



Center on the Developing Child
HARVARD UNIVERSITY

Leveraging Science to Strengthen the Foundations of Lifelong Learning, Behavior, and Health

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The Foundation of a Successful Society is Built in Early Childhood

Healthy development in the early years provides the building blocks for educational achievement, economic productivity, responsible citizenship, lifelong health, strong communities, and successful parenting of the next generation.

Advances in neuroscience, molecular biology, epigenetics, and the behavioral and social sciences could be leveraged to catalyze more effective policies and practices across multiple sectors.

Genes and Experiences Interact to Build Brain Architecture

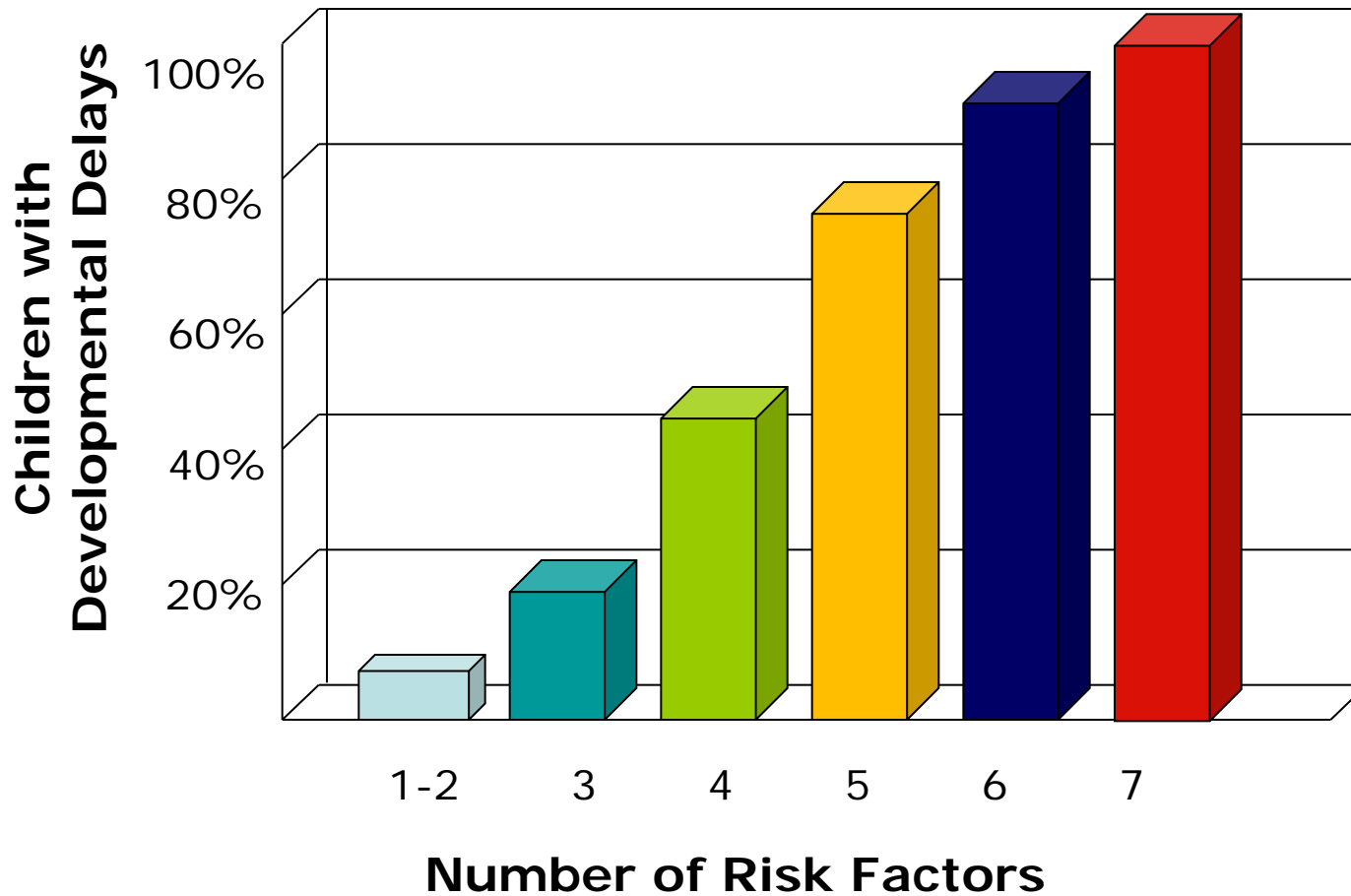
**Três conceitos fundamentais sobre
o Desenvolvimento na Primeira Infância**

1. As experiências moldam a arquitetura do cérebro

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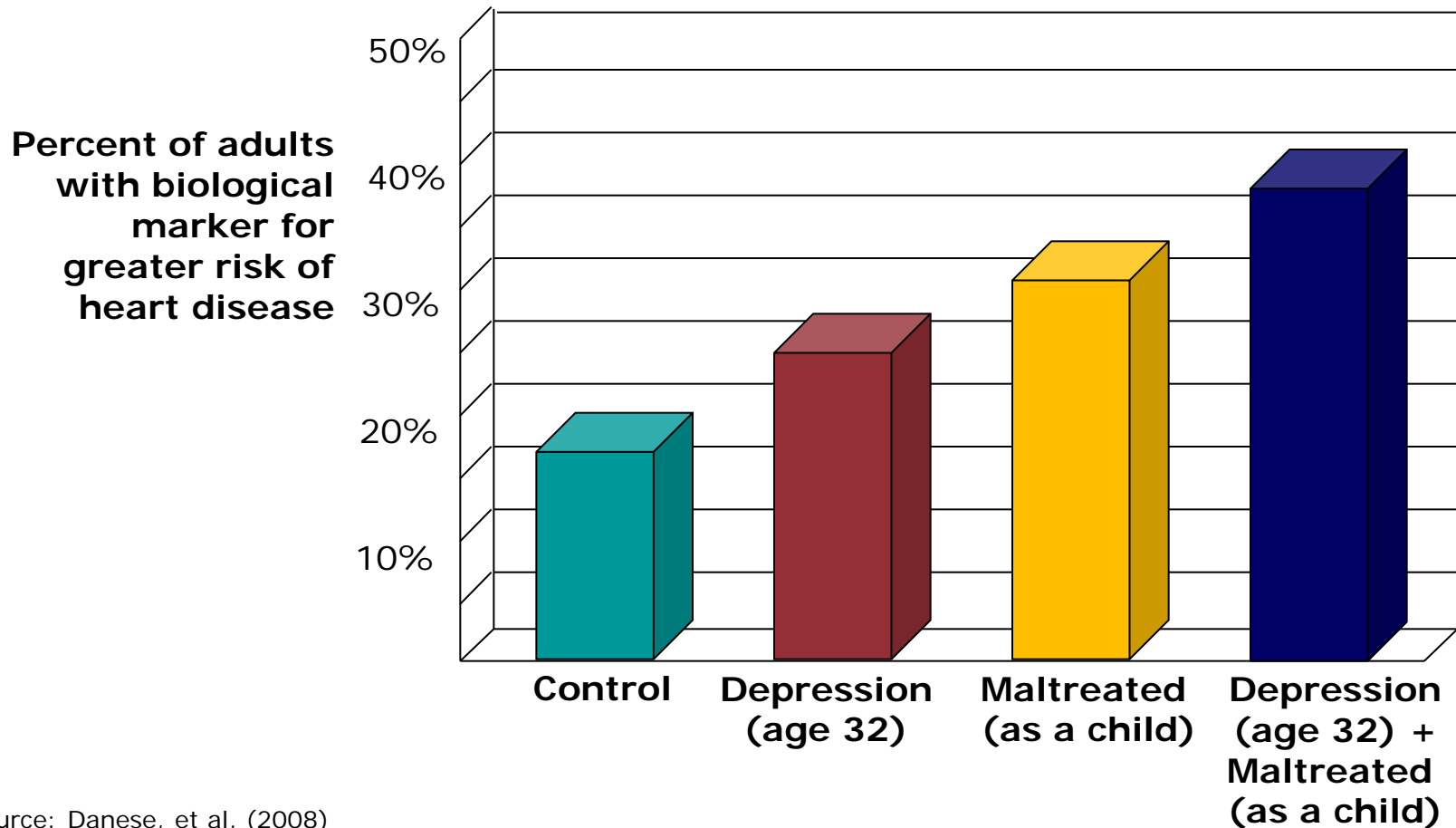
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The Cumulative Pile Up of Adversity Impairs Development in the First Three Years



Source: Barth, et al. (2008)

Biological “Memories” Link Maltreatment in Childhood to Greater Risk of Adult Heart Disease



Source: Danese, et al. (2008)

Toxic Stress Derails Healthy Development

**Três conceitos fundamentais sobre
o Desenvolvimento na Primeira Infância**

**3. O stress tóxico prejudica o
desenvolvimento saudável**

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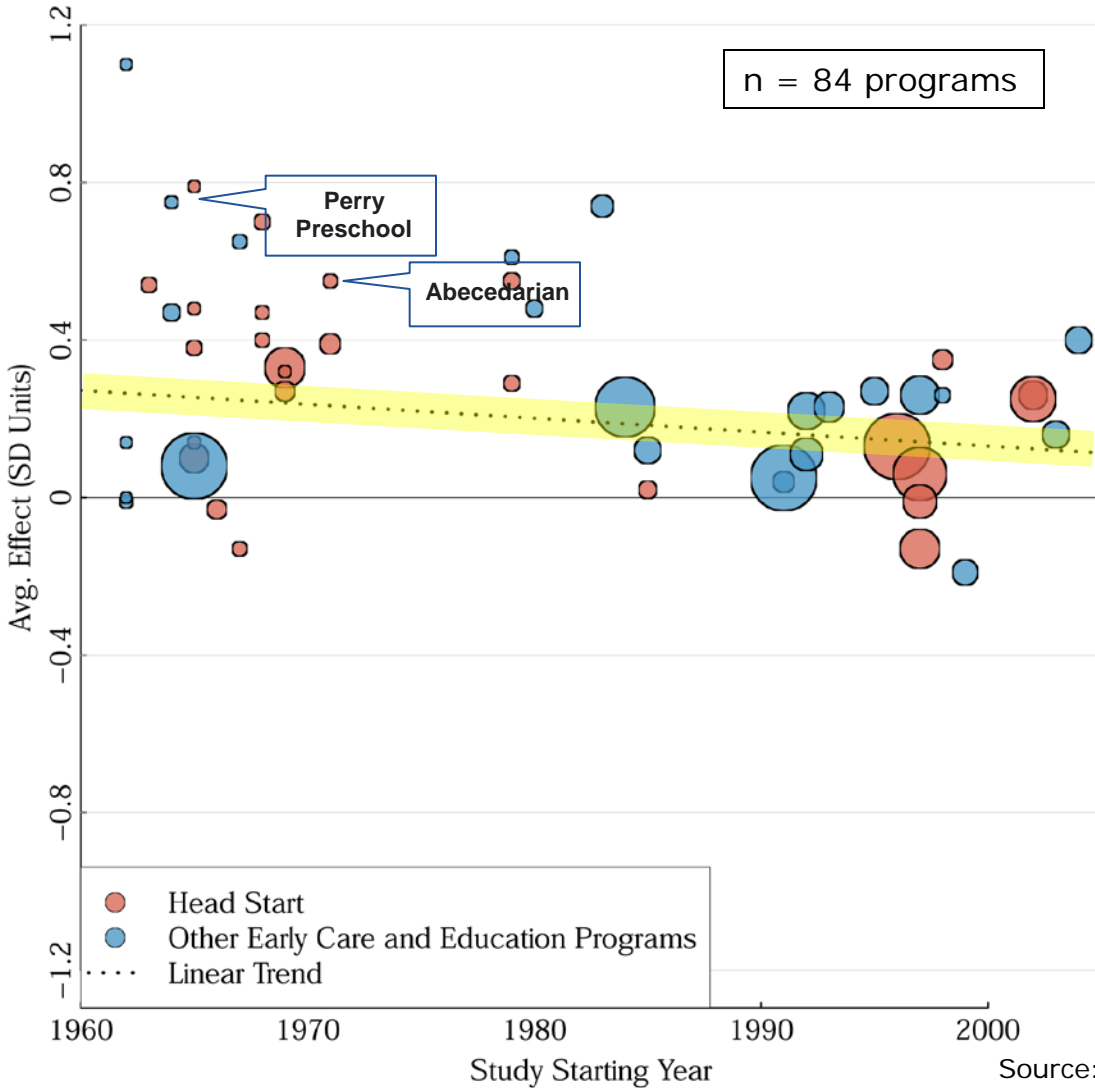
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Early Life Experiences Are Built Into Our Bodies (For Better or For Worse)

Stable and supportive relationships, language-rich environments, and mutually responsive, “serve and return” interactions with adults promote healthy brain architecture and adaptive regulatory systems.

Excessive or prolonged activation of stress response systems and reduced availability of the buffering protection of supportive relationships can weaken brain architecture and disrupt the development of other organ systems.

Effects of Early Education on Child Achievement and Cognition Illustrate Both Impact and Challenges



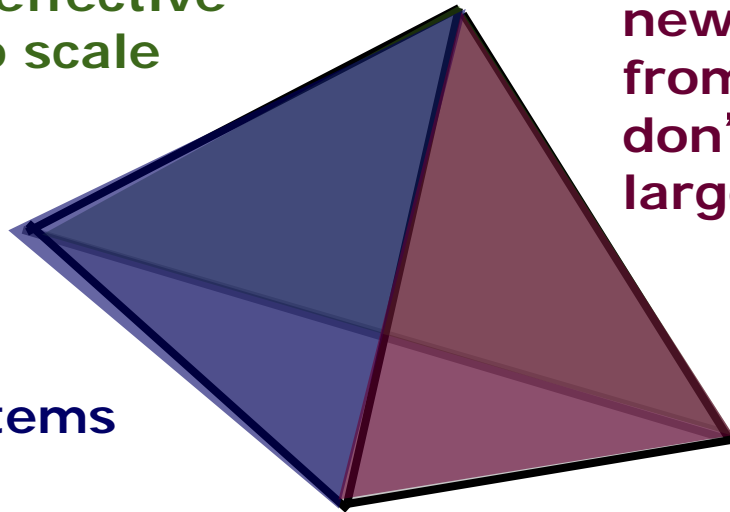
Source: Duncan & Magnuson (2013)

Increasing the Returns on Current Investments Requires Three Strategies

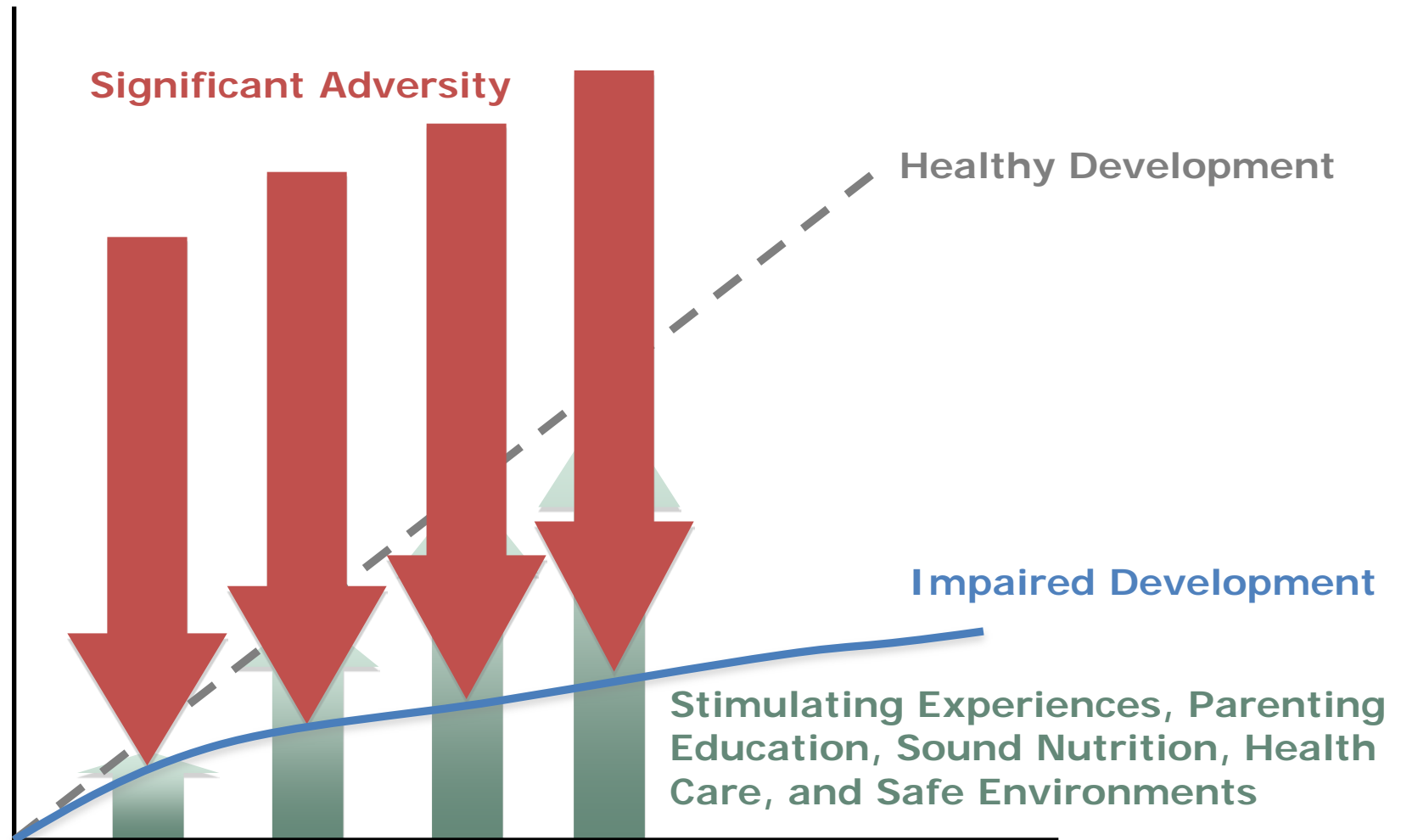
Enhance quality
and take effective
models to scale

Formulate enhanced
theories of change, test
new ideas, and learn
from interventions that
don't achieve sufficiently
larger impacts

Build strong systems
for coordinated
service delivery and
data management

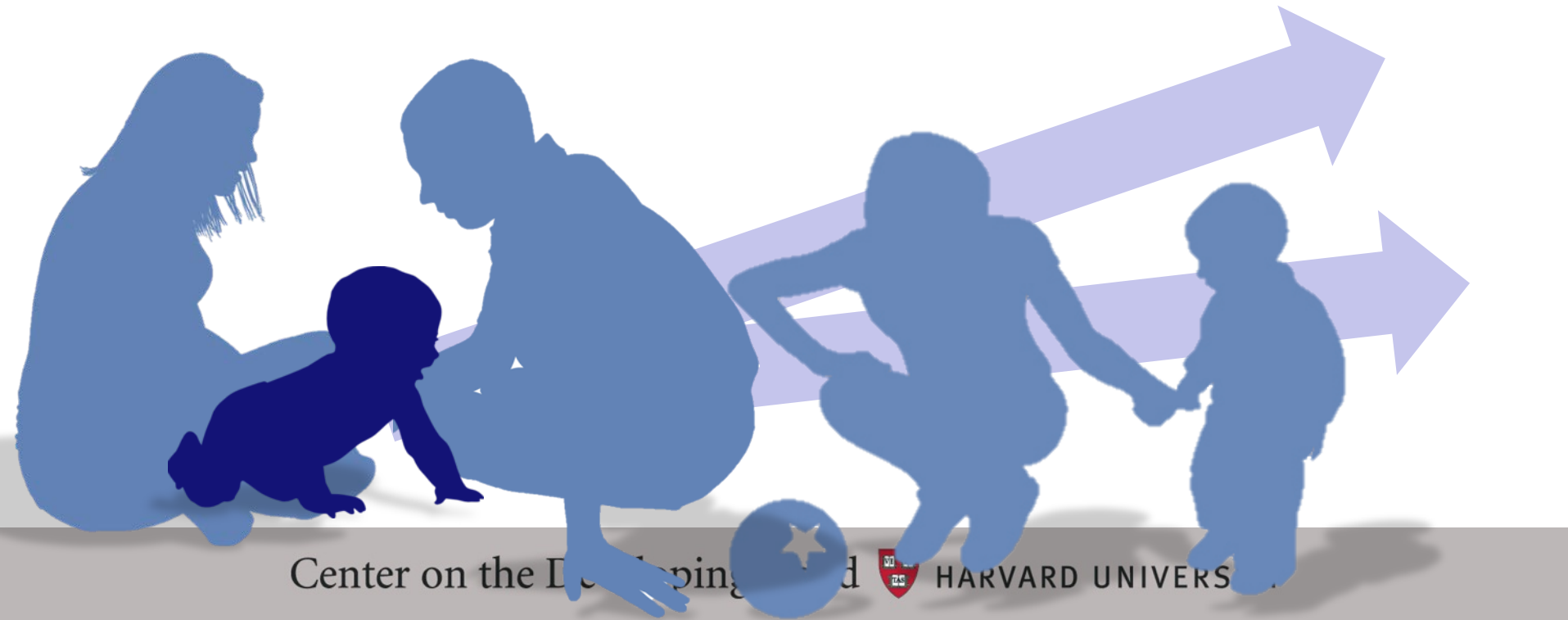


Current Conceptual Framework Guiding Early Childhood Policy and Practice



Using 21st Century Science to Change the Narrative for Policy and Practice Across Sectors

Early experiences affect **both** lifelong health **and** learning
Healthy development requires **both** protection **and** enrichment



Generating Hypotheses to Guide the Design and Testing of New Intervention Strategies

Early experiences affect lifelong health *and* learning

Healthy development requires protection *and* enrichment



① Protection and enrichment for young children require capacity-building for their caregivers

② Improved parenting skills also enhance employability and economic stability

③ Strong communities reduce sources of toxic stress

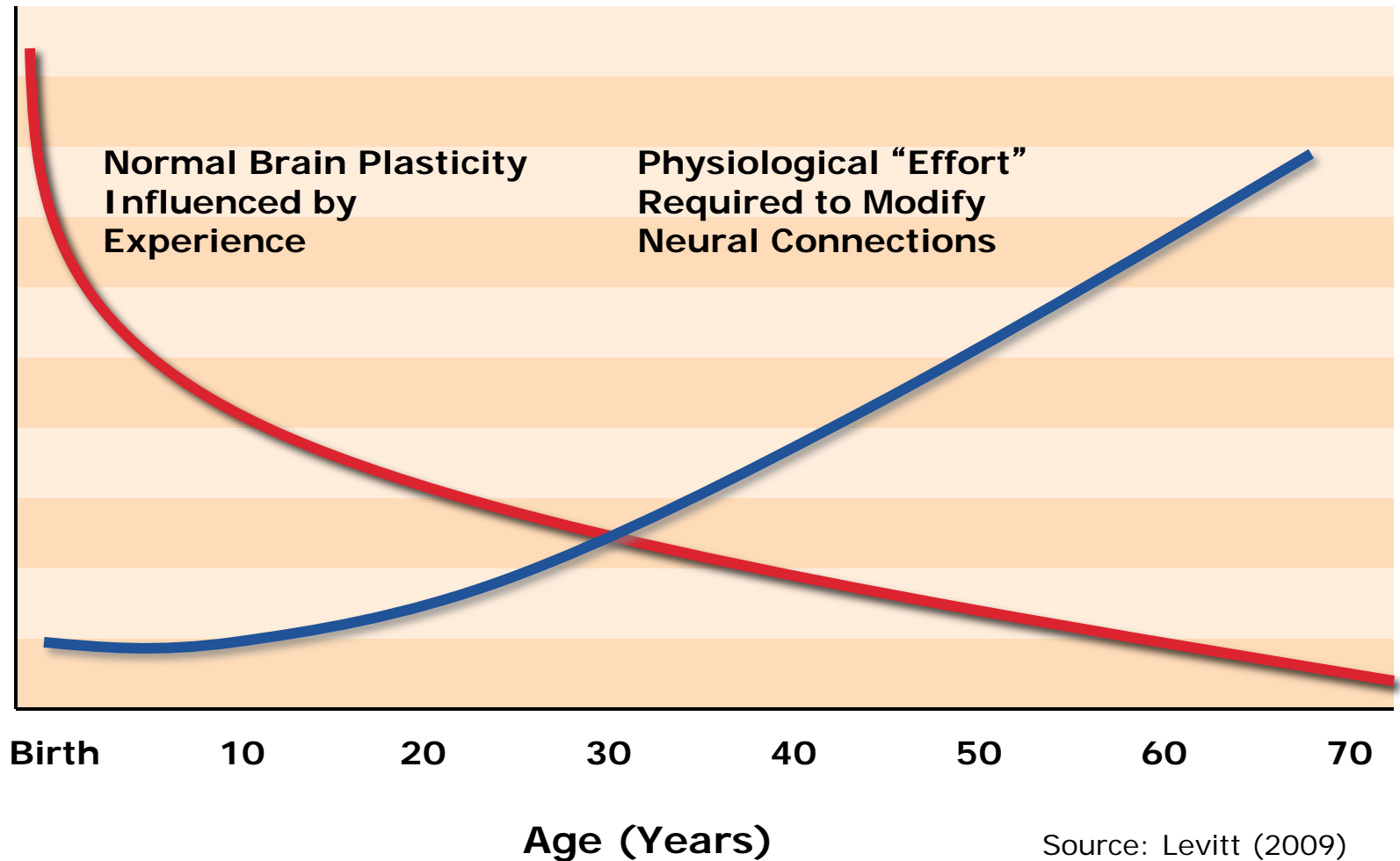


Skill Building for Parenting and Economic Self-Sufficiency Points to the Foundational Role of Executive Function and Self-Regulation Skills

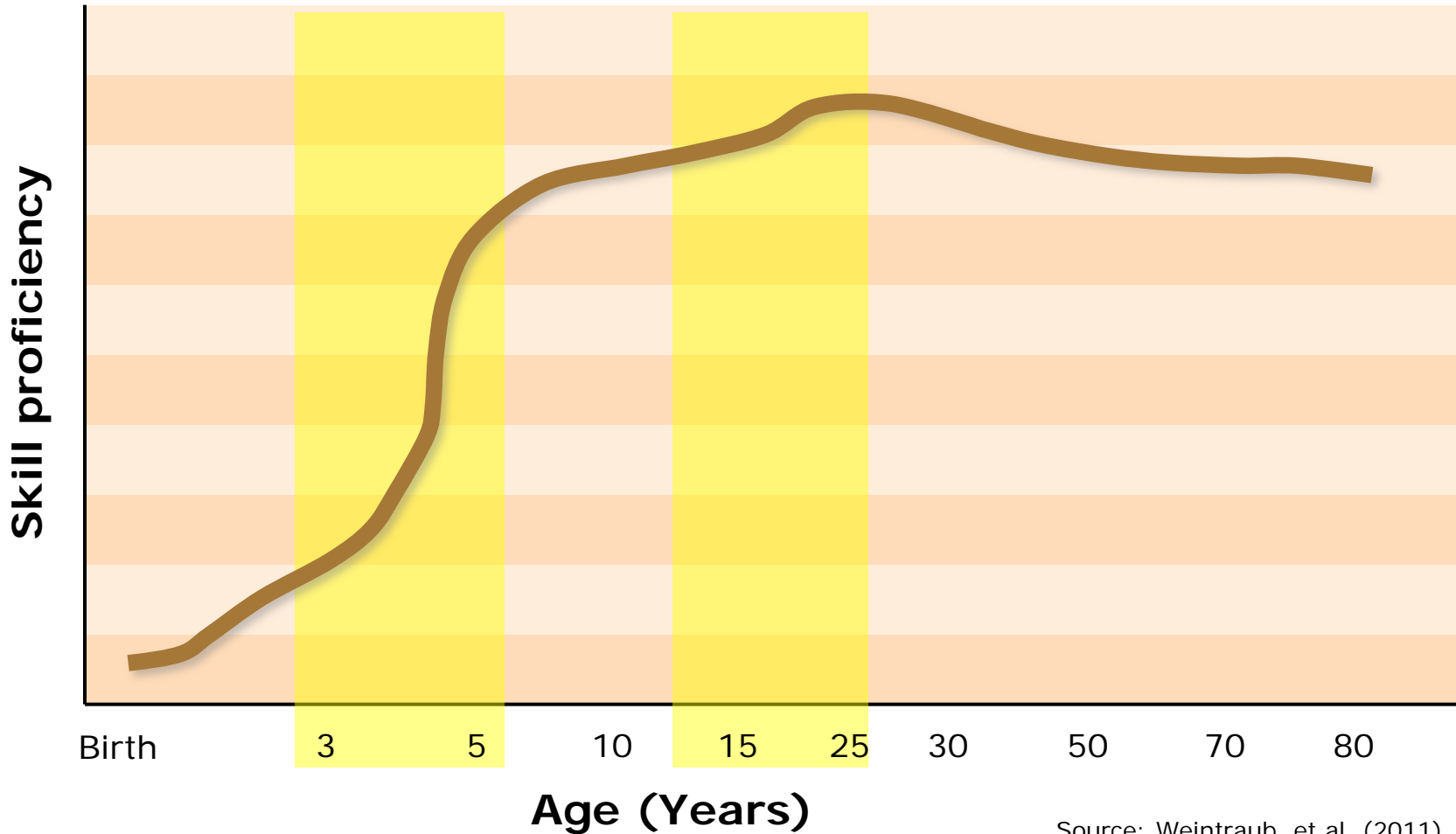


These core dimensions of adult competence include the ability to focus and sustain attention; set goals, make plans, and monitor actions; make decisions and solve problems; follow rules, control impulses, and defer gratification.

The Challenge: The Ability to Change Brains and Behavior Decreases Over Time

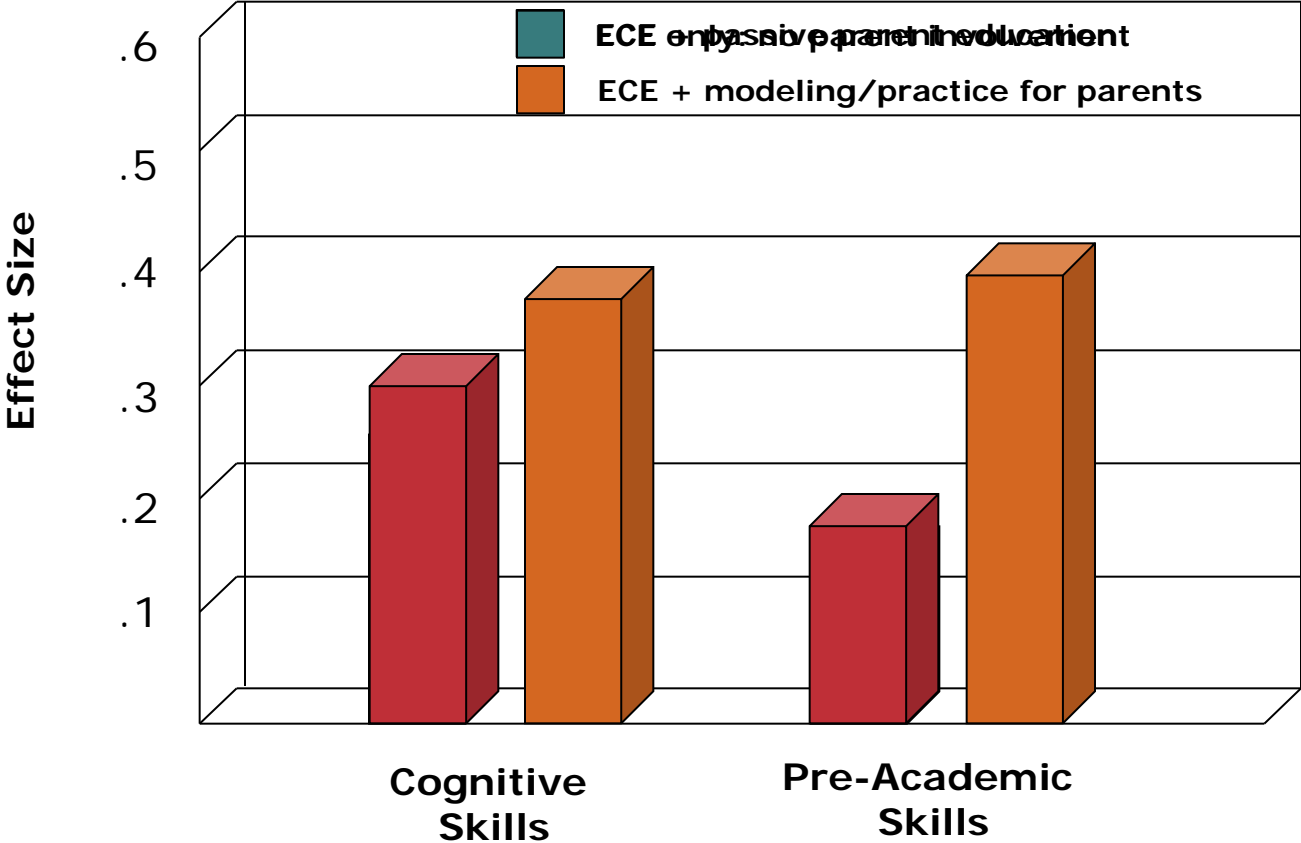


The Opportunity: The Development of Executive Function Skills Begins in Early Childhood and Extends into the Early Adult Years



Source: Weintraub, et al. (2011)

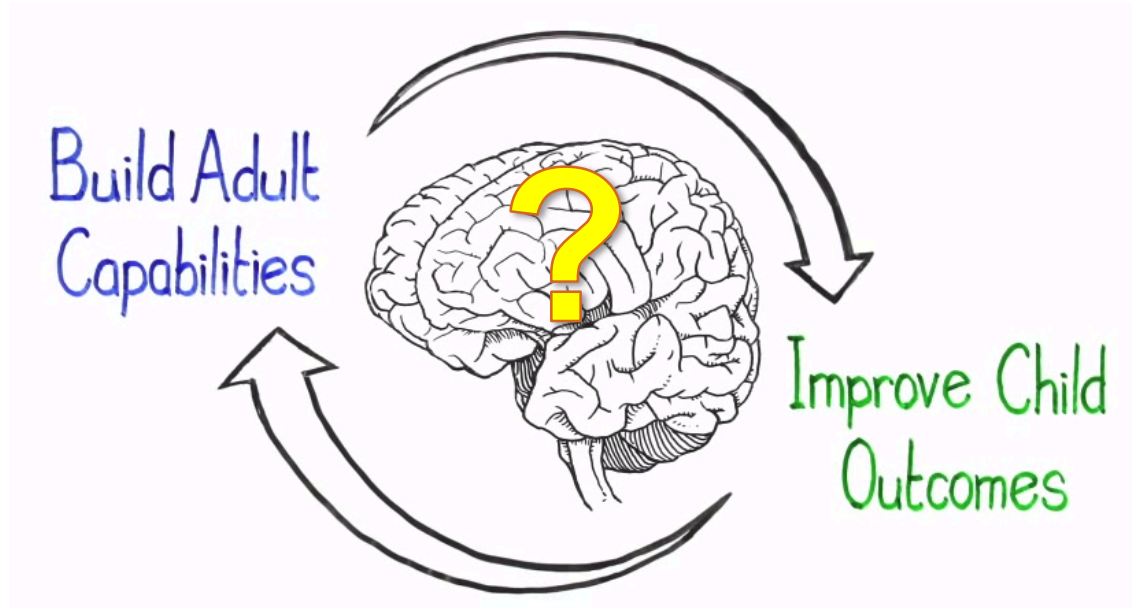
Analysis of Parent Involvement in Early Childhood Programs Illustrates Challenges and Opportunities



Average Impacts of 88 Early Childhood Education Programs (1960-2007)

Source: Grindal, et al. (under review)

Crafting a New Framework for Intergenerational Investment



If we really want to achieve breakthrough outcomes for children facing significant adversity, then we have to transform the lives of the adults who care for them.

Leveraging Scientific Knowledge in Brazil

Núcleo Ciência Pela Infância



www.ncpi.org.br

Building a Brazilian scientific community and agenda around early childhood

Translating the science for policymakers

Informing public discourse and decision making

Building leadership capacity and catalyzing innovative policies and programs



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The image displays several overlapping screenshots of the Center on the Developing Child website. The top-left screenshot shows a navigation menu with categories like 'BROWSE BY TOPIC', 'ACTIVITIES', 'RESOURCES', 'FACULTY & PARTNERS', 'NEWS & EVENTS', and 'ABOUT'. Below this, there are sections for 'SCIENCE OF EARLY CHILDHOOD' and 'INNOVATION'. The top-middle screenshot features a video player for 'InBrief: Executive Function: Skills for Life and Learning' with a thumbnail of children playing. The middle screenshot is a 'MULTIMEDIA' page for 'InBrief: The Impact of Early Adversity on Children's Development', which includes a diagram titled 'Toxic Stress Changes Brain Architecture' comparing 'Normal' brain architecture (typical neurons with many connections) to 'Toxic Stress' (neurons damaged by toxic stress with fewer connections). The bottom-right screenshot shows a 'REPORTS & WORKING PAPERS' section for 'The Foundations of Lifelong Health Are Built in Early Childhood', with a detailed description of the report and links for 'Download PDF', 'Summary of Essential Findings', 'Order printed copies', 'Press release', and 'NCSL PowerPoint Presentation, Aug. 7, 2007 (PDF)'. A 'NEWSLETTER' sign-up box is visible at the bottom of this page.

www.developingchild.harvard.edu