INBRIEF

Finding the Balance:
Transforming How We Think About the Body's Response to Stress in Early Childhood

For the full paper on which this InBrief is based, see *Finding the Balance: Transforming How We Think About the Body's Response to Stress in Early Childhood,* Working Paper 18 (2026) from the National Scientific Council on the Developing Child

Stress is an unavoidable reality of life across all socioeconomic, racial, and ethnic groups. Honing the biological response to adversity, whether from a relatively manageable challenge all the way to a life-threatening experience, is key to protecting health and development. *The stress response system is our body's most important first responder*—and the ability of this system to provide lifelong protection is shaped early in life.

Making reliable supports and opportunities available across communities enables families to provide the stable, predictable, and supportive environment young children need to learn how to deal with challenges and develop a healthy response to stress. While significant adversity poses a serious threat to healthy development, avoiding challenging situations altogether is not a viable strategy for developing an effective stress response system and building resilience. Both responsive caregiving and supportive communities play an important role in strengthening that system, which sets children up for robust development and school success in the short term, better health across a long lifespan, and full participation in thriving communities as adults.

Center on the Developing Child
HARVARD UNIVERSITY

FirstPlace

1 React, Adapt, Restore: How the Stress Response Works

The ability to cope with unfamiliar or potentially threatening situations, such as new experiences or physical danger, is essential to survival. The body must react quickly to a wide diversity of challenges, ranging from wounds, infections, and emotional trauma to the *lack* of essentials like adequate nutrition, clean water and air, and (for infants and young children) reliable, responsive "serve and return" interactions with adults. The capacity to *react* to both physical and psychological threats and *adapt* to the expectation of similar experiences in the future is built into developing brain circuits, immune responses, metabolic regulation, and other biological systems.

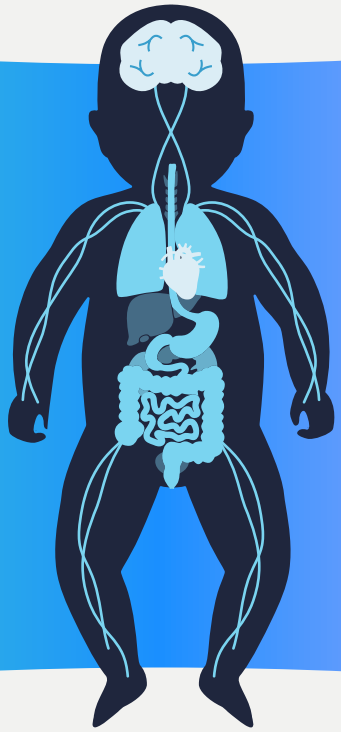
Threat-response systems also have built-in mechanisms to turn off after activation, which is essential for returning to a normal, resting state and *restoring* the balance of healthy functioning that the body needs for long-term physical and mental well-being. As this cycle repeats, these systems become better prepared for similar challenges in the future. In contrast, if the stress response is chronically activated at high levels, it can cause adaptations in the developing brain, immune function, and other biological systems that are beneficial in the short term but lead to increased risk for cardiovascular disease, diabetes, depression, cancer, and other chronic diseases in the long term, as well as a shorter lifespan. In such circumstances, the stress response system adapts to being continuously on high alert but pays a price for relatively rare returns to a normal baseline, which are essential for sound physical and mental health.

2 Understanding the Continuum from Protection to Disruption

Activation of the body's stress response system is designed to be protective, but if it exceeds reasonable limits, either in magnitude or duration, it can overload the body and prevent it from returning to baseline and promoting healthy functioning. Between these two alternatives lies a broad continuum of physiological reactions and effects on the body, ranging from short-term protection to long-term harm.

Much of this continuum can be described as a **Positive Stress Response.** Within this healthy range, activation of the stress response stimulates the developing brain and other biological systems to go on alert, deal with a challenge, and return to a resting state. Over time, this repeated pattern develops a healthy, protective response. Only if the response to threat or hardship is too intense or prolonged will this result in the potentially damaging condition known as a **Toxic Stress Response.** In such cases, the stress response system activates more frequently and for longer periods, like revving a car engine in a driveway for hours every day rather than just when it's needed to pass a truck on a highway. This excessive activation has a wear-and-tear effect on the body that can lead to significant, harmful psychological and physical health conditions over time. Preventing the body's stress response from becoming overloaded typically depends on reducing the severity and duration of whatever is causing excessive activation, making supportive relationships reliably and readily available, and improving community conditions and strengthening neighborhood support for families.

Understanding The Broad Range of Responses to Adversity



Positive Stress Response

Brain and other developing systems respond to stress activation and then return to baseline

—

Successful adaptation

—

Building blocks of resilience

Toxic Stress Response

Excessive activation of stress response system

—

Adaptation at a cost

—

Increased risk for problems in early development and lifelong health

FACTORS THAT INFLUENCE IMPACT

Individual variation in sensitivity to adversity

Availability of responsive caregiving in multiple settings

Stable, community level, protective factors

Developmental timing beginning prenatally

Severity, duration, predictability & controllability of stressors

The figure above illustrates how multiple interacting factors—including the nature and timing of stressors, individual variation in sensitivity, and the availability of protective relationships and community supports—shape where a child's stress response falls along a continuum from adaptive to potentially harmful. As these influences combine, they can either support a positive stress response that builds resilience or push biological systems toward excessive activation and increased risk for problems in development and health. Most importantly, strengthening protective factors can shift this balance toward healthy adaptation, even in the presence of significant adversity.

3 Protective Factors, Individual Variation, and Developmental Timing Influence How Stress Affects Young Children

Some children thrive in supportive environments but do very poorly in harsh ones, while others seem to be able to do well whether conditions are good, bad, or neutral. And, of course, there is a full range in between these extremes. Key factors that shape how stress affects a young child's development include:

- **The intensity, duration, frequency, and predictability** of the stressor.
- **When the experiences or exposures occur during development** (i.e., at times of particularly heightened sensitivity to experiences and exposures).
- **Individual variation in children's sensitivity** to both hardships and supports.
- **Burdens and threats experienced by parents or other caregivers** that affect the provision of a stable, secure environment for children.
- **The availability and quality of social capital at a community level** (mutual aid, a shared sense of belonging, informal supports from neighbors).
- The distinctive burdens and threats associated with **intergenerational poverty, racism, and other structural inequities that perpetuate inequalities in opportunity.**

4 Impacts of Stress Responses on Early Childhood Development

While the stress response is active throughout life and its activation continues to have both short- and long-term effects on behavior and health, it affects young children in distinctive ways. Because all of the body's organ systems are developing rapidly during the prenatal and early childhood periods, both positive and negative influences have particularly long-lasting effects on how they function across the lifespan—from later school achievement and economic productivity to lifelong physical and mental well-being. Early adaptations not only affect the architecture of regions in the brain that are essential for learning and memory, but also immune system activation (particularly inflammation) and blood pressure. These adaptations shape how the body manages energy, affect cellular function throughout the body (including cellular aging), and influence how individual genetic differences in infants and older children affect their response to the environment. Whether safe and supportive or stressful and harsh, signals from outside the body reach into our cells and the DNA instructions contained within them are adjusted accordingly.

5 How We Can Strengthen Protective Factors That Affect the Impact of Stress

Most children in the United States do not experience stress at a level that leads to lifelong negative consequences. That said, nearly one in four are estimated to have been exposed to multiple sources of significant adversity during the early childhood period. A range of protective factors can help prevent excessive activation of the stress response system in young children both directly—through responsive, "serve and return" interactions with the adults who care for them—and indirectly—by creating a stable, supportive environment that meets the basic needs of families. Community-focused policies and investments can help ensure that the wide range of stress responses experienced by children and their families remain positive rather than toxic. Important protective factors are listed on the next page.

Protective Factors

Supportive Relationships

The most important protective factor for promoting healthy development, beginning immediately after birth, is a stable, nurturing, and responsive relationship with at least one adult caregiver. The responsive interactions that infants and young children have with *all* the adults who care for them, including parents, extended family, neighbors, and/or childcare providers, can help reduce excessive activation of stress responses that are triggered by unpredictable or threatening conditions.

Early Care and Education Programs

Whether it is home-based or center-based, the structural and interpersonal features of non-parental care received by young children can help promote healthy development. Young children who spend significant amounts of time in low-quality settings (i.e., programs with high ratios of children to adults, inconsistent caregivers, and harsher adult-child interactions) are more likely to demonstrate problems in self-regulation and externalizing behavior problems than those in better quality care.

Sound Nutrition

A healthy diet contributes to a more balanced stress response. Ensuring that appropriate nutrition is affordable and readily accessible during pregnancy, infancy, and all stages of childhood is an important protective factor for reducing the impact of stress and maximizing lifelong metabolic, physical, and mental health.

Natural Spaces for Play

When children can play in safe, natural environments, they experience reduced stress that can have important protective effects on both physical and mental health in the present and later in life, including lower rates of obesity and type 2 diabetes. Ensuring that all children grow up in neighborhoods free of exposure to toxic substances (in the air and water) and rich in access to safe green spaces will require directing more resources to areas that have historically received less investment.

Child Capacities

Children whose stress response rarely becomes toxic typically benefit from both a lower internal sensitivity to adversity *and* a strong set of protective factors in their family and community. When adults model effective coping skills, offer comfort and praise, and help children learn from past experiences, multiple systems (e.g., brain, immune, metabolic) develop the adaptive capacities needed to activate and then restore their response systems to baseline. Over time, these biological systems respond to comparable threats as increasingly manageable.

Broader Community Conditions

Beyond health care, childcare, and early education, the well-being of young children could be enhanced by improvements in policies and programs that govern a range of potential sources of excessive stress activation. These include housing, zoning, both urban and rural planning, economic development, criminal legal reforms, environmental protection (to ensure clean air and water), climate change policies and mitigations (including protection against excessive heat) and anti-discrimination policies. Positive conditions in communities facilitate healthy development by shielding young children from toxic exposures and adverse experiences, and by strengthening the stress-buffering effects of protective factors.