

Addressing Toxic Stress in Young Children in Rhode Island

What is Toxic Stress?

Stress is a part of everyday life, and most of us do not have long-lasting problems adjusting to stress. To cope with everyday events, children invoke biological, psychological, social, and/or physical-action responses. In the face of adverse or traumatic events, a child's mobilized responses are more likely to be ineffective, resulting in the stress response remaining active. Such prolonged activation increases the potential for enduring changes in physiologic and neurologic systems. **When such enduring changes compromise children's adaptation, we refer to this long-term series of events as toxic stress.**



The development of toxic stress includes four distinct but interrelated elements: **inputs to the individual, the individual response, consequences for the individual, and family context.**

Many adverse events occur more frequently among those with certain individual and family characteristics (such as poverty, disability, racial/ethnic minority, or refugee status). Toxic stress is more likely when the adaptive systems of a child are continually challenged to a degree where that child cannot fully respond to the event(s). It is important to consider that many of these physical processes involve regulatory feedback loops. A hallmark of individual adaptation is that biological systems change their level (and sometimes type) of response over time, as these feedback loops are repeatedly challenged. Such biological programming in response to environmental demands may be more or less enduring, as well as more or less modifiable when environments become more manageable. **What may be unmanageable and threatening for one child may be completely manageable and benign for another child.**

Toxic stress is not permanent or immutable. The RI initiative is based on the assumptions that (1) young children have high levels of developmental plasticity and (2) the opportunities for resilient developmental trajectories are optimized when appropriate supports are provided.

Inputs to the Individual

- Physical or sexual maltreatment
- Caregiving neglect
- Extreme Deprivation
- Witnessing violence
- Extreme family dysfunction
- Caregiver substance abuse
- Caregiver mental illness
- Environmental pollutants (i.e. lead ingestion)

Individual Response

- General Health
- Temperament
- Genetic Factors
- Current and past exposure to stresses
- Intensity of the events
- Persistence of the events
- Supports afforded by caregivers and others

Consequences for the Individual

- Physical alterations:
 - Brain architecture and connectivity
 - Gene activation and modification
 - Hormone secretion and metabolic processes
- Cognition and learning
- Psychological effects:
 - Anxiety
 - Depression
 - Social withdrawal
 - Behavioral dysregulation

Family Context

- Caregiver experiences
- Caregiver response to experiences
- Caregiver supports to the child
- Caregiver promotion of resilience

Frequently asked questions about toxic stress:

What is toxic? The dictionary defines toxic as **having the effect of a poison**. In the current context, the notion of poison goes beyond substances one might ingest or inhale, and extends to social events, natural disasters, or serious interpersonal conflict.

What is stress? The dictionary defines stress as **a state of mental/emotional strain or tension resulting from adverse or demanding circumstances**. [In addition to demanding social and psychological circumstances, exposure to toxicants can also produce the mental/emotional strain, as well as physical strain, basic to how we understand stress.] We are thus implying a complex interplay of events in the world, an individual's response to those events, and the underlying physical, emotional, and behavioral manifestations of that experience.

What are adverse events? Brains, other organs, and psyches can be injured by all kinds of events during a person's life. As implied in the answer to the above FAQ (What is toxic?), the proximal and distal cause of such injury can range from chemical, to radiation, to single traumatic social interactions, to enduring social challenges, to violent neighborhoods, to natural disasters. The coordinated response to toxic stress requires appreciation of the varied adverse events to which children are exposed. [In the past two decades, much has been made of the accumulation of adverse childhood experiences (sometimes referred to as ACEs), particularly because adults' recollection of ACEs have been predictive of chronic health and behavior problems during adulthood.]

What do we mean by toxic stress? Putting together toxic adverse events that are stressful, and adding that they result in serious repercussions for the individual, we have the classic formula for toxic stress. The repercussions can include the full range of impediments to health learning and development.

Is this just ACEs? No. The majority of adults recall having at least some adverse childhood experiences (ACEs). Although toxic stress and ACEs are often discussed together (and the terms are sometimes used interchangeably), it is the number, severity, chronicity, and individual response to adversities that ultimately determine whether the experiences result in toxic stress.

Who is most at risk? We know that the types of adverse events leading to toxic stress are more frequent among certain groups of individuals. These groups include those living in poverty, living in poor quality (often violent) neighborhoods, refugees from political or social persecution, those who are subject to persecution based on racial or ethnic status, those having disabilities of many types, and individuals directly experiencing violence.

Is all toxic stress the result of chronic conditions? No. An experience of short duration may result in toxic stress. One example would be witnessing the violent death of a loved one when combined with an unmanaged response to the event.

Are all chronic stressors toxic? No. Toxic stress is always in part determined by the individual's response. Individuals with certain coping mechanisms or in families/communities that are highly supportive may avoid experiencing toxic stressed, as they find ways to make the events manageable.

Are all toxicant exposures toxic? No. As with behavioral events, the same exposure may affect individuals differently. For example, a well-nourished child can be resilient in the face of high-level lead exposure, while the same lead exposure will have more enduring biological effect in a poorly-nourished child.

Does age matter? Yes. Children experience the world differently, based on their developmental level. From the perspective of whether events become toxic, the lack of understanding earlier in development may be protective (missing the more subtle nuances of enduring caregiver conflict) or more risky (as in failing to differentiate when high noise levels are supportive, conflictual, or intrusive). From the perspective of whether toxic effects endure, younger children who experience toxic stress have more plasticity in their developing brain and neural systems, and thus more opportunity for repair with appropriate supportive interventions (this is often referred to as resilience). It takes less time, intensity and repetition to organize developing neural systems than to reorganize poorly-developed neural systems. Opportunity does exist, however, to overcome early adversity and stress.

Do neighborhoods matter? Yes. It is well documented nationally, and becoming more evident here in RI, that characteristics like structural violence concentrate and isolate poor women with low educational levels in certain neighborhoods. These communities are violent, have few supports like healthy homes, little green space for kids to play, unsafe streets, and few food systems that are locally available and affordable. Some have proposed Health Equity Zones as a strategy to support the development of healthy brains in a stressful world.

Brief Definitions

Definition for Professional Providers

Toxic stress occurs when individuals have adverse events (or toxicant exposures) that are uncontrollable, unmanageable, and/or unmediated by caregiver/community supports, resulting in biological/psychological changes that may reduce the opportunity for healthy development. Deficits in learning, behavior and health are all more likely. These deficits may extend into adulthood. [college grade reading level]

Definition for Non-Professional Providers

Toxic stress results from excessive and prolonged activation of a young child's basic defenses against pain, hunger, abuse, toxins, or other adversities. This is especially true when caregivers and communities do not have the resources to help the child. Toxic stress disrupts brain development and other organ systems. Toxic stress makes it more likely that children will have behavioral problems, school difficulties, and health problems as adults. [11th grade reading level]

Definition for Families

Stress from hunger, pain, or other causes is a natural part of growing up. Toxic stress results from too much stress, especially when the care of adults cannot cope with the stress. When toxic stress occurs, the body's own defenses against stress may disrupt healthy development of brain and behavior. Children with toxic stress are more likely to have problems with learning and behavior. When they grow up, they are more likely to have chronic health problems. [8th grade reading level]

Definition for Policy Makers

Stress is a part of everyday life, and most of us do not have long-lasting problems adjusting to stress. For many, however, the stress can have enduring negative effects – the stress can become toxic. Toxic stress results from excessive and prolonged activation of a young child's basic defenses against pain, hunger, abuse, toxins, or other adversities. Many of these adversities are more common for children growing up in poor neighborhoods in poverty conditions. This is especially true when caregivers do not have the resources to help the child. Toxic stress disrupts brain development and other organ systems. The changes in psychical development can result in behavioral problems and school difficulties. Toxic stress also makes it more likely that children will have chronic health problems as adults. [11th grade reading level]