

## RESOURCES

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Go to <http://dhhs.ne.gov/publichealth/MCAH/Pages/TogetherForKids.aspx> to view segment videos and download definition booklet and brochure.

# TOXIC STRESS

Definition Booklet  
by segments



# 1 A STORY

## Functional Behavior Assessment

A set of strategies to determine the underlying function or purpose of a behavior, so that an effective intervention plan to modify or maintain the problem behavior can be developed. <sup>1</sup>

## Behavior Modification

Behavior Modification focuses on using positive and negative consequences – reinforcers and punishments – to change observable and measurable behaviors. Good behavior is encouraged by using reinforcement techniques such as praise or rewards. Misbehavior is discouraged by using punishment-oriented techniques such as ignoring or time-out. <sup>2</sup>

### Example:

A 6-year-old refuses to do his homework. A parent using behavior modification might say, "Remember, once you get your homework done, we can go to the park." Praise would be offered if the child chooses to comply and any protests or whining would likely be ignored.

## Relational buffer

The positive interaction to regulate the brain's stress response system. The example given was the time Dr. Wright was staying with his grandmother and a tornado warning occurred. Without the relationship with his grandmother being there to reinforce that it was okay and demonstrate how to be calm, it may have been a more traumatic event.

## Evidence based treatment or therapy

Empirically supported treatments or therapies that are based on research and have been proven to produce results.

## Trigger

An experience that produces a memory whether it is bad or good. A trigger can be a reminder of a traumatic event, even though the trigger itself may not be frightening or traumatic. Triggers are caused by the senses, sight, smell, taste, and touch. For example,

- seeing a police officer may remind the child of a time a family member was arrested
- smell of cookies is a reminder of an aunt who baked cookies for the child

## Cues

Something said or done either consciously or unconsciously perceived, that signals a type of behavior. For example,

- putting a finger to the lips is a signal for the child to keep quiet
- telling the child who is just learning to walk upstairs to "step up, step up" lets the child know to raise their foot higher



# 5 WHAT THE EXPERTS SAY

## Regulation

The ability to respond to what is going on in your environment or what one is experiencing into information you can use to regulate thoughts, emotions, and behaviors. An infant can translate the feel of a soft voice or soft touch into cues that help them develop self-calming skills. Children can take cues from adults when they say “It’s your turn next,” into regulation that helps them be more patient and not grab food or toys. Thinking affects emotions and emotions affect cognitive self-regulation – the ability to calm yourself down emotionally.

## Dysregulation

Not having the ability to self-regulate. It is an emotional response that does not fall within the accepted range. For example,

- a baby continues to cry even after attempts to be calmed
- a child frequently shows tantrums when ignored by caregiver

## ACEs

Adverse Childhood Experiences. The ACE Study is one of the largest research study conducted to assess associations between childhood experiences and later-life mental and physical health and well-being.<sup>16</sup>

## CDC

Centers for Disease Control and Prevention.  
Visit them at <http://www.cdc.gov/>



## Traumatic Events

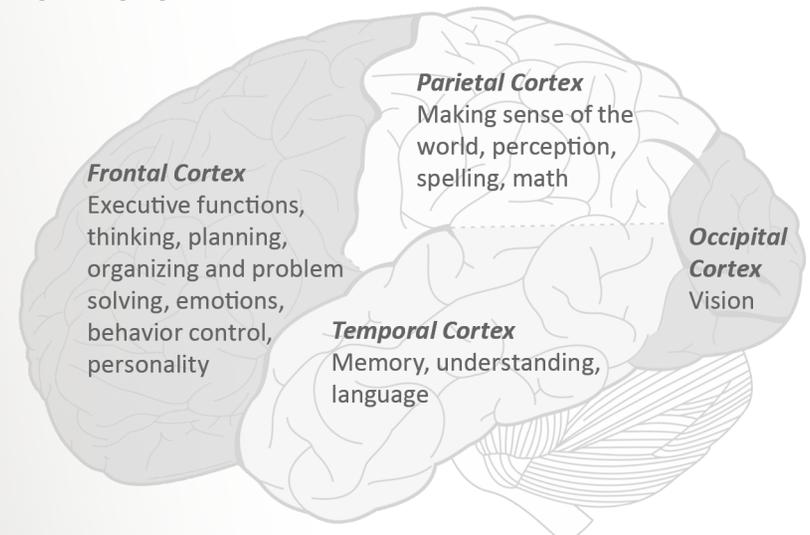
An experience that causes physical, emotional, distress, or harm. This event is perceived and experienced as a threat to one’s safety or to the stability of one’s world<sup>3</sup>. A common reaction to a threat or danger is the fight or flight reaction. As one begins to feel threatened, the body responds – increased heart rate, increased arousal, increased blood pressure, and respiration or sweating. During the traumatic event, all aspects of one’s functions change – feeling, thinking, and behaving—all change. For example, a child that is being screamed at is not going to be thinking about the words; they are going to focus on the threat signals in their environment – the non-verbal signs of communication such as eye contact, facial expression, body posture – or how close the threat is to them.<sup>4</sup>

## Trauma Informed Therapy/Care

A program, organization, or system that is trauma-informed realizes the widespread impact of trauma and understands potential paths for healing; recognizes the signs and symptoms of trauma in staff, clients, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, practices, and settings.<sup>5</sup>

## Brain/Cerebral Cortex

This is the layer of the brain often called the gray matter. It is the outermost layered structure of neural tissue associated with higher brain functions. The cerebral cortex plays a key role in memory, attention, perception, social abilities, thought, language and consciousness.



# 2 THE BRAIN

## Brain Architecture

Brain architecture is built on our experiences early in childhood. Our genes determine the basic blueprint but our experiences shape the process and determines if there will be a strong or weak foundation for learning, health, and behavior. During brain development, billions of brain cells called neurons send electrical signals to each other in order to communicate. These connections forms circuits that become the bases of brain architecture. Our experience and environment dictate which circuits and connections get more use. Neurons that make connections over and over again becomes the stronger and faster. They become more permanent. Neuron connections that are not repeatedly used fade away – this is called pruning.<sup>6</sup>

90% of brain development is completed by age 3<sup>7</sup>

## Synapses

A specialized connection to a neighboring neuron. It is the gap between neurons used to transmit signals. The more signals sent between two neurons, the stronger the connection grows. With each new experience and remembered event, the brain slightly re-wires its physical structure.

## Neuron or Neural Connections

The nerve cell or “brain cells”. A neuron transmits information to other neurons. They cannot be replaced after being lost. An average human has about 100 billion neurons.

# 5 WHAT THE EXPERTS SAY

## Stress versus trauma

The critical difference is that you can do something about a stressful situation. With trauma or a traumatic experience, you can feel helpless to change the outcome because it was unexpected. Not all stressful events result in trauma.

## Three Types of Stress

The Center on the Developing Child at Harvard University distinguishes three kinds of responses to stress. The definitions refer to the stress response system’s effects on the body, not the stressful event.

**POSITIVE stress response** is a normal and essential part of healthy development, characterized by brief increases in heart rate and mild elevations in hormone levels. For example, the first day with a new caregiver or receiving an immunization.

**TOLERABLE stress response** activates the body’s alert systems to a greater degree as a result of more severe and longer-lasting difficulties, such as the loss of a loved one, a natural disaster, or a frightening injury. If the activation is time-limited and buffered by relationships with adults who help the child adapt, the brain and other organs recover from what might otherwise be damaging effects.

**TOXIC stress response** can occur when a child experiences strong, frequent, and/or prolonged adversity—such as physical or emotional abuse, chronic neglect, caregiver substance abuse or mental illness, exposure to violence, and/or the accumulated burdens of family economic hardship—without adequate adult support. This kind of prolonged activation of the stress response systems can disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease and cognitive impairment, well into the adult years.<sup>15</sup>

# 4 TRAUMA, ADVERSE CHILDHOOD EXPERIENCES, & IMPLICATIONS

## Stress response system

The stress response system is when the body reacts to a perceived harmful event, attack, or some type of threat — the fight or flight response. Heart rate increases, blood pressure rises, breathing becomes more rapid, hormones and adrenaline are released throughout the body. The body is hard-wired to react to stress and readies its' self for a fight or flight. Once the perceived threat has passed, the body goes back to baseline levels – heart rate slows down, hormone levels return to normal, and other systems go back to their regular activities.

But what happens when the perceived threat is always present? The body feels under attack all the time, the fight or flight reaction stays turned on? The long term activation of the stress response system can disrupt almost all of the body's processes. This causes increased risk of numerous health problems, including:

- Anxiety
- Depression
- Digestive problems
- Memory and concentration impairment <sup>14</sup>
- Heart disease
- Sleep problems
- Weight gain

How people react to stressors is different for each person. People can experience the same threatening event, but responses will vary.

People who were neglected or abused as children tend to be more vulnerable to stress.

## HMO

Health Maintenance Organization. It is an organization that arranges managed care.

## Buffer

Buffer or buffering is when stress response systems are activated within an environment of supportive relationships with adults. Without supportive relationships, the physiological effects or stress levels (heart rate, blood pressure, etc.) are aroused and cannot be brought back down to baseline. The child may not have the coping skills to deal with stress. Learning to cope with this stress is an important part of development. For example,

- a parent carries and sooth the crying baby after a fall
- a child becomes stressed when the tornado sirens go off. Mom remains calm and comforts the child. The child learns to remain calm in future tornado sirens.

## Epigenetic

The study of changes in the expression of genes. This can be caused by the environment, changes in diet, or exposure to certain chemicals and can be passed down from parent to child from one generation to another. It is the age old question as to how we develop – nature or nurture. Genes can be “turned on” or “turned off” depending on experiences. Certain experiences – child neglect, drug abuse or other severe stresses – can set off changes to the DNA (deoxyribonucleic acid) inside the neurons of a person's brain. Traumatic experiences in a person's past or ancestors' past leave molecular scars adhering to DNA.

## Genetic or Gene Expression

A process that takes inherited information in genes to make a specific functional product (or gene product) such as RNA (ribonucleic acid) or protein. Genes program the proteins in cells and proteins dictate how that cell functions. Research shows that environmental influences can affect how genes get expressed. Early experiences can determine how genes get turned on or off or if they get expressed at all. <sup>8</sup>



# 3 ATTACHMENT

## Attachment

Attachment is focused on the relationship and bond between an adult (caregiver or parent) and a child. It is an emotional bond to another person. The central theme of attachment is that primary caregivers who are available and responsive to an infant's needs allow the child to develop a sense of security. The infant knows that the caregiver is dependable, creating a secure base for the child to explore the world.<sup>9</sup>

Attachment is necessary for a child's:

- Growth
- Immune Response
- Development
- Learning

If attachments are broken, research shows that a person is much more likely to have health issues, use tobacco, have addictions, and/or have depression. Without attachment, a child tend to not deal with stressful events such as Katrina, deaths, or other life events.<sup>10, 11, 12</sup>

## Intrinsic

Attachment is intrinsic and "in the brain". This means there are attachment features already built in the brain between the infant and caregiver.

For example,

- a baby cries when separated from the mother
- a parent hugs her child when he/she smiles at her

## Serve and Return Interaction

This is the back and forth between a caregiver and a baby. The baby coos, smiles or cries. An adult responds with eye contact, soft words or a hug. The baby's brain is making connections that support communication and social skills. When caregivers are sensitive and responsive to the baby's signals and needs, they provide an environment that is consistent, safe, and nurturing. When the baby doesn't have this serve and return interaction, the baby's stress response goes up flooding the brain with stress hormones.<sup>13</sup>

## Sections of the Brain

### CORTEX

Thinking, talking, planning, logical  
*Where we think we live*

### LIMBIC

Emotions, connecting, anger, love, sadness, grief  
*Where poets know we live*

### ARCHAIC

Regulatory, respiration, heart, fluid balance  
*So that we can live*