

# Stress and Brain Development: Supporting Healthy Brain Architecture and Children's Development

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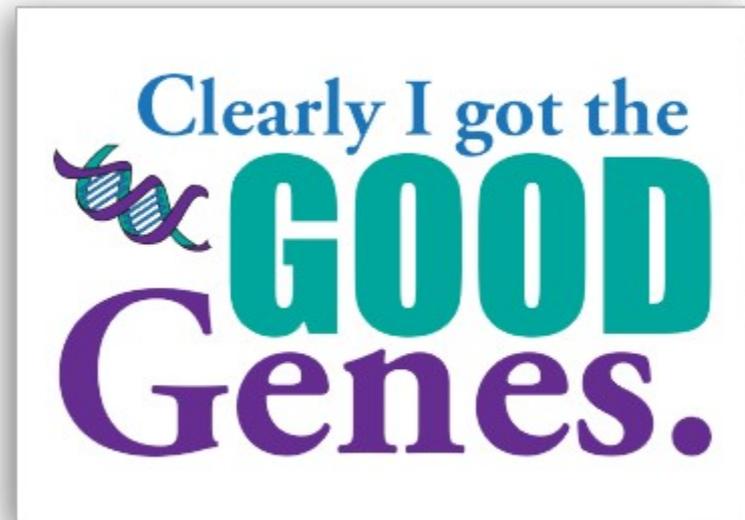
# The Foundation of a Successful Society is Built in Early Childhood



- 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)

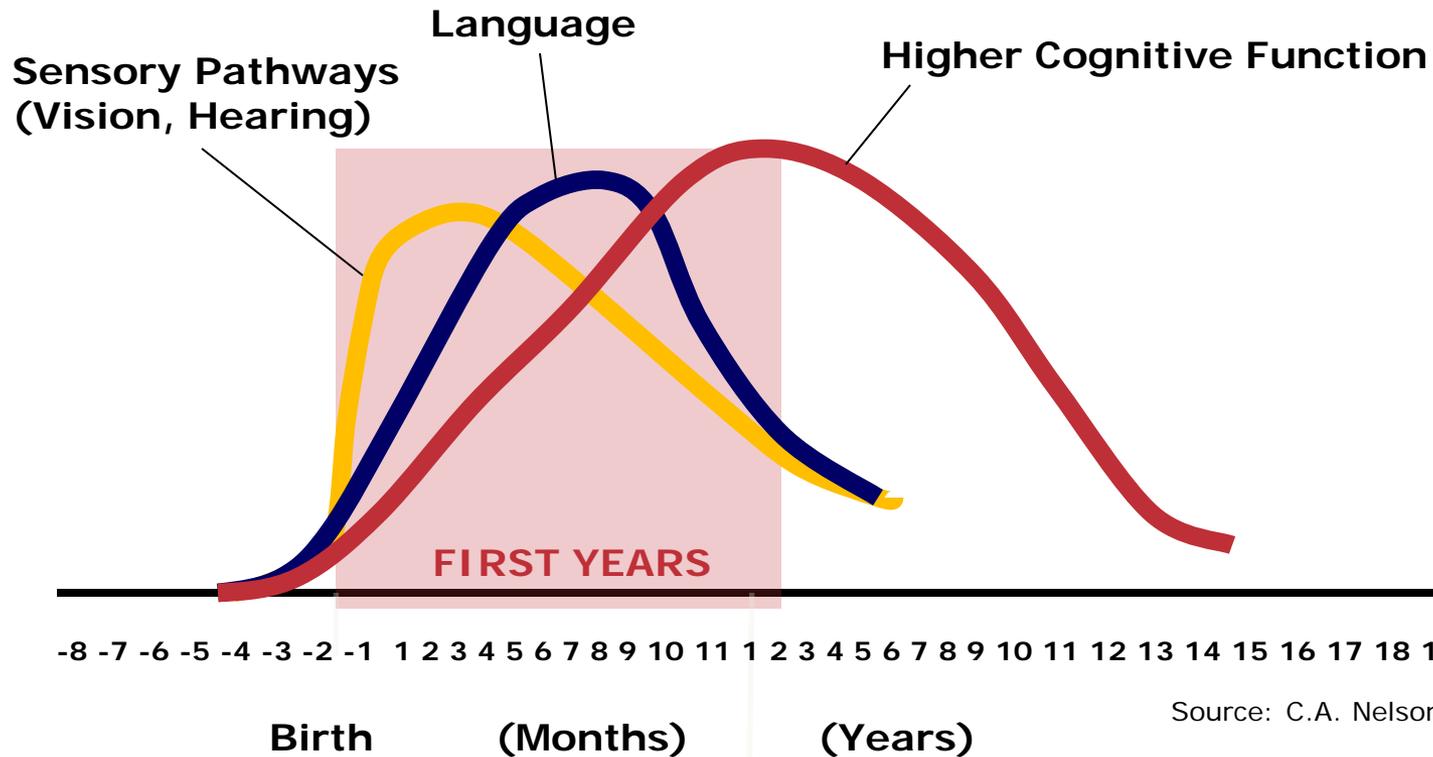


birth

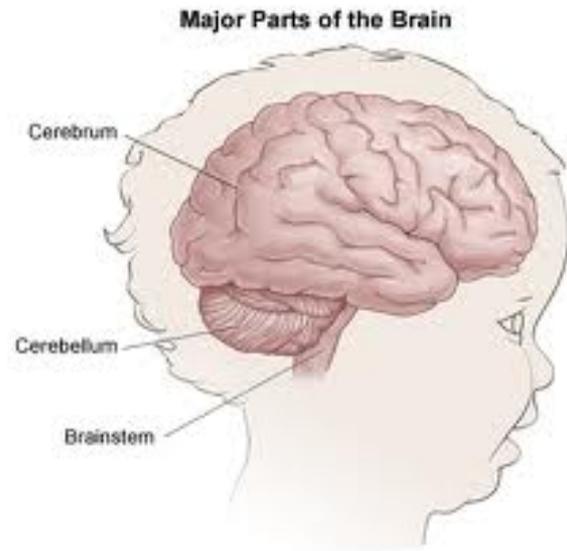
6 years

14 years

# Neural Circuits are Wired in a Bottom-Up Sequence



Source: C.A. Nelson (2000)



Stimulation is Needed  
In Order for the Brain  
To Develop



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

# The Brain Develops in the Context of Relationships

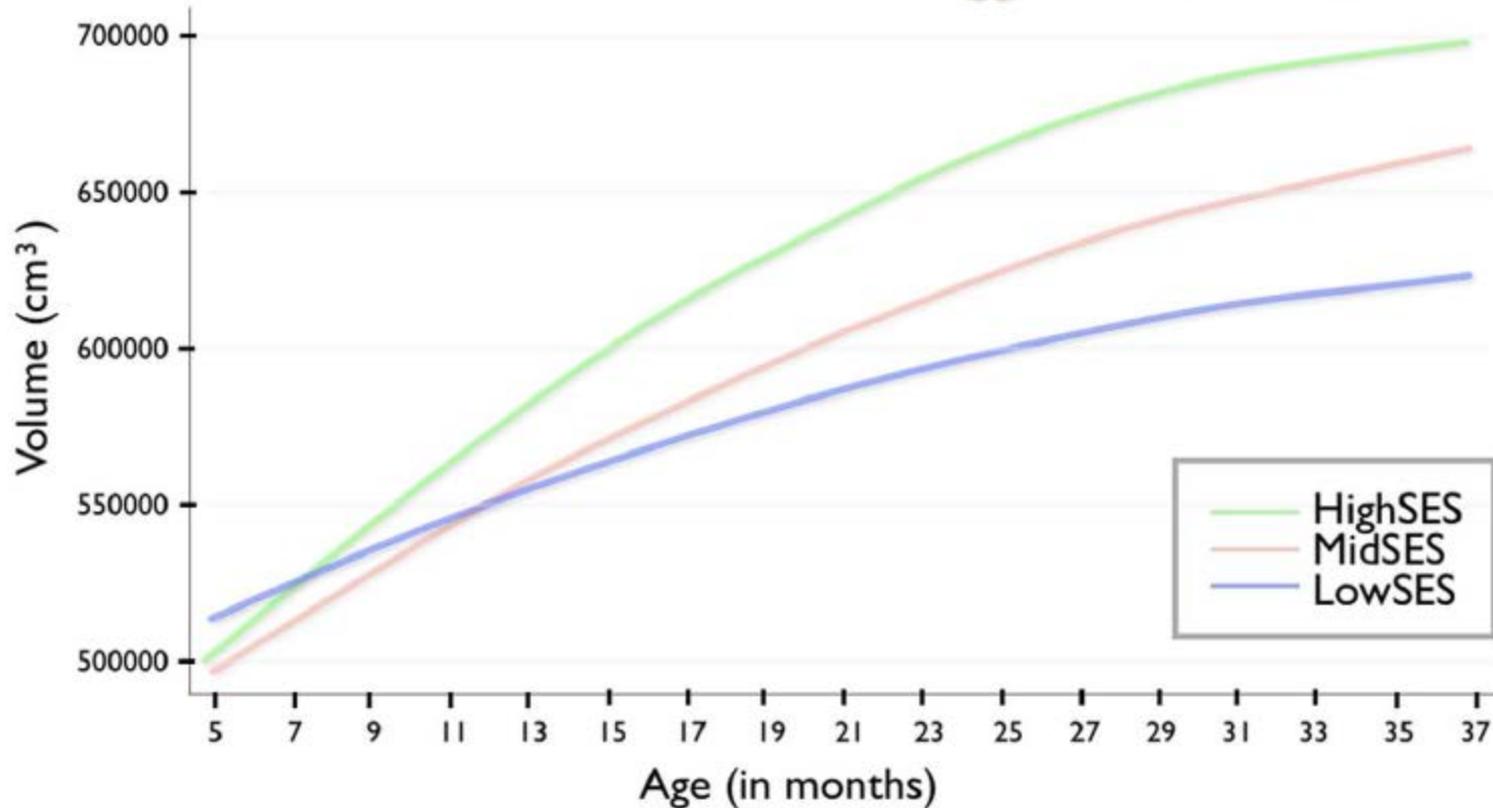




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# Total Gray Matter



Hanson et al., 2014

# How Does Poverty Get Into the Brain?



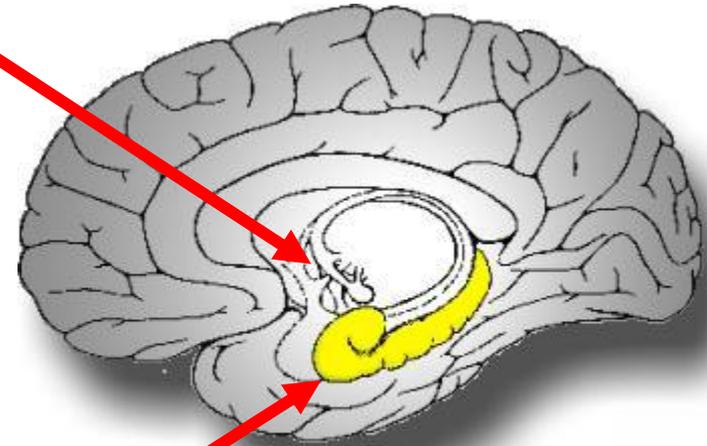
Income to Needs When Child Was Three Years



Age 3  
Harsh/Unsupportive Parenting



Age 3  
Stressful Experiences



Size of Hippocampus age 6

Luby et al., JAMA Pediatrics, 2013

# 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.

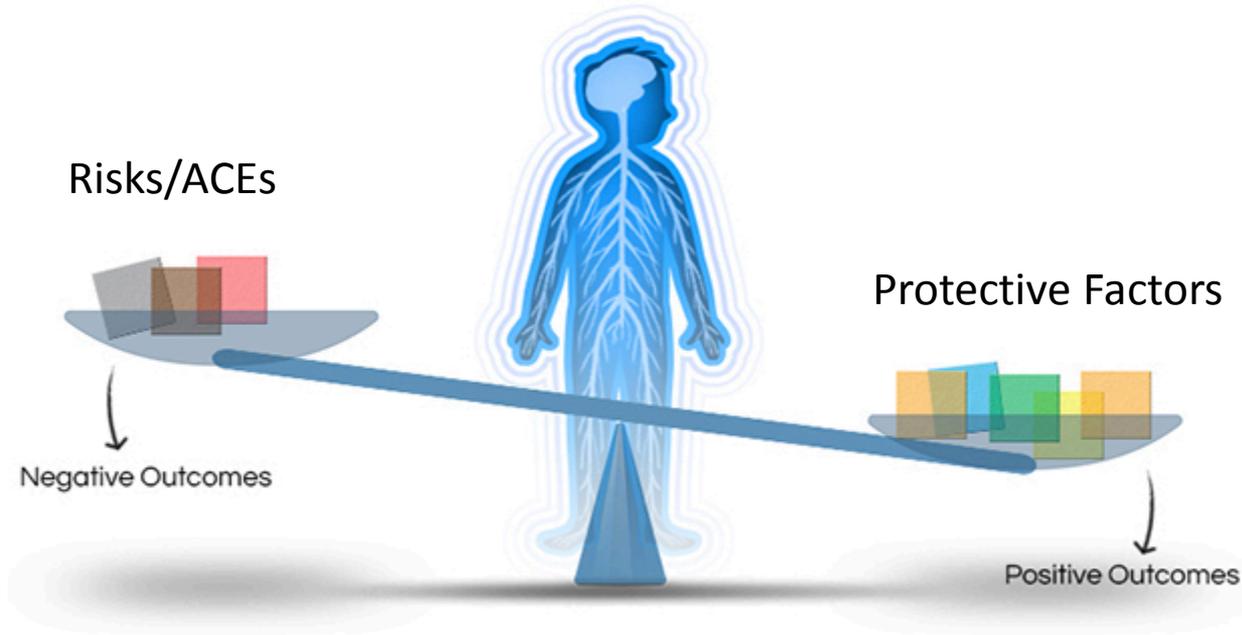
## Toxic

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



Emotion

# Build Resilience

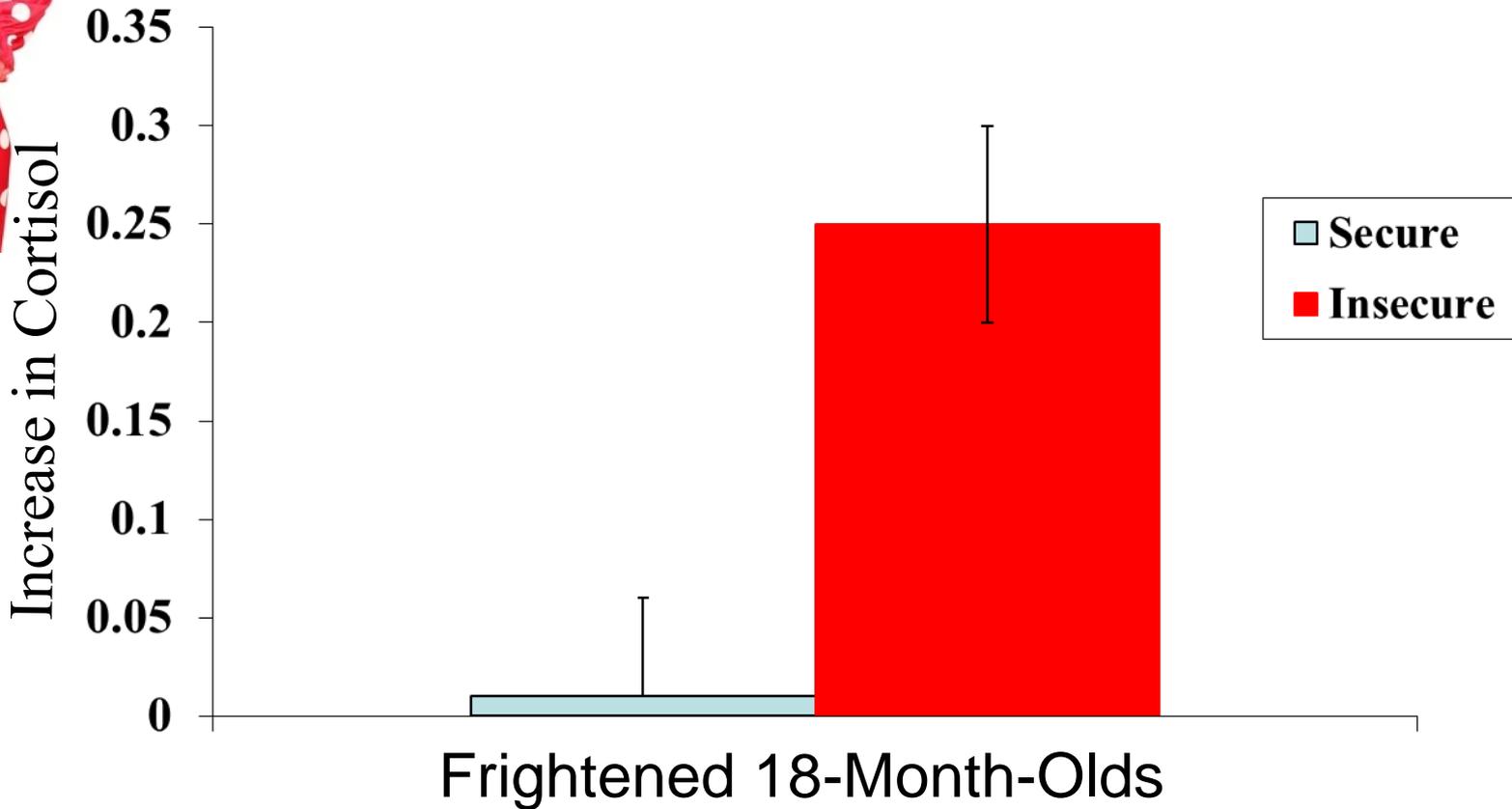


# Most Powerful Protective Factor



A Secure Attachment Relationship  
Which is Built on Supportive Serve and Return Interactions

# Secure Attachment Buffers Cortisol Response to Threatening Events



# 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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