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The Science of Early Childhood Development and the Foundations of Prosperity

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Decades of Science from Many Disciplines All Point to the Same Conclusion

The healthy development of children provides a strong foundation for healthy and competent adulthood, responsible citizenship, economic productivity, strong communities, and a sustainable society.

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Six Numbers to Remember

700 per second

18 months

2:1 ratio

90-100%

3:1 ratio

9 minutes, 30 seconds

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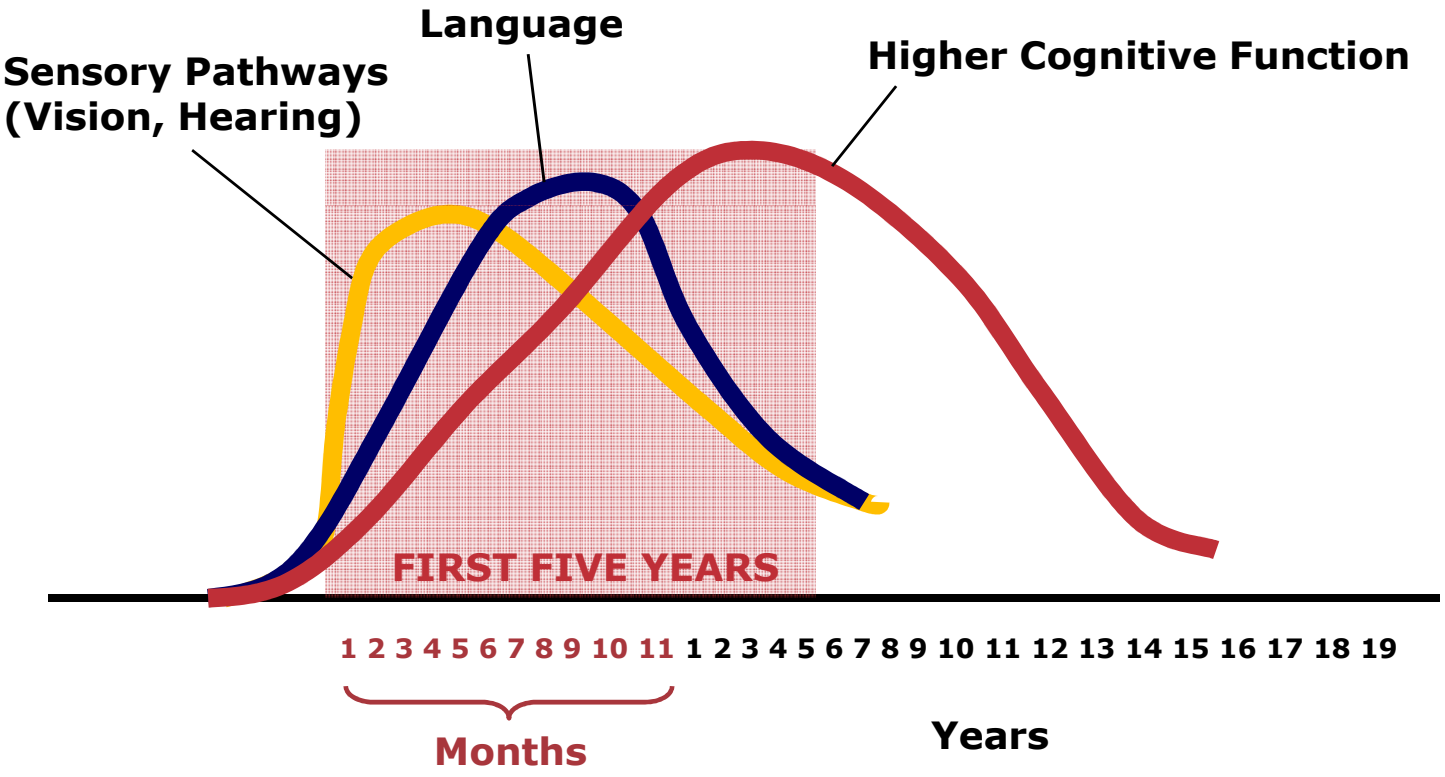
Neural Circuits are Wired in a Bottom-Up Sequence

(700 synapses formed per second in the early years)



Source: C.A. Nelson (2000)

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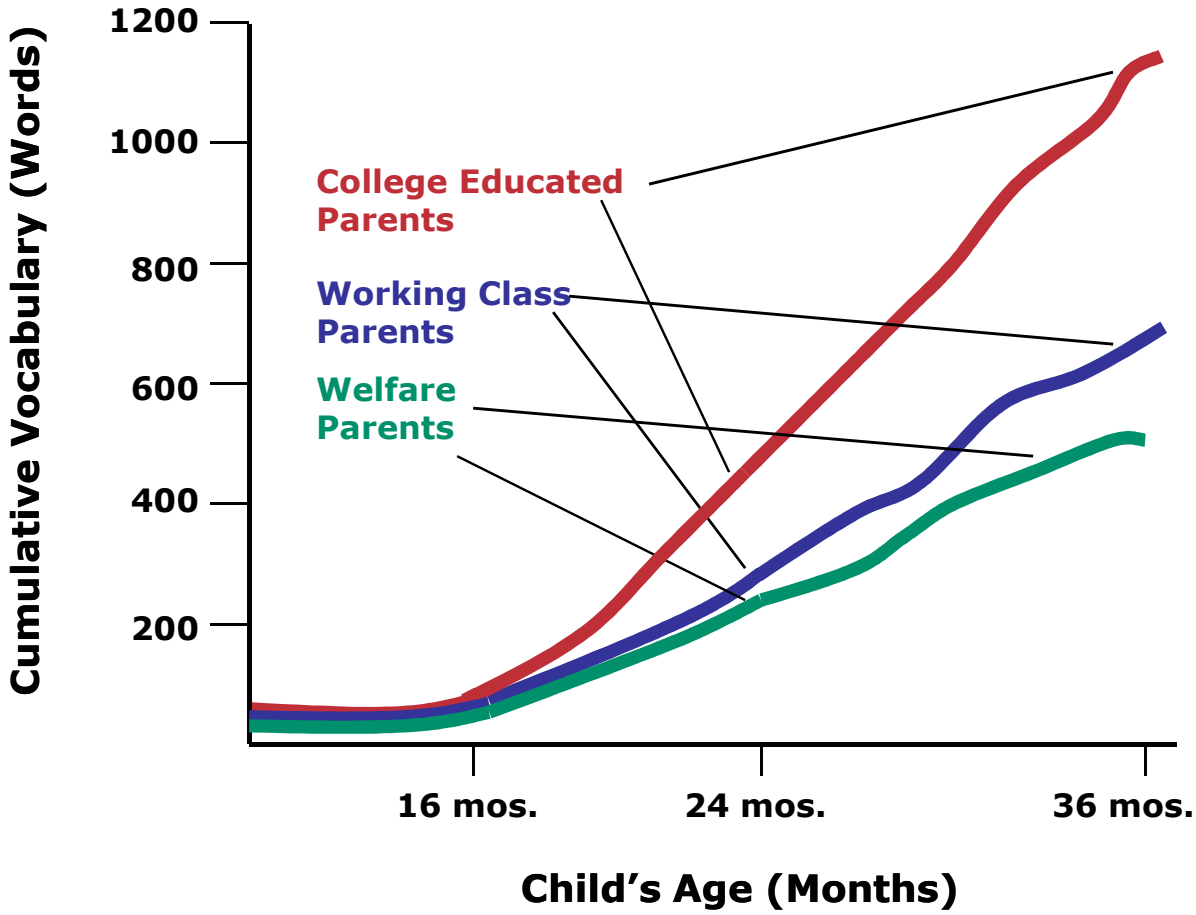
Barriers to Educational Achievement Emerge at a Very Young Age



Source: Hart & Risley (1995)

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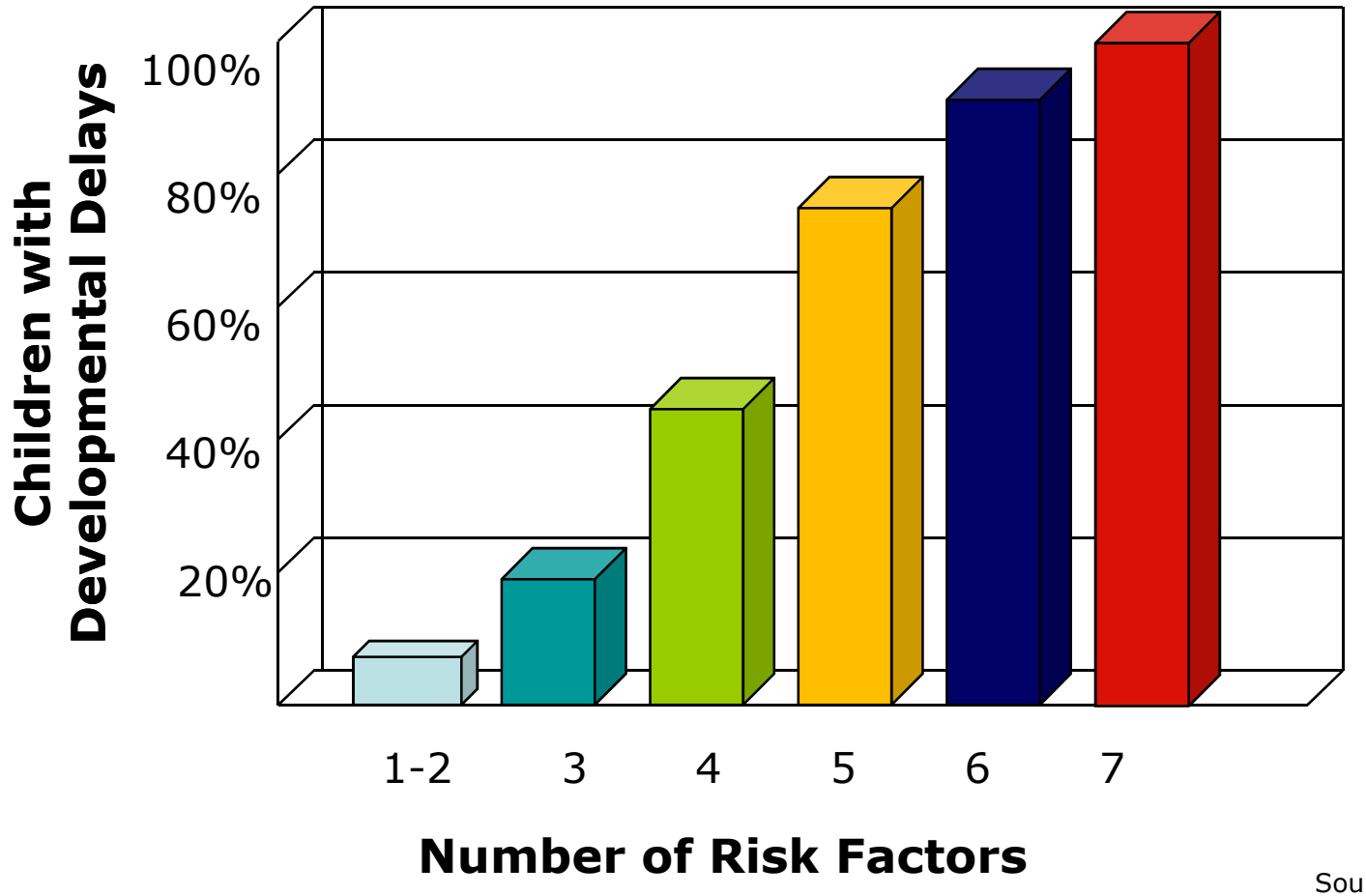
Significant Adversity Impairs Development in the First Three Years



Source: Barth et al. (2008)

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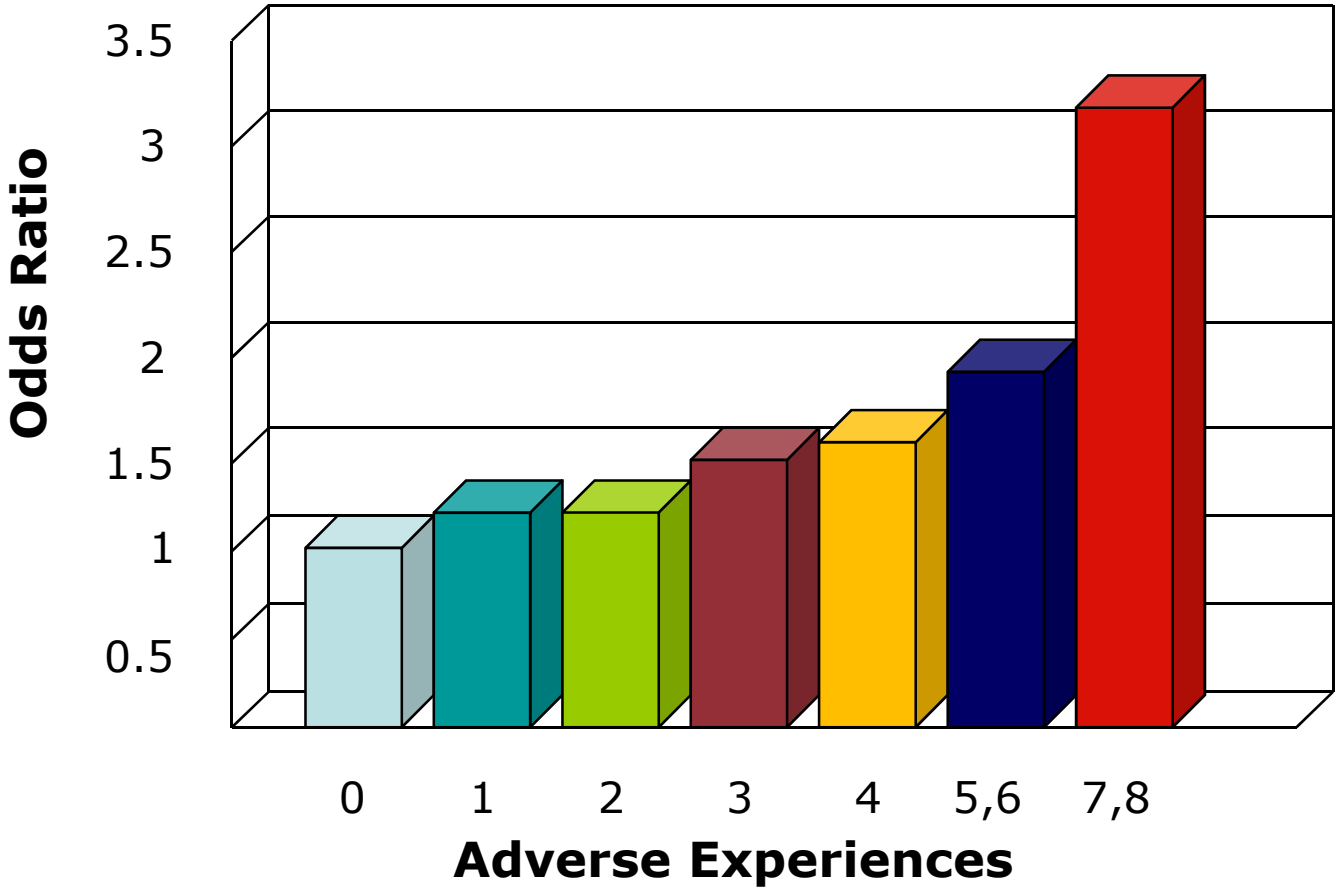
Risk Factors for Adult Heart Disease are Embedded in Adverse Childhood Experiences



Source: Dong et al, (2004)

Science Tells Us that Early Life Experiences Are Built Into Our Bodies

Research on the biology of stress illustrates how threat raises heart rate, blood pressure, and stress hormone levels, which can impair brain architecture, immune status, metabolic systems, and cardiovascular function.

Three Levels of Stress

Positive
Brief increases in heart rate,
mild elevations in stress hormone levels.

Tolerable
Serious, temporary stress responses,
buffered by supportive relationships.

Toxic
Prolonged activation of stress response systems
in the absence of protective relationships.

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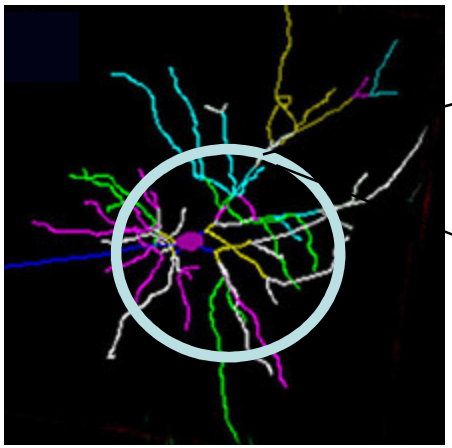
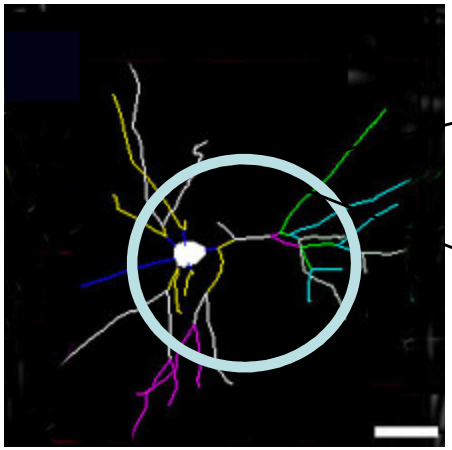
Toxic Stress Changes Brain Architecture

Normal



Typical neuron—
many connections

Toxic
stress



Damaged neuron—
fewer connections

Prefrontal Cortex and
Hippocampus

Source: C. Nelson (2008)
Bock et al Cer Cort 15:802 (2005)

Insights Neuroscience Can Offer to the Policymaking Process

Getting things right the first time is easier than trying to fix them later.

A balanced approach to emotional, social, cognitive, and language development will best prepare children for success in school, the workplace, and the community.

Highly specialized interventions are needed as early as possible for children experiencing toxic stress.

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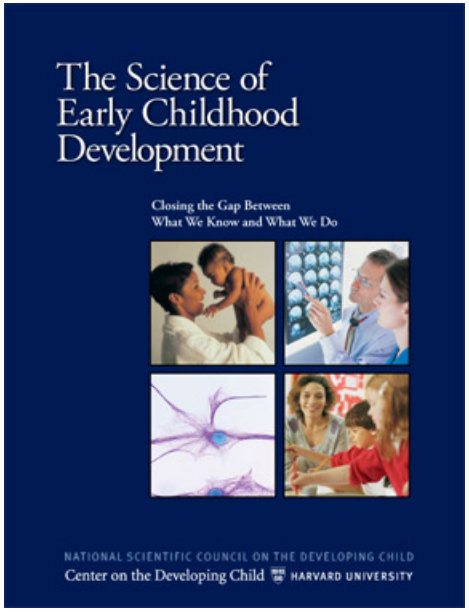

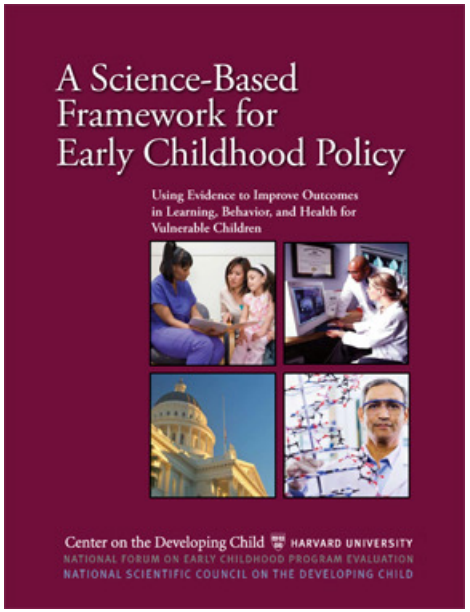

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