

# Children's Developmental Health, Policies and Practices

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# Childhood as a time of sensitivity

- Humans are born especially helpless and immature compared to almost all similar sized species
- We have a protracted childhood where we continue to rely on caregivers
- Early childhood is a sensitive period which is critical in shaping brain structure and function

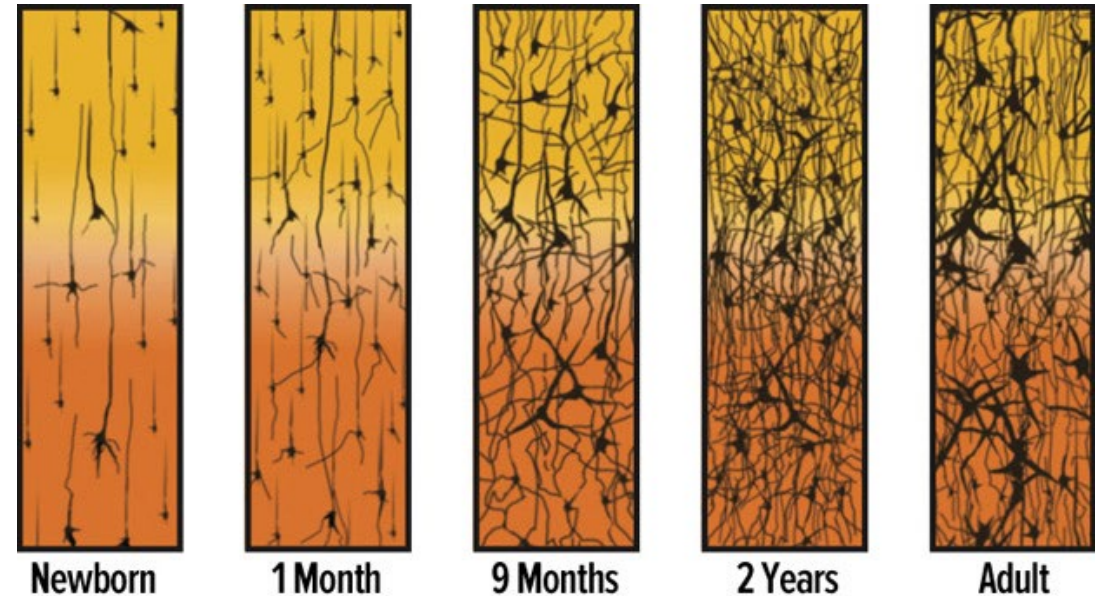


# Experience builds brains

- The brain doubles in size in the first year, and by age three it has reached 80 percent of its adult volume.
- Hormone and immune systems are also immature



Credit: Alex Grey

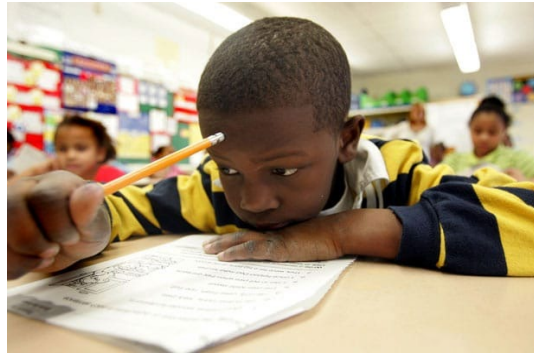


Credit: Corel, 1975

# Supportive, nurturing caregivers are the key to healthy development

- The primary context of child development is the parent child relationship. Develops the ability to handle stress.
- Caregivers don't have to be perfect.
- Some stress is even good.

# Tolerable vs Toxic stress



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

Serious, temporary stress responses, buffered by supportive relationships.

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



# Tolerable vs toxic stress

- A supportive and caring adult has the potential to
  - Calm and reduce the stress response
  - Instill the belief that the child is competent and capable
  - Teach life long problem solving strategies and coping skills
- Stress with out an adult buffer has the potential to
  - Leave children defenseless to threat
  - Active a continuous stress response and “high alert”
  - Instill learned helplessness and poor coping skills



# Consequences of toxic stress

- Toxic stress places individuals at risk for developing a host of negative outcomes
  - Health (depression, cardiovascular disease, obesity...)
  - Behaviors (smoking, drug and alcohol abuse...)
  - Life Potential (graduation rates, academic achievement...)

## The Science of Early Life Toxic Stress for Pediatric Practice and Advocacy

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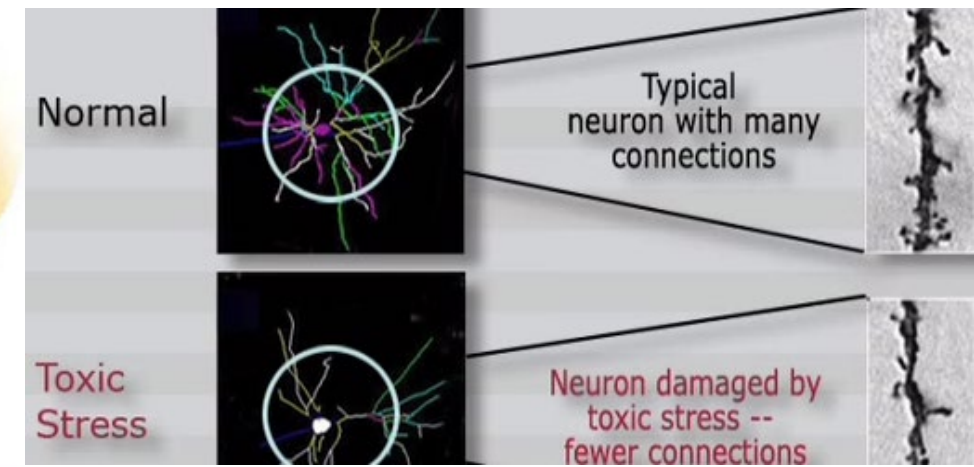
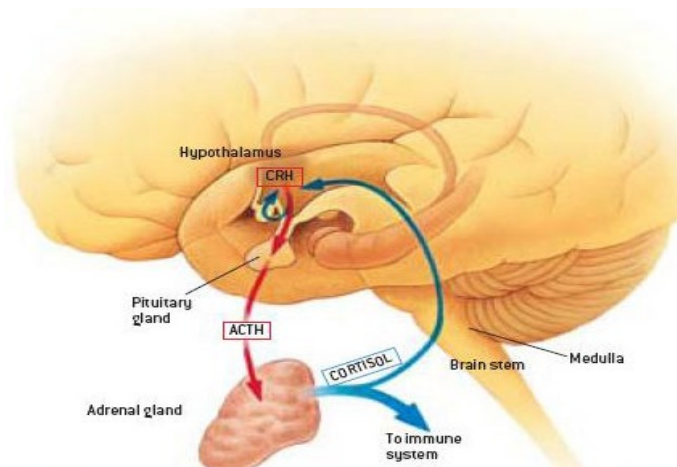
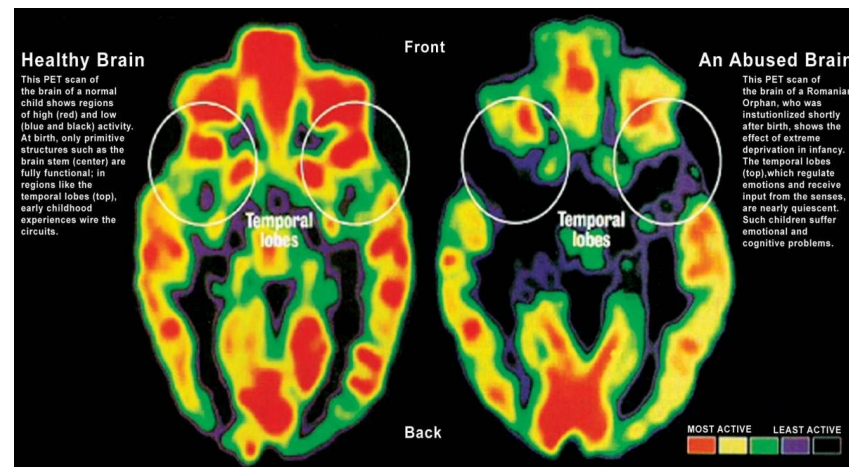
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### abstract

Young children who experience toxic stress are at high risk for a number of health outcomes in adulthood, including cardiovascular disease, cancers, asthma, and depression. The American Academy of Pediatrics has recently called on pediatricians, informed by research from molecular biology, genomics, immunology, and neuroscience, to

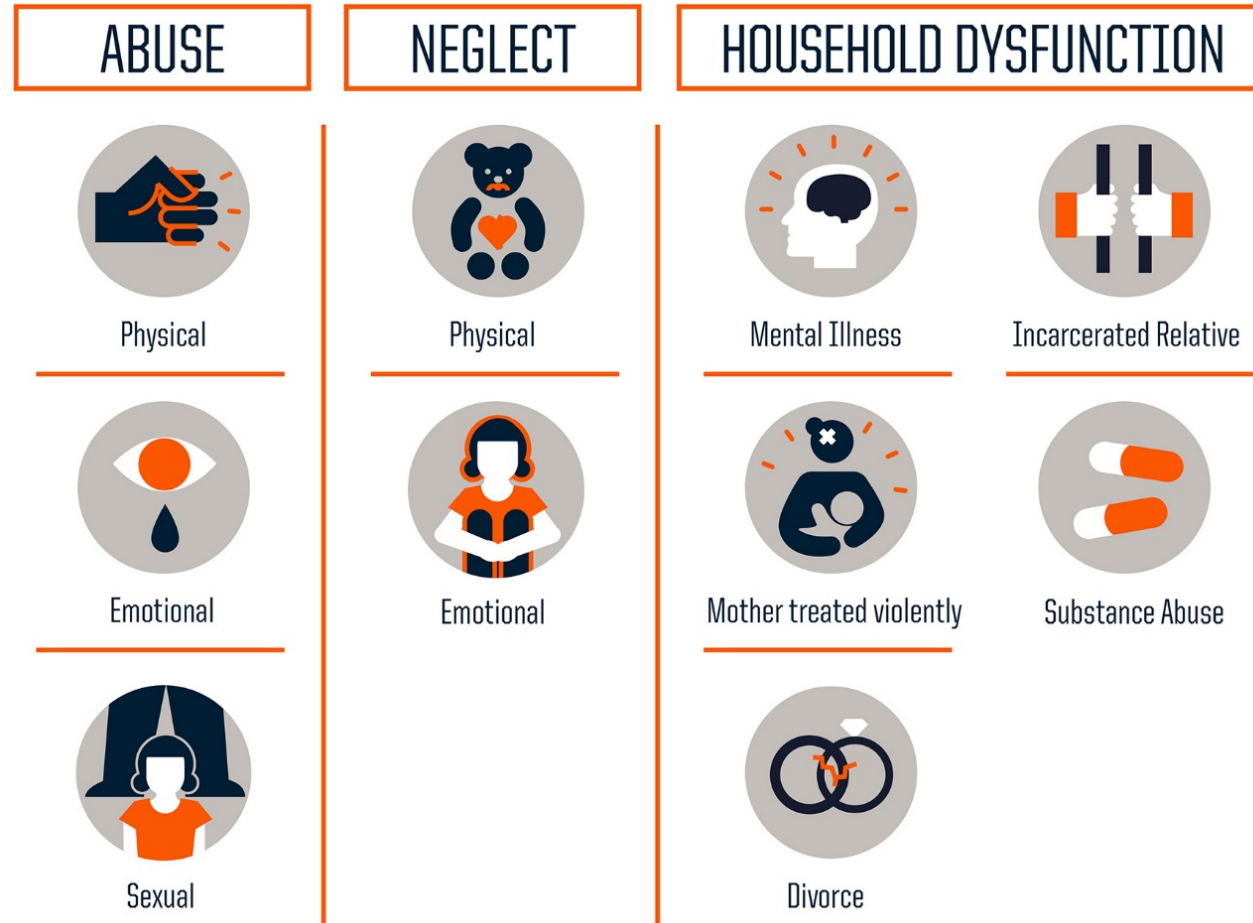
# Stress physiology and neural plasticity as the pathway

- Brain connections develop to meet the needs of the challenges at hand
  - Primed for threat
- Same for stress responsive physiological systems such as the HPA axis (cortisol)
  - Neurotoxicity (stress makes you stupid)
  - Cardiovascular disease, cellular aging, metabolic disease, psychopathology
  - Up regulation through reduced regulatory feedback, or stress sensitization





# Connecting toxic stress to Adverse Childhood Experiences (ACES)



# Limitations of ACEs

- Preventing adversity is not the same as supporting nurturing relationships and environments.
- Not all ACEs are created equal
- Severity, frequency, and timing will be deeply tied to outcomes
- ACEs are not the mechanism. Intervention on the ACE, may not create the desired outcome if the underlying mechanisms are not also impacted

# Research into action



- Preventions must target at risk populations, before birth. Stop the adversity before it happens, and before biological mechanisms are set into action.
- Invest in the first 3-5 years when brains are most susceptible to experience. Support nurturing relationships.
- Understanding the mechanisms from early adversity to later health and wellbeing allows us to target interventions toward those specific brain and physiological pathways.