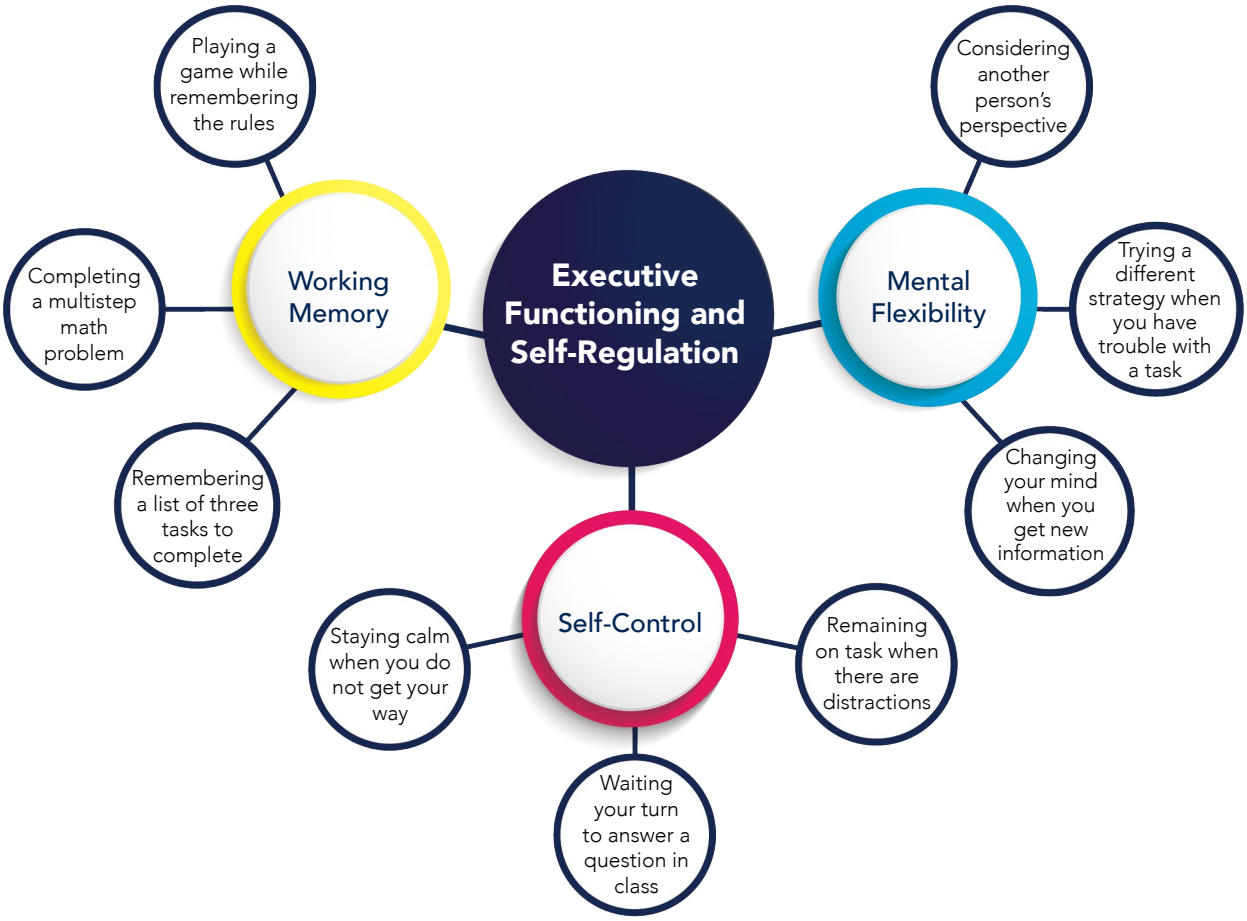
The changes in a child's brain after being maltreated can affect many aspects of their life, including their behaviors, how they relate to others, how they process their emotions, their ability to learn, and their overall health. Even though many people think of physical abuse as being most harmful to a child's development because its effects are often easily seen, neglect and emotional abuse can cause more harm to a child's development. For example, in one study, children who were neglected or emotionally abused (e.g., threatened with harm by the parent, being told they are unwanted) had higher rates of depression, behavior problems, stress, anxiety, and self-injury than children who were physically abused.

Two parts of a child's life that are greatly affected by the brain changes caused by maltreatment are how they respond to stress and their executive functioning and self-regulation skills:

- **Stress response.** We all experience stress throughout our lives. However, it is important to limit the extreme stresses we face and to be able to cope healthily with this stress. When a child experiences frequent or extremely stressful situations, their brain may become overly sensitive to situations others may view as nonstressful or minimally stressful. The child may act impulsively, aggressively, or in other ways that seem inappropriate. For example, a child who has been maltreated may become overly agitated from a touch intended to be caring (such as a hug or a gentle touch on the back) or may become quickly or overly fearful when a parent's or other caregiver's face shows minor anger or even a neutral expression.

- **Diminished executive functioning and self-regulation skills.** These skills help us prioritize and accomplish the many tasks presented to us each day and help us achieve success in school and jobs, improve social interactions, and assist in everyday activities. Executive functioning and self-regulation generally include (1) working memory (being able to keep and use information over a short period of time), (2) self-control (managing thoughts and impulses), and (3) mental flexibility (adjusting to changing demands, priorities, or perspectives). Experiencing maltreatment can create difficulties for children in all these areas. See figure 1 for more information.

Figure 1. Examples of Executive Functioning and Self-Regulation



Adaptation or Damage?

The changes in a child's brain due to maltreatment are often viewed as "damage," but another way to view these effects is that they are adaptations for immediate survival. The child's brain may be altering how it works to help the child survive in a dangerous or otherwise extremely stressful situation. For example, a child may remain in a constantly heightened state of fear or stress because it helps them better sense when a parent may be physically or emotionally abusive and allows them to attempt to protect themselves. While those adaptations may be helpful in a dangerous or unpredictable environment, they may be unhealthy in caring, nonstressful environments.

RESILIENCE

Even in instances when maltreatment changes the development of a child's brain, some children do not present any symptoms. Scans of their brains show the physical effects of maltreatment on their brains, but those children do not experience the expected symptoms from those physical effects. These children are showing resilience, which is the ability to overcome hardships or bounce back when things aren't going well. Researchers are still trying to determine why this happens. Do these children have characteristics that allow them to be resilient? Are there certain protective factors—conditions or attributes that reduce the risk of negative situations and promote healthy child development—in their environment that help reduce or avoid the effects? Is it a mix of those reasons?

To learn more about how you can promote resilience for the children in your life and build protective factors in your home and community, read "Resilience Guide for Parents and Teachers" and "Building Family Resilience in Troubled Times."

Prenatal Substance Exposure Can Alter Children's Brain Development

Prenatal substance exposure—particularly to alcohol—can have numerous harmful effects on a child's brain development. This exposure can change the structure of the child's brain, how it works, and the child's behaviors, including executive functioning, how they process sounds, and motor skills (the movements and skills that allow us to perform tasks like walking or using a pencil). Alcohol use can cause the child to have a fetal alcohol spectrum disorder (FASD), which can lead to a wide variety of effects, such as learning disabilities, speech and language delays, and poor judgment skills. To learn more about the effects of prenatal substance exposure, visit the Substance Use During Pregnancy page on the UCSF Health website.

State laws vary on whether prenatal substance exposure is considered child maltreatment. As of July 2019, 23 States and the District of Columbia included prenatal exposure to controlled substances in their definitions of child abuse or neglect.

If you are concerned that a child in your care may have been prenatally exposed to substances, talk with your caseworker, the child's pediatrician, or other professionals supporting you. You can also listen to the "Parenting a Child With Prenatal Exposure" podcast episode from Creating a Family to learn more about supporting a child with prenatal substance exposure. Visit the HealthyChildren.org website to learn more about FASDs and how to care for a child affected by them.

HOW YOU CAN HELP

Even after changes have taken place in a child's brain due to maltreatment, you can still help that child heal and thrive. Just as a child's brain may have adapted to a stressful or harsh environment, it can later adapt to a caring, predictable environment. Scientists refer to this as plasticity—which, among other things, helps your brain adapt and learn new things. Changing a child's environment doesn't mean that the child—and their brain—will immediately heal. It will require a lot of work and patience from you and your child. This section provides information about ways you can help a child in your life whose brain development has been affected by abuse or neglect.

SEEK EARLY INTERVENTION SERVICES

Every State provides early intervention programs to support children ages 0 to 3 with diagnosed or suspected developmental delays or disabilities. (Early intervention may be referred to as "Part C," which is a section of the Individuals With Disabilities Education Act [IDEA], one of the funding sources for the State programs.) Children can be referred for early intervention services by a variety of people, including teachers, physicians, caseworkers, or their parents. Additionally, any child involved in a substantiated case of maltreatment is referred to their State's Part C program. If a child is then found to be eligible, States must provide intervention services as outlined in

their Individualized Family Service Plan. Examples of early intervention services include special instruction, family training, occupational or physical therapy, psychological services, and speech-language services. By making sure children in need receive early intervention services, you can help reduce or prevent future challenges they may have in school, their relationships with others, everyday life skills (e.g., dressing, eating), and much more. The earlier they receive help, the better.

For more information about early intervention, including how parents and caregivers can help and participate, review the practice guides for families from the Early Childhood Technical Assistance Center. Talk to your caseworker or other professionals involved with your child about ensuring your child is receiving the services they need. If you still need help referring your child for early intervention services, you can contact the Part C coordinator for your State. The Early Childhood Technical Assistance Center website has a list of coordinators by State.

"BE THERE" FOR YOUR CHILD

Children who have at least one caring and responsive relationship with an adult—such as a parent, foster parent, other relative, etc.—are better able to recover from the trauma of child maltreatment. You can help your child heal by spending time with them, talking with them, and responding to their needs in a nurturing way. The more positive, trusting interactions the child has, the better. You can also help model appropriate ways to behave and interact with others.

To learn more about how you can create and promote positive experiences that support your child's growth and development, visit the Healthy Outcomes From Positive Experiences website. You can also watch a video from the Center on the Developing Child at Harvard University to learn how you can use "serve and return" to support healthy brain development. For more information about caring for a child who has experienced maltreatment, read Child Welfare Information Gateway's *Parenting Children and Youth Who Have Experienced Abuse or Neglect*.

Talk to your caseworker or early intervention provider if you need additional services or training to help your child heal. And remember that part of taking care of your child is taking care of yourself. Your caseworker or other professionals can help. You can also visit the National Parent & Youth Helpline to contact an advocate or find support.

SET REALISTIC EXPECTATIONS

It is important for parents and other caregivers to learn about child development and how trauma impacts brain development so they can set realistic expectations for their children. Children who have been abused or neglected may not develop as expected for their age in terms of their physical, social, emotional, and other skills. Additionally, children who have experienced maltreatment may display unusual or difficult behaviors, such as being unable to control their emotions, having difficulties learning in school, or not responding to affection. Your child's pediatrician, early intervention services provider, or another member of your child's support team may ask you questions about how your child is developing, if they are meeting specific developmental milestones (such as walking or being able to say a certain number of words), and about other behaviors they may have (such as regulating their emotions or connecting with other children).

By learning more about the basics of development and the challenging behaviors your children may have, you can better respond to and care for your child. Each child progresses through developmental stages and copes with trauma differently. Patience will be important as you care for your child and help them obtain the support they—and you—need. Even when your child is receiving services, it may take time to see change. Although children's brains can adapt to positive experiences, including the support of caring adults and services, it can be a difficult and long process. Don't be afraid to ask for help. Rely on your support system, including family and friends, your caseworker, other professionals, and other resources in the community, such as a parent support group or family resource center, if your community has one.

To learn more, visit the Centers for Disease Control and Prevention website, which has a variety of resources about child development to help parents track and understand their child's developmental milestones and seek assistance if needed.

CONCLUSION

Child abuse and neglect can cause long-term impairment to a child's brain development, affecting the way they learn, behave, and feel. When this occurs, caregivers—along with their support team—can help children heal by finding services that match their needs and providing children with a loving, nurturing environment. You can support your child by learning more about brain development and what to expect when caring for a child whose brain development may have been affected by maltreatment. The path to recovery is not easy or immediate, but children's brains can recover with positive experiences and environments supported by protective factors.

Want a quick overview of many of the concepts in this factsheet? Watch the 4-minute "Brain Builders" video on the Alberta Family Wellness Initiative website.

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