Stress and Brain Development: Supporting Healthy Brain Architecture and Children’s Development

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The Foundation of a Successful Society is Built in Early Childhood

- Academic Achievement
- Employment
- Parenting of Next Generation
- Contributions to Sustaining our Communities
- Lifelong Health
Building Healthy Brain Architecture – The Ingredients

• Takes more than having the right genes
• Takes the right, supportive experiences
• Experience literally writes on our genes, determining how well our genes work
Experience Shapes Brain Architecture by Over-Production Followed by Pruning
(700 synapses formed per second in the early years)
Neural Circuits are Wired in a Bottom-Up Sequence

- Sensory Pathways (Vision, Hearing)
- Language
- Higher Cognitive Function

Birth (Months) (Years)

Human Infant is Unable to Provide Itself Adequate Stimulation for Normal Brain Development

Stimulation is Needed In Order for the Brain To Develop
The Brain Develops in the Context of Relationships
Total Gray Matter

![Graph of Total Gray Matter](image)

Hanson et al., 2014
How Does Poverty Get Into the Brain?

- Income to Needs When Child Was Three Years
- Age 3 Harsh/Unsupportive Parenting
- Age 3 Stressful Experiences
- Size of Hippocampus age 6

Luby et al., JAMA Pediatrics, 2013
Toxic
Prolonged activation of stress response systems in the absence of protective relationships.

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

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

Risks/ACEs

Protective Factors

Negative Outcomes

Positive Outcomes
Most Powerful Protective Factor

A Secure Attachment Relationship
Which is Built on Supportive Serve and Return Interactions
Secure Attachment Buffers Cortisol Response to Threatening Events

Frightened 18-Month-Olds

Increase in Cortisol

- Secure
- Insecure

Frightened 18-Month-Olds
Parenting is Stressful
• Children’s Emotions Trigger our Emotions
• Crying is an irritating stimulus, especially for non-parents
• Change in the brain’s response to crying with parenthood…but not for all and not all the time.
• We bring our own history to our parenting
What Parents Need

• Knowledge of child development; appropriate expectations.
  – Baby is spoiled
  – Baby is doing _______ on purpose

• Effective strategies for calming ourselves and unhooking from negative emotions

• Understanding our own emotions and their history

• Physical Safety

• Financial Security

• Supportive Others
Two and Three Generation Issues
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