



Center on the Developing Child
HARVARD UNIVERSITY

Connecting the Brain to the Rest of the Body: How Early Experiences Affect Lifelong Health

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ACEs Aware: Sciences of ACEs & Toxic Stress | March 26, 2021



@HarvardCenter

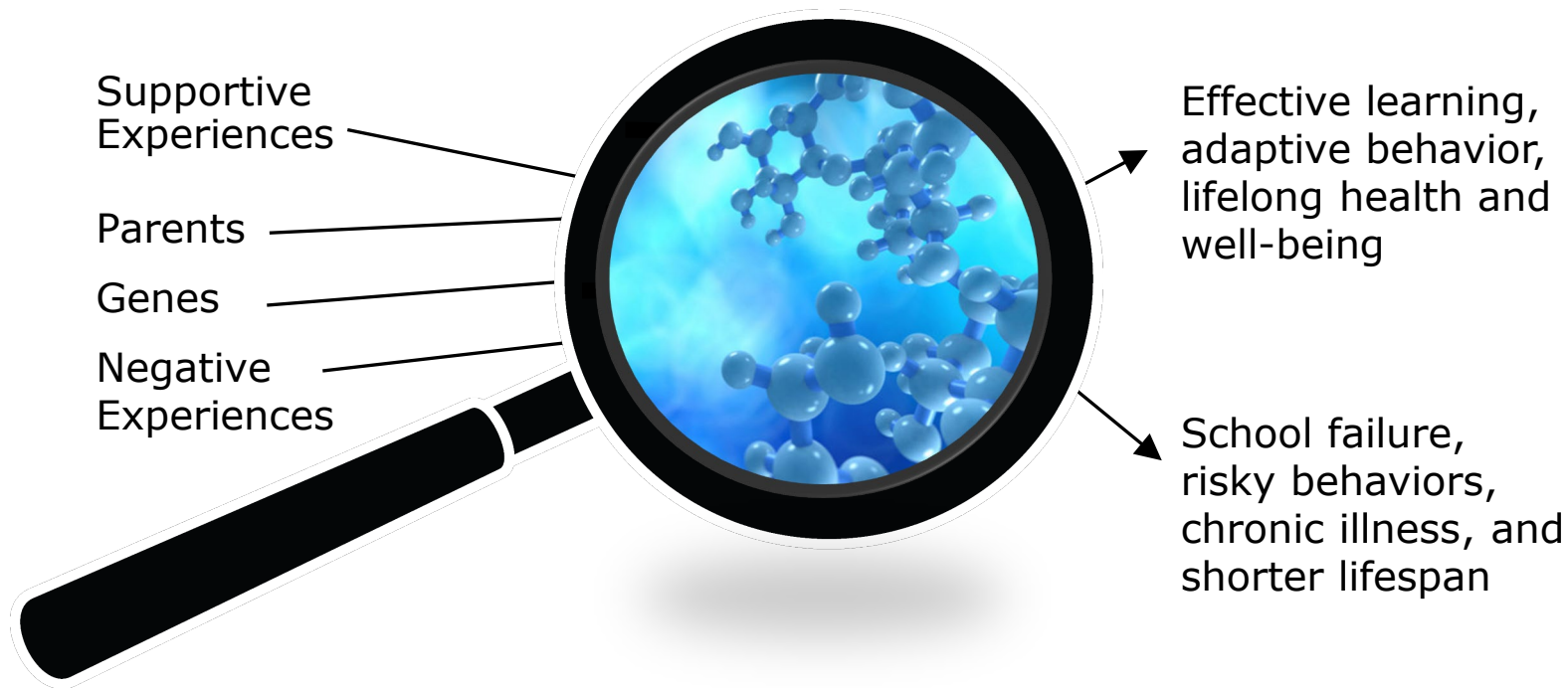


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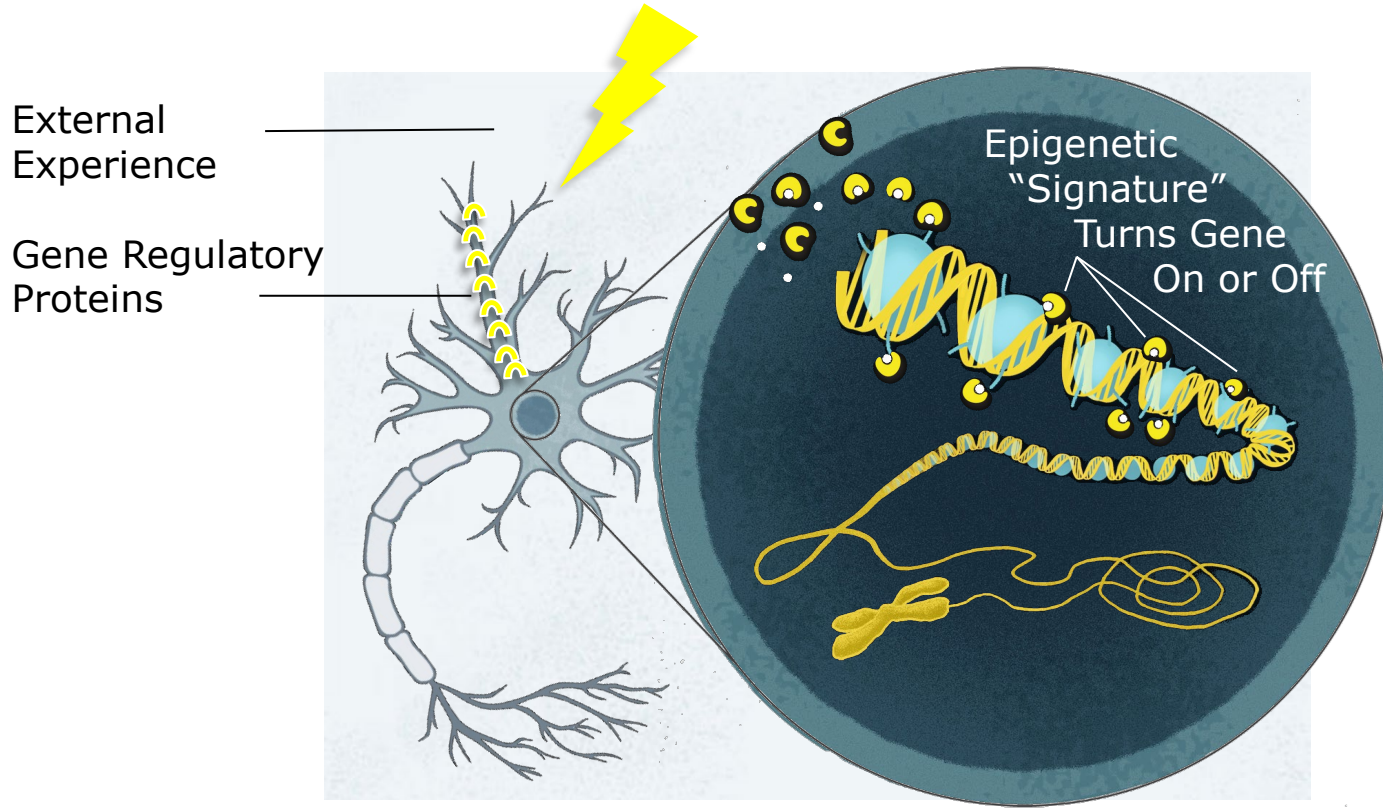


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Advances in Science Are Revealing the Underlying Causes of Disparities in Learning, Behavior, and Health



Early Experiences Leave Chemical “Signatures” on Genes



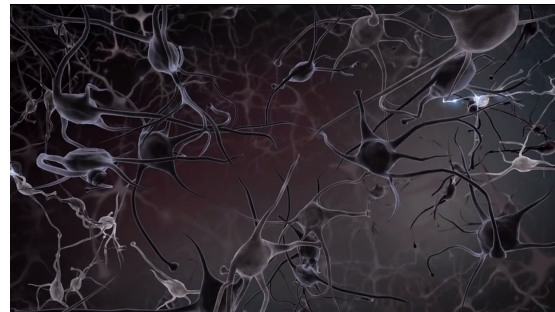
We Know How Early Experiences Affect Brain Development



Brain Architecture



Serve & Return Interaction

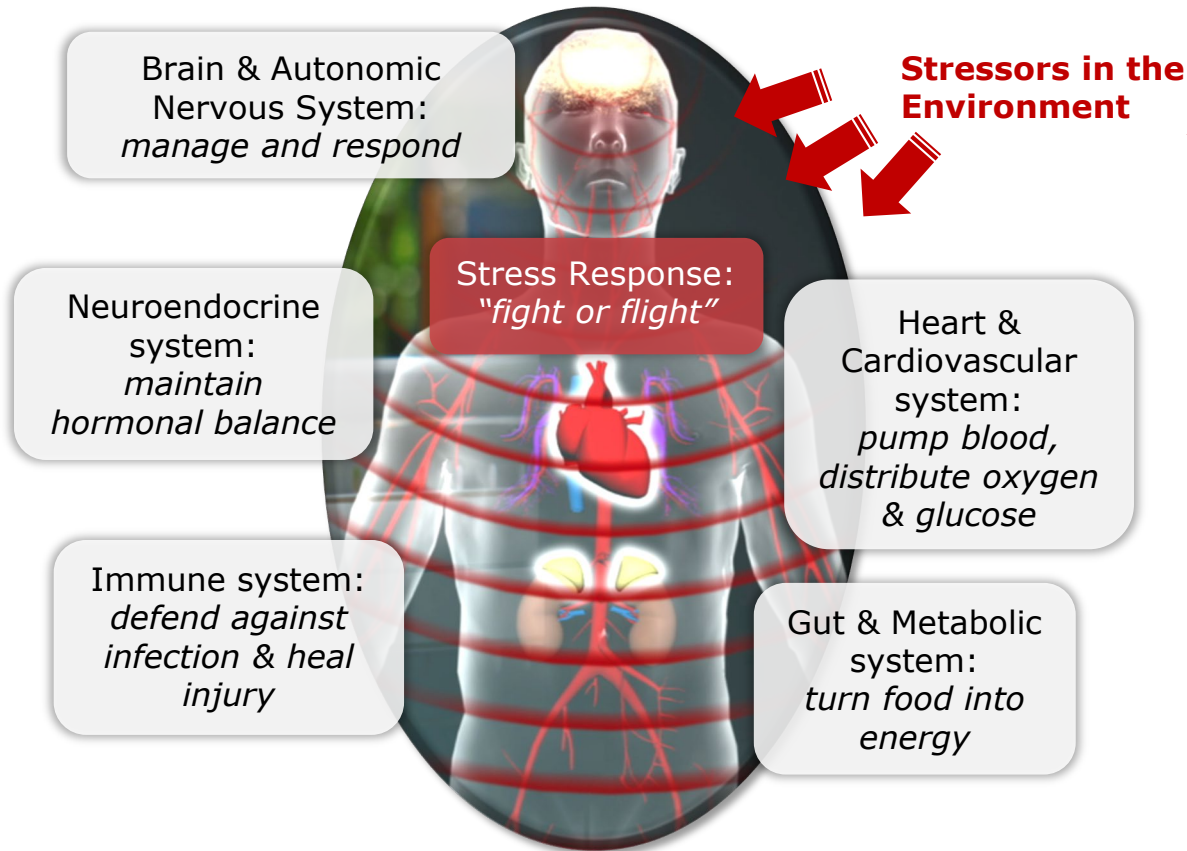


Toxic Stress

**Now It's Time to
Connect the Brain
to the Rest of the Body**



Adversity Affects the Brain *and* Other Systems



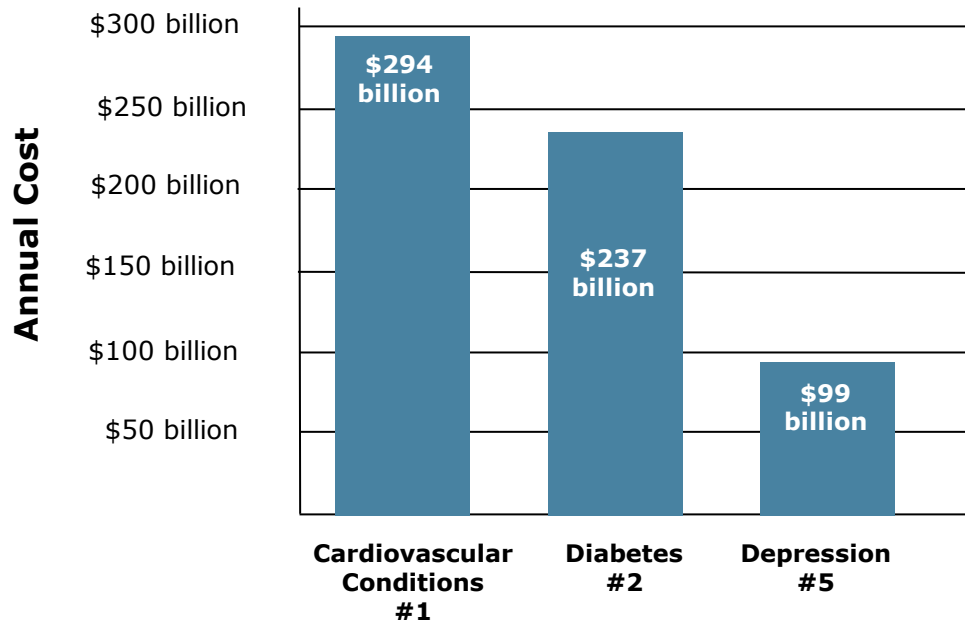
Asthma
Heart Disease
Diabetes
Obesity
Depression
Autoimmune
Dementia...

Why This Matters:

Supporting families with young children is as much about building a strong foundation for lifelong health as it is about early learning, social-emotional development, and school readiness.

Early Childhood Investments that Protect Developing Biological Systems from Toxic Stress Will Generate Substantial ROI

3 of the 5 Most Costly Adult Diseases are Associated with Early Life Adversity

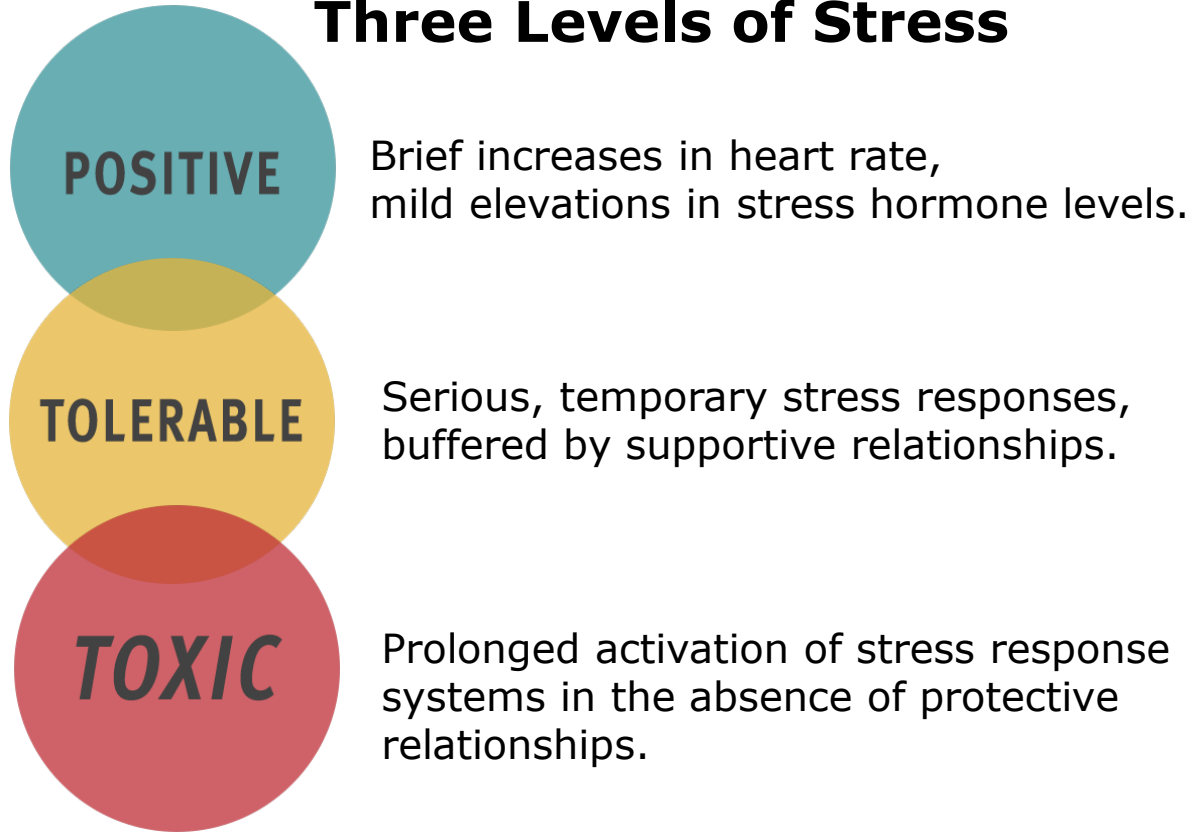


Why This Matters:

Reducing hardships and adverse experiences faced by families and pregnant women is a promising pathway to enormous savings in health care costs.

Sources: Waters, Graf (Milken Institute, 2018); Greenberg et al. (2015)

The Biology of Adversity: Three Levels of Stress

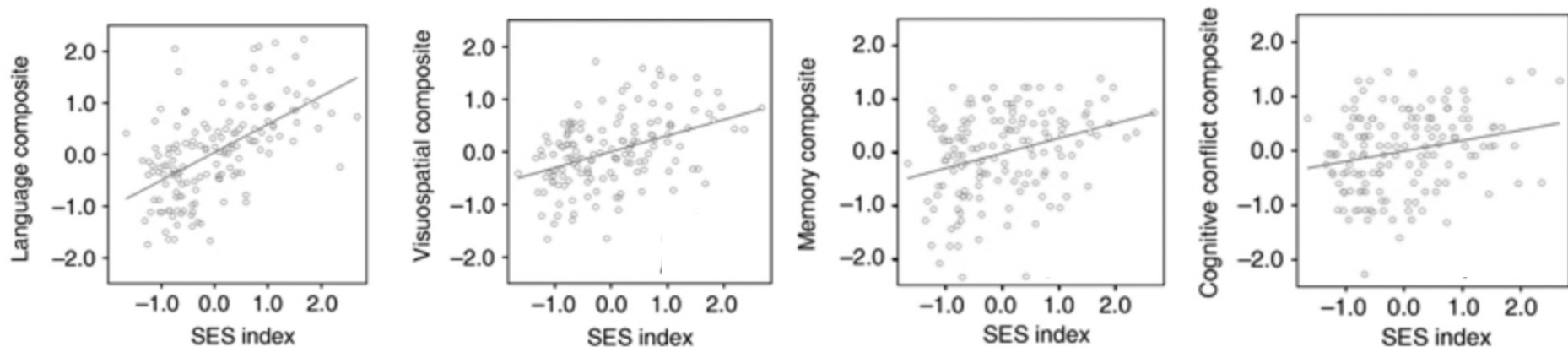


How ACEs, Trauma, and Toxic Stress Intersect



But Everyone Is Different!

Variation in Sensitivity to Context Calls for Rethinking How We Address Social Determinants of Development



Source: Noble et al. (2007)

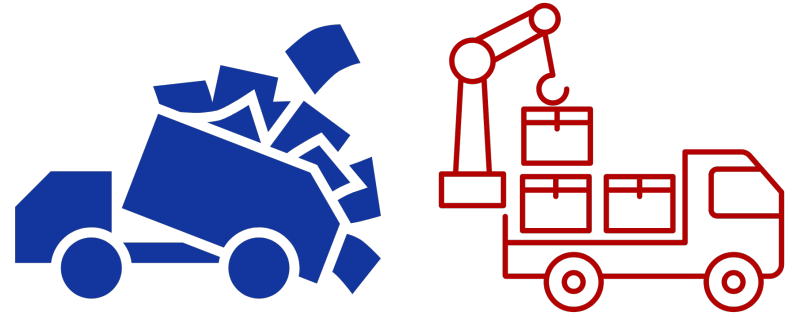
Avoid Determinism When Talking About ACEs and Stress With Families

Include resilience, hope & solutions.

Emphasize responsive caregiving AND the external factors can make it hard to do.

Balance systemic solutions with self-efficacy.

Too Much Stress Can Feel Like an Overloaded Truck



<https://developingchild.harvard.edu/resources/talking-about-toxic-stress-a-communications-toolkit/>

The Problem with Social Determinants

Living in a community with high rates of violence creates constant stress, and when children experience ongoing discrimination, this stress can wear on the body over time.

In order for doctors and communities to create services that effectively address the root causes of stress, they need to know more about how environments cause stress and affect children's health and development.

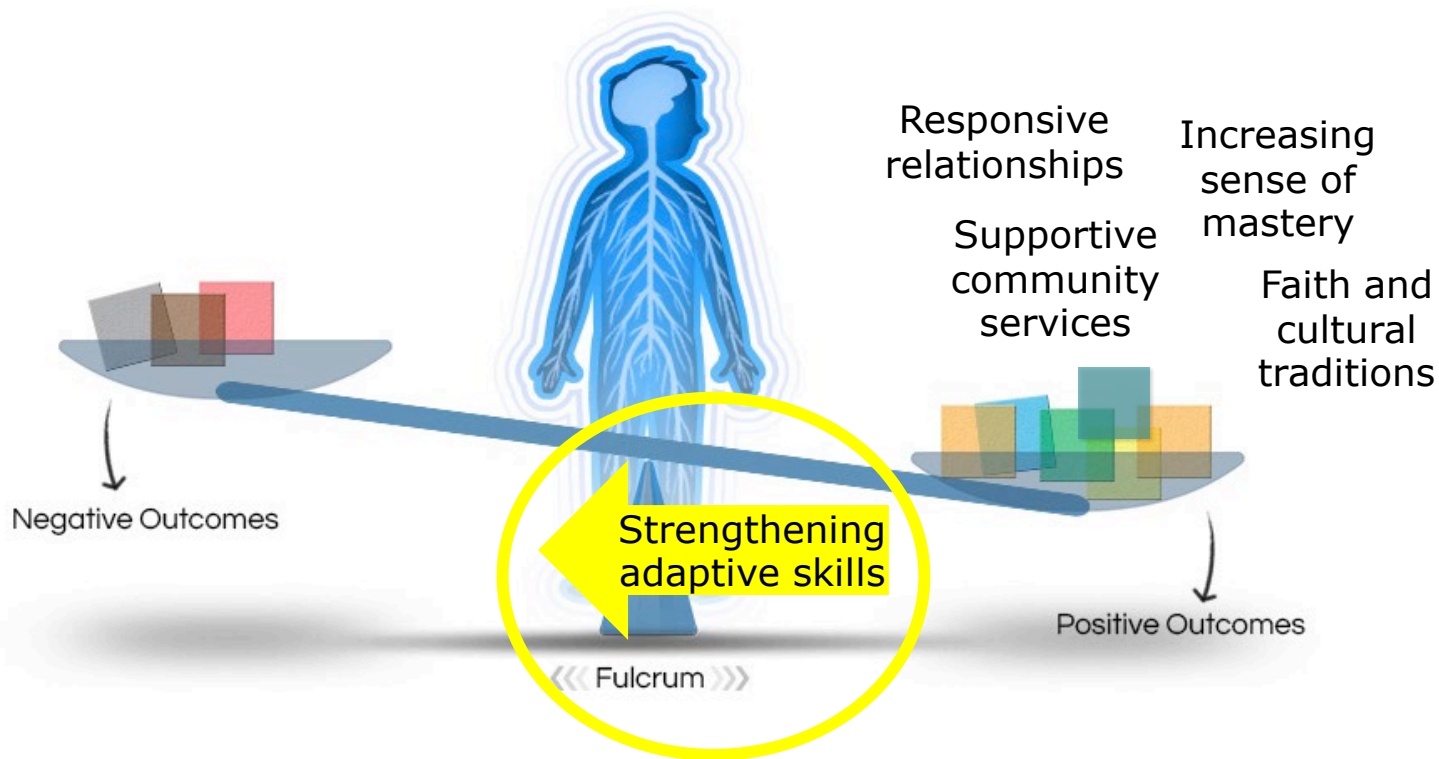
Hope
Self-Efficacy



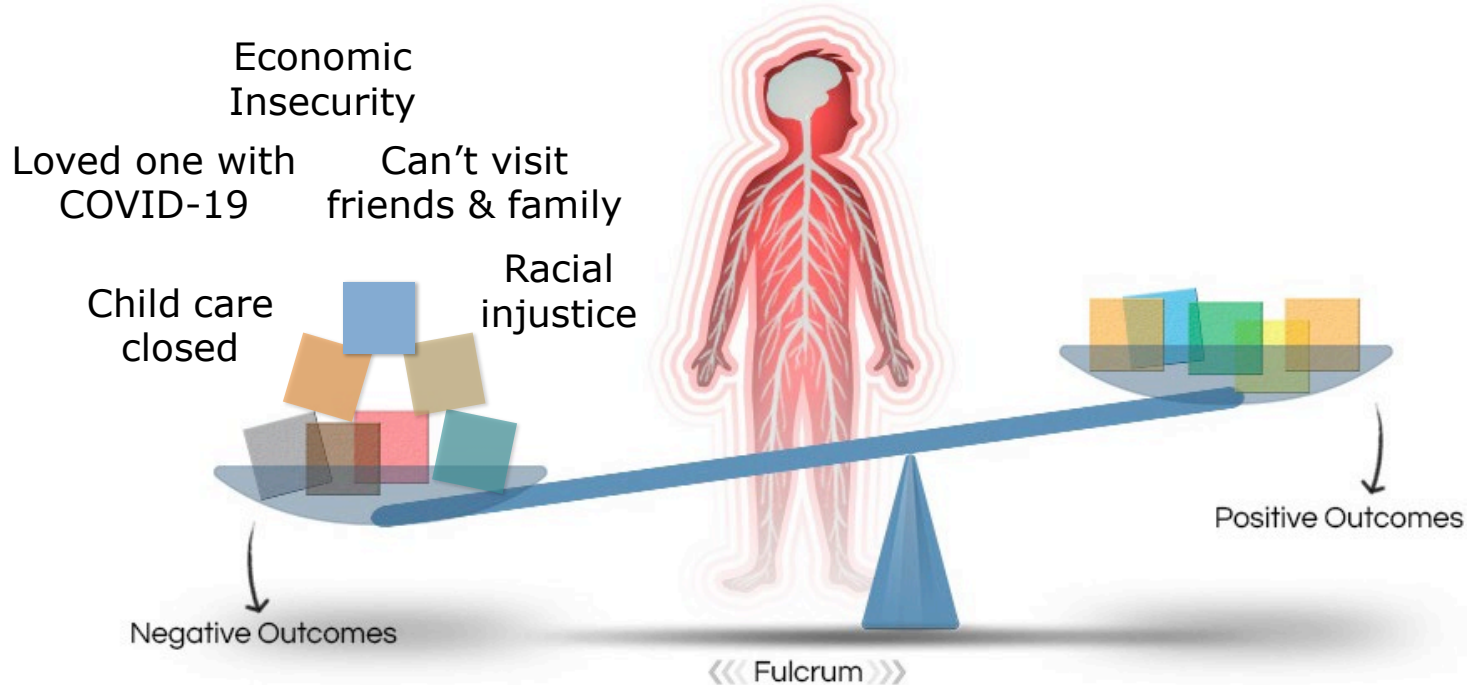
"leaves people less able to see how positive development and health can be achieved following exposure to early adversity"

SOURCE: THE FRAMEWORKS INSTITUTE 2018

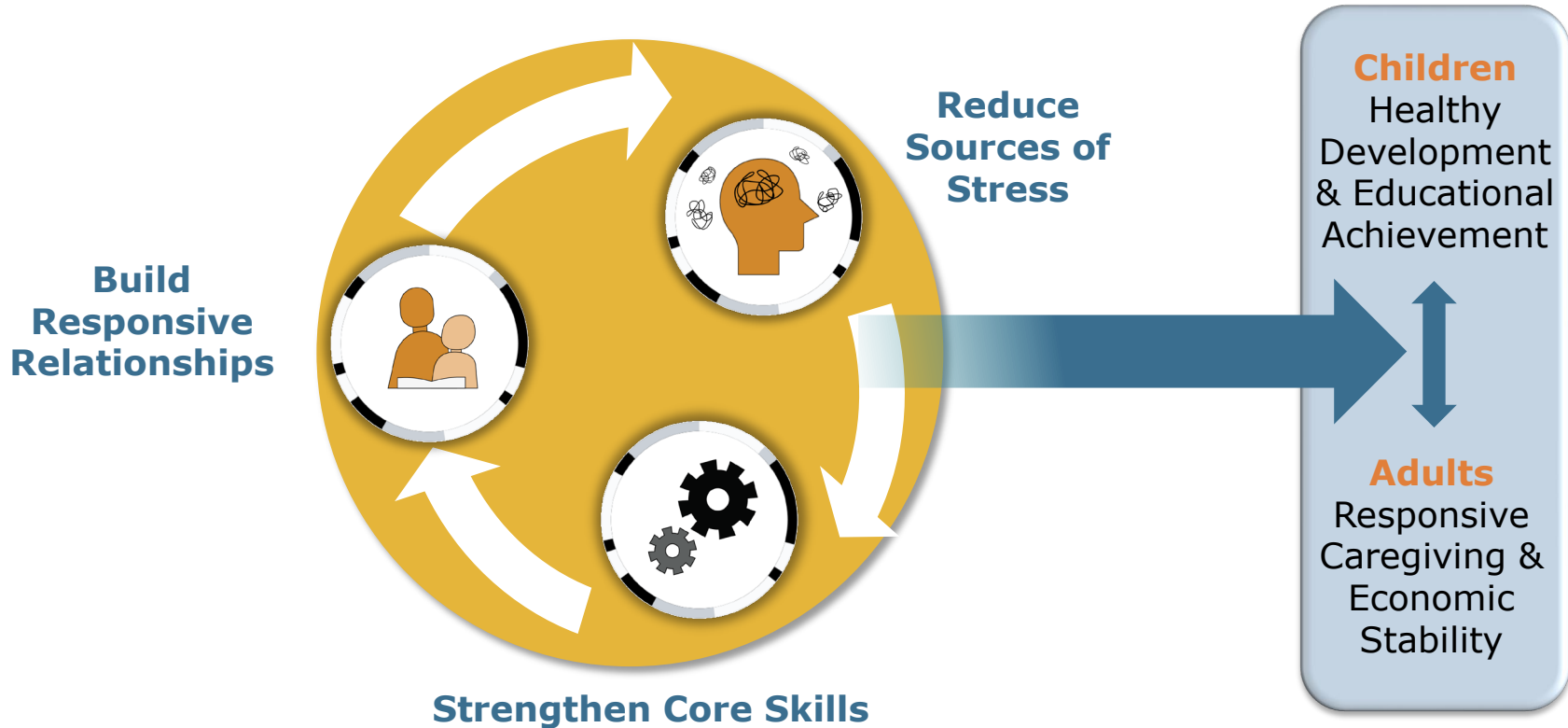
Resilience Can Be Strengthened by Supportive Relationships and Focused Skill-Building



2020 = A Pile-Up of Stressors ...And Some Are Affected More than Others



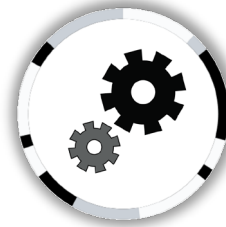
3 Science-Informed Design Principles Can Improve the Impacts of Policies and Services on Children & Families



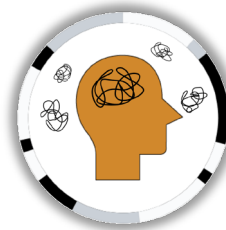
Simple Practice Shifts Using the 3 Principles



- Coach parents/caregivers on serve & return interactions
- Provide fun activities for parents and children to do together



- Suggest games that help children build EF/SR skills
- Help families establish regular household routines with their children



- Help families identify stressors and solutions
- Help connect families to resources for basic needs



Experiences During the Prenatal Period and First 2-3 Years After Birth May Affect Adult Health Even More than School Achievement

Why This Matters:

To improve lifelong health, it is just as important to reduce stress for pregnant mothers and families with infants and toddlers as it is to encourage better lifestyle choices in adulthood.





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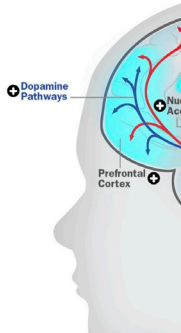


The Brain Circuits Motivation: An Inter

Experiences Create Pathways I How Motivation System

Hover over the labels on the brain regions or the highlighted text below to learn more about the role each plays in reward and motivation.

1. Experiences trigger neurons (brain cells) in certain regions of the brain to send chemicals to other neurons in different regions.
2. Repeated experiences create different pathways in the brain that link those experiences to thoughts, memories, and behaviors.
3. These linked pathways create powerful associations between what we do and the memories of how that made us feel physically and emotionally, and that drives our behavior.
4. We are motivated to repeat those experiences that made us feel good—and to avoid those that



Enhancing and Practicing Executive Function Skills with Children from Infancy to Adolescence



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NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

Connecting the Brain to the Rest of the Body: Early Childhood Development and Lifelong Health Are Deeply Intertwined

WORKING PAPER 15

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<https://developingchild.harvard.edu>

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