


## The Science of Early Childhood Development



### Learning, Stress, and Brain Development

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Developmental neuroscience,  
developmental psychology,  
and the economics of human capital formation  
are yielding a common focus on  
development in the early years

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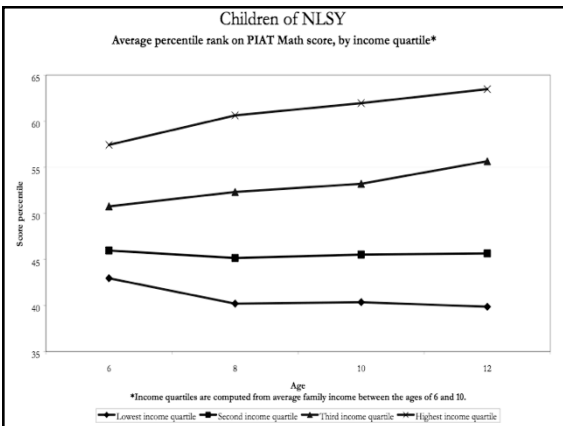
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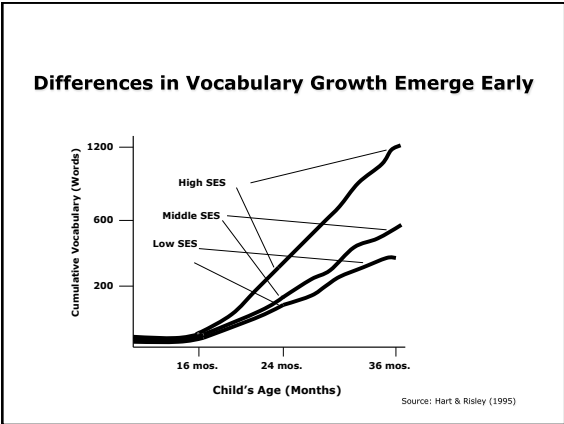
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### Social and emotional problems can impair early learning and competence

- Roughly 10% of children in kindergarten show disruptive emotional or behavioral problems. For low-income children, the prevalence is double or triple this estimate.
- Head Start teachers report that their children exhibit signs of serious emotional distress, including depression, withdrawal, and problems with aggression and antisocial behavior.
- Early childhood mental health disorders like depression, PTSD, and conduct disorders are being identified as early as age 2 and at surprisingly high prevalence.
- Children who are disruptive, have emotional or behavioral problems, or are absent do not succeed academically.

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### What is school readiness?



- Cognitive skills (letters, numbers, problem-solving, language)
- Personal skills (motivation, curiosity, persistence, self-confidence, self-regulation of behavior and emotions)
- Social skills (getting along with teachers and peers; social understanding; developing close relationships)
- Teacher perceptions
- Young children's social and scholastic lives are linked in kindergarten and the primary grades

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**Core Concepts  
of Brain Development**

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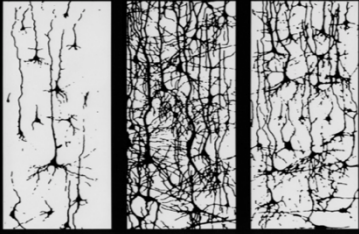
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**Experience Shapes Brain Architecture**



birth      12 months      36 months

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**Experiences  
- positive and negative -  
are incorporated into the  
developing brain architecture**

- Common human experiences
- Unique personal experiences
- Abusive, traumatic experiences



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**Brains are shaped by the  
"serve and return"  
quality of human interaction**



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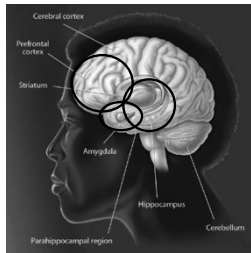
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**Cognitive, social,  
and emotional development  
are deeply interdependent  
in the early years**



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**Early childhood  
stress  
influences  
developing brain  
architecture**

Chronic, severe, and/or uncontrollable stressful experiences ("toxic stress") can lead to stress management systems that respond at lower thresholds, and may impair learning and memory

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**Positive Stress**

Brief increases in heart rate / blood pressure and mild elevations in stress hormone levels that are moderated by stable, supportive relationships.

**Tolerable Stress**

Stress responses that *could* disrupt brain architecture, but are buffered by supportive relationships.

**Toxic Stress**

Prolonged activation of stress response systems in the absence of protective relationships, which can produce physiological changes that lead to lifelong problems in learning, behavior, and health.

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What is distinctive about toxic stress?

- stress is chronic and sometimes severe
- stress is uncontrollable
- parents or other caregivers are not available to provide assistance (instead, they may be the source of stress)

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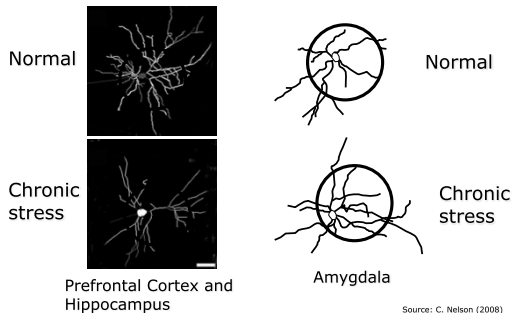
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**Persistent Stress Changes Brain Architecture**



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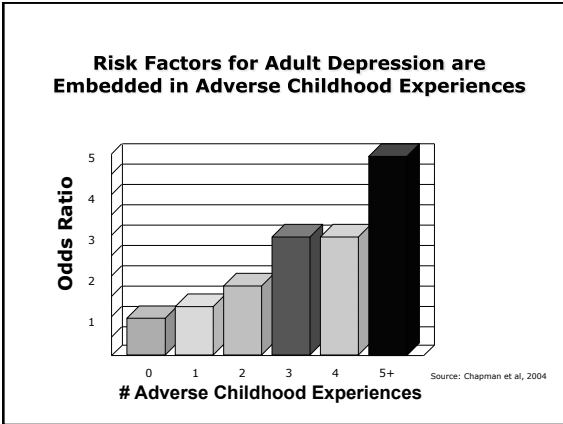
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### Early childhood mental health is vulnerable to stress

- Early signs of depression, PTSD, conduct disorders, anxiety disorders, ADHD in children as young as two, possibly earlier
- Vulnerability associated with: family disruption and parental mental health difficulties; socioeconomic distress; temperamental vulnerability is also important
- These children are often first identified in early childhood programs as emotionally dysregulated and disruptive (expulsion findings)
- These children are at risk for academic failure

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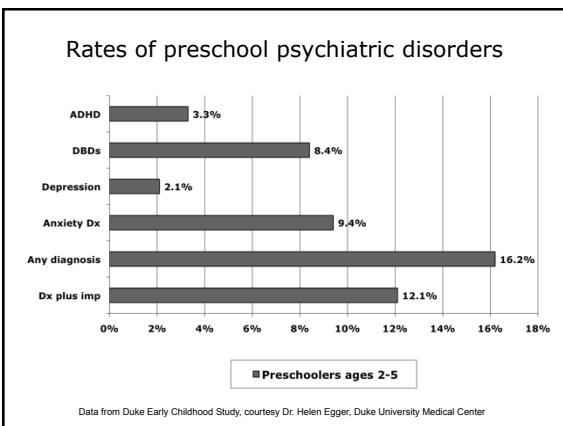
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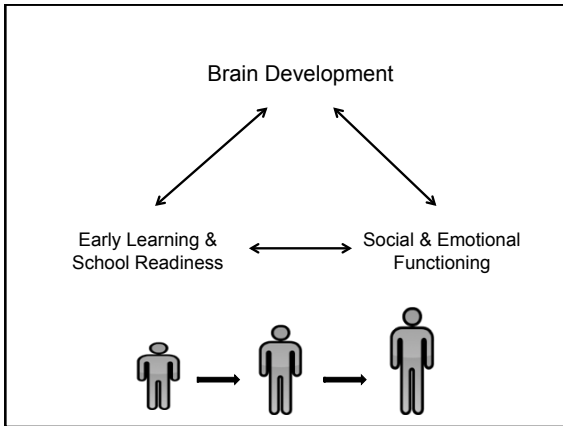
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### Primary Care Practitioners are Essential

- Developmental screening / surveillance
- Connecting families to community services
- Parent education and family support
- Medical home
- Focus on physical, behavioral, mental health
- Specialized referrals



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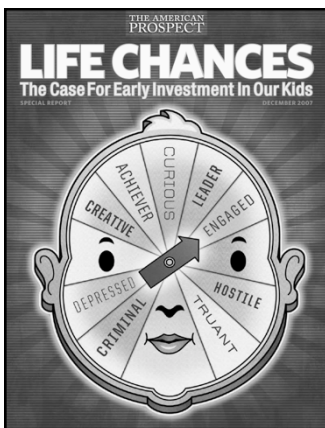
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**LIFE CHANCES**  
The Case For Early Investment In Our Kids  
SPECIAL REPORT DECEMBER 2007

ACHIEVER  
CURIOUS  
LEADER  
CREATIVE  
STUDIOUS  
ENGAGED  
DEPRESSED  
CRIMINAL  
HOSTILE  
TRUANT

Thanks!

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