Leveraging Advances in Science to Strengthen the Early Foundations of Both Learning and Health

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The Framework That Has Guided 50+ Years of Early Childhood Policies and Services is Conceptually Sound But Variable in Impact

Significant Adversity

Readiness to Succeed in School

Disruptions in “Whole Child” Development

Enriched Learning Experiences
Parenting Education & Support
Primary Health Care
Sound Nutrition
Health-Promoting Environments
Community Empowerment
The Biology of Adversity and Resilience Explains How Excessive Stress Undermines the Foundations of Healthy Development

Genetic Variation

Environmental Stressor

Time

Stress hormones

Inflammation

Metabolic regulation

Heart rate & blood pressure

Brain circuitry & electrical activity

Epigenetic effects on gene expression & developmental pacing

Learning, Behavior & Health
3 Core Concepts Grounded in 21st-Century Science Underscore the Potential Power of a New Mindset for Early Childhood Policy

- Connecting the Brain to the Rest of the Body
- Variation in Sensitivity to the Environment
- Timing & Critical Periods
PN-3 Policies that Strengthen Conditions that Support Healthy Development Will Generate a Substantially Larger ROI

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

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<tr>
<th>Annual Cost</th>
<th>Cardiovascular Conditions #1</th>
<th>Diabetes #2</th>
<th>Depression #5</th>
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**Take-Home:** Science-informed investments that reduce hardships and adverse exposures faced by pregnant women and families raising very young children offer a promising pathway to enormous savings in health care costs.

Sources: Waters, Graf (Milken Institute, 2018); Greenberg et al. (2015)
Relevant Lessons Learned From COVID-19

Predictable impacts of poverty, racism, and other structural inequities on health— with striking variations in both susceptibility to illness and response to treatment.

The need for credible scientific knowledge and trusted metrics to inform both prevention and treatment.

The influence of lived experiences and personal beliefs on policymaking and implementation.

The challenge of high-stakes decisions in the face of incomplete information.
3 Science-Informed Principles Can Strengthen the Roots of Whole Child Development Across the PN-3 Roadmap

But the Devil is in the Details

- Build Responsive Relationships
- Reduce Sources of Stress
- Strengthen Core Life Skills
Experiences trigger neural tracts and form connections between regions of the brain. These neural connections can have lasting effects on behavior and cognitive development. Here's a breakdown of how these experiences influence our development:

1. **Experiences trigger neural tracts**: Neural pathways connect different parts of the brain, allowing us to process and react to stimuli. When we have new experiences, these neural pathways are activated, creating new connections and strengthening existing ones.

2. **Repeated experiences create neural pathways**: These neural pathways form connections between different parts of the brain, allowing us to process and react to similar stimuli in a more efficient way.

3. **Neural pathways create powerful associations**: These neural pathways create powerful associations between the brain regions involved in specific experiences, allowing us to recall and react to similar experiences quickly and efficiently.

4. **Neural pathways influence behavior**: These neural pathways influence our behavior, allowing us to make decisions and respond to stimuli in a more automatic and efficient way.

5. **Neural pathways influence learning**: These neural pathways influence our ability to learn new information, allowing us to recall and respond to similar stimuli in a more efficient way.

6. **Neural pathways influence memory**: These neural pathways influence our ability to recall and store information, allowing us to recall and respond to similar stimuli in a more efficient way.

7. **Neural pathways influence decision-making**: These neural pathways influence our ability to make decisions, allowing us to respond to stimuli in a more efficient and effective way.

8. **Neural pathways influence attention**: These neural pathways influence our ability to focus on specific stimuli, allowing us to respond to stimuli in a more efficient and effective way.

9. **Neural pathways influence emotion**: These neural pathways influence our ability to respond to stimuli in an emotional way, allowing us to respond to stimuli in a more efficient and effective way.

10. **Neural pathways influence motivation**: These neural pathways influence our ability to respond to stimuli in a motivational way, allowing us to respond to stimuli in a more efficient and effective way.

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