

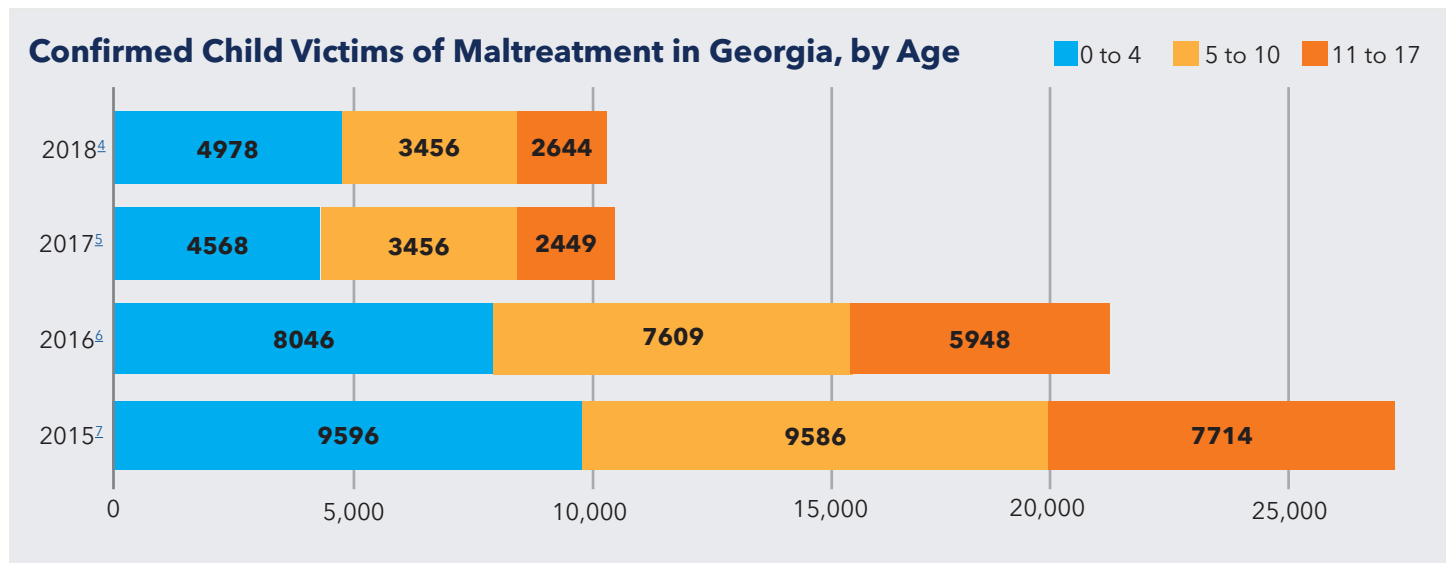
# Child Maltreatment's Impact on Brain Development

Brain development is impacted by both our genetics and our experiences. As children grow, their brains develop basic functions first (e.g. breathing) before progressing to more sophisticated functions (e.g. complex thought).<sup>1</sup>

Child maltreatment includes all types of abuse and neglect of a child under the age of 18 by a parent, caregiver, or other person in a child-serving role (e.g., minister, teacher, etc.). There are four common types of abuse: physical, sexual, emotional, and neglect.<sup>2</sup>

## Effects of Maltreatment on Behavior, Social, and Emotional Functioning<sup>3</sup>

- Permanent fear response to certain triggers, even when they pose no actual threat
- Fear response is automatically triggered without conscious thought
- Destabilization of emotion and stress regulation
- Delayed developmental milestones
- Diminished executive functions like memory, attention, impulse control, etc.
- Decreased response to positive feedback or rewards
- Social interactions made more difficult



## OTHER FACTORS IMPACTING DEVELOPMENT



### Responding to Stress

The timing and type of stress determines the impact on the brain.

**Positive Stress** - moderate, brief, and generally normal part of life<sup>8</sup>

**Tolerable Stress** - more severe and long-lasting difficulties; can be damaging unless the stress is time-limited and buffered by relationships with adults that help the child adapt<sup>9</sup>

**Toxic Stress** - strong, frequent, and prolonged activation of body's stress response system that disrupts healthy development<sup>10</sup>



### Sensitive Periods

Windows of time in development when certain parts of the brain may be more susceptible to certain experience (e.g. strong attachments to caregivers formed during infancy)<sup>11</sup>



### Memories

Systems of neurons that have been repeated and strengthened<sup>12</sup>

Trauma-induced changes to the brain can result in varying degrees of **cognitive impairment** and **emotional dysregulation** that can lead to a host of problems, including difficulty with attention and focus, learning disabilities, low self-esteem, impaired social skills, and sleep disturbances.

-Child Welfare Information Gateway, Supporting Brain Development in Traumatized Children and Youth

## POLICY AND PRACTICE CONSIDERATIONS

Prevention and early intervention remain the most effective methods for minimizing the effect of maltreatment on development. Other promising trends include:<sup>14</sup>



Trauma informed care and evidence-based practices



Individualized services for children and families



Promotion of evidence-based practices



Family-centered practice and case planning, including parent-child interaction therapy



Child advocacy centers offering interviews, assessments, and services in a child-friendly environment

## HEALTHY BRAIN DEVELOPMENT<sup>13</sup>

### Early Brain Development

- Before and after birth, neurons are created and form connections
- The brainstem and midbrain fully develop first, governing functions necessary for life like heart rate, breathing, eating, and sleeping



### Young Child Brain Development

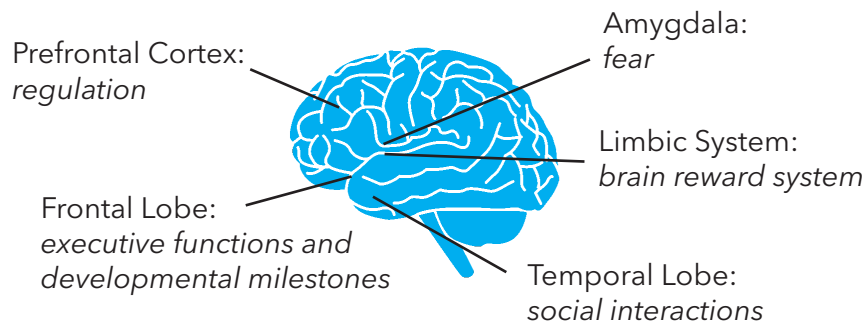
- Formation of synapses occur at a high rate
- Higher function brain regions (governing emotion, language, and abstract thought) grow rapidly in the first three years
- By age two, a child has formed 100 trillion synapses
- Synapses are eliminated as experiences deem them unnecessary (i.e. pruning)
- By age 3, a child's brain is nearly 90 percent of its adult size



### Adolescent Brain Development

- Prior to puberty, there is a growth spurt in the areas of the brain governing planning, impulse control, and reasoning
- While these areas develop, teenagers can act impulsively, make poor decisions, and take increased risks (all normal behaviors for this stage)
- More pruning and myelination occurs in the teenage years
- Limbic system grows and transforms

## PARTS OF THE BRAIN



### TERMS TO KNOW

**Amygdala:** brain's emotional reaction center associated with behavioral function and survival instincts (e.g. fight or flight)<sup>15</sup>

**Neuron:** a unique type of cell found in the brain and body that is specialized to process and transmit information<sup>16</sup>

**Brain stem:** one of the four major parts of the brain. It monitors basic, vital functions such as heartbeat, body temperature, and digestion. The brain stem is the first part of the brain to develop.<sup>17</sup>

**Midbrain:** the part of the brain that regulates auditory and visual processing, motor control, arousal, and alertness<sup>18</sup>

**Synapse:** the site between neurons where the transmission of messages occurs<sup>19</sup>

**Pruning:** the selective elimination or "weeding out" of non-essential synapses based on a child's specific experiences<sup>20</sup>

**Myelination:** the strengthening of necessary connections between neurons<sup>21</sup>

**Limbic System:** a network of brain structures that governs emotions and memory<sup>22</sup>



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