

How Trauma Affects Learning in Pre-school and School-Age Children

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Learning Objectives

At the completion of this activity, participants will be able to:

- describe the critical importance of secure attachment with a caregiver for child development/learning
- discuss how trauma affects the neurobiology of the brain during development
- identify a child who may be in a fight or flight state and employ techniques to better soothe the child.

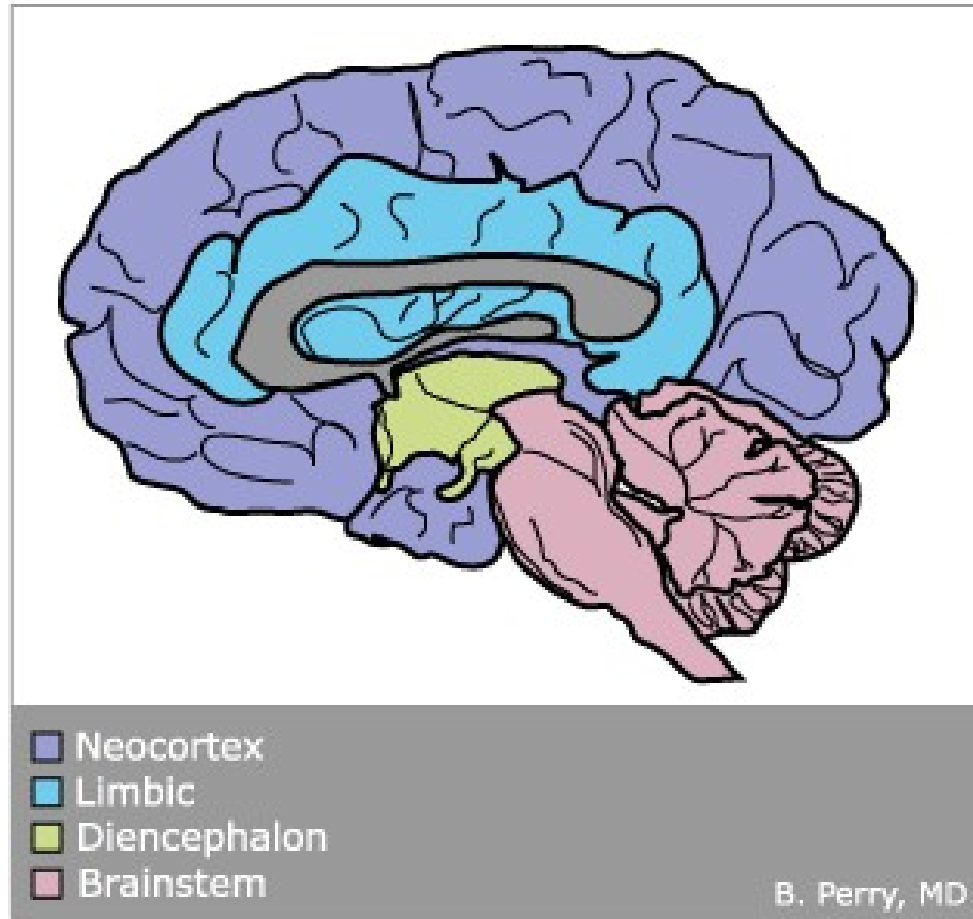
Case vignette: Joey

- 5 yo male referred for psychiatric medication management with chief complaint of poor attention, difficulty focusing, impulsivity, hyperactivity, fidgeting, aggressive behavior, poor sleep and class disruption.
- Pertinent reported past history:
 - In-utero and birth history were normal
 - Developmental history including gross and fine motor skills, language abilities and social engagement were normal
 - Past medical history was normal
 - Family psychiatric and medical history were normal
 - Joey was forced to transfer schools because of his poor behavior.
 - During initial evaluation parents did not disclose that Joey and his parents were separated for 1 year during a CYFD investigation for physical abuse, concern for parental substance dependency and he had been reunited with his parents for 1 month prior to his appointment.

The Brain Matters

- The human brain is the organ responsible for everything we do. It allows us to laugh, walk, love, talk.
- For each of us, our brain is a reflection of our experiences and is shaped early.
- The brain is a fundamental social organ. It reflects our environment.

The Human Brain



- organized by right & left hemispheres divided by the central sulcus
- organized by four different lobes:
 - frontal, parietal, temporal, occipital

Cortical Neuron

Brain Plasticity:

Connections are formed and altered by experience.

- Babies highly attuned to their environment
- Massive synaptic growth in first two years.
- Pruning starts at 8 months
- Pruning regulated by emotional interactions with caregivers

What is attachment?

Essential characteristics:

- Instinctive social behavior with a biological function readily activated especially by the mother's departure or by anything frightening
- Stimuli that most efficiently terminate the systems are sound, sight or touch of their mother
- Product of the activity of a number of behavioral systems that have proximity to the mother as a predictable outcome

Goal:

- Seeking not just proximity but access to an attachment figure who is emotionally available and responsive.

Attunement = being aware of and responsive to another.

Allan Schore, PhD. "Effects of a Secure Attachment Relationship on Right Brain Development, Affect Regulation, and Infant Mental Health."

“There is no such thing as a baby – meaning that if you set out to describe a baby, you will find you are describing a baby and someone else. A baby cannot exist alone, but is essentially part of a relationship.”

-Donald Winnicott, MD

Long term Memory systems

- Implicit memory
(amygdala)
- Explicit memory
(hypothalamus)

Danger as a continuum From Stress to Trauma

Culturally accepted,
Developmentally
Expectable Stress

Emotionally Costly (Toxic)
Stress

Traumatic Stress

Key Features of Trauma

A traumatic event is defined by

- Unpredictability
- Horror
- Helplessness

& it overwhelms the capacity to cope

Psychobiology of attachment & separation

- When removed:
 - Behavioral agitation
 - Increases in HR and body temperature
 - Depression
 - Sleep disturbances (decrease in REM and increase in arousals and time spent awake)
 - Dysregulation upon reunion with caregiver but it is the caregiver's response that is the critical variable.

The Fear Response

How does this trauma and separation affect Joey?

- Parents continue to deny the trauma and blame Joey calling him “a liar.”
- The same people he has to trust are the same people who failed to protect him and caused him harm.

- alexithymia
- sleep disturbances-
restless/insomnia
- eating disturbances
- aggressive behavior
- oppositional
- withdrawn
- anxious

- poor attention
- hyperactivity
- impulsivity
- hypervigilant
- increased heart rate 92-
100

Emotional Memory and Physiological Hyper-arousal

Hyperarousal

- Fight or flight
- Increased sympathetic activation
- Noradrenergic networks
- Older children
- “Activation”

Dissociative

- Prepare to be injured
- Endogenous opioids, dopaminergic
- Increased vagal activity and decreased heart rate, decreased peripheral sensation
- Younger children
- “Disengagement”

Toxic effects of stress

Components of the stress response system:

- Sympathetic Adrenomedullary Nervous system (spinal cord) -> release NE from adrenal medulla
- Various neurotransmitter systems
- Immune system
- Hypothalamic-Pituitary-Adrenocortical Axis -> release of cortisol

Brain abnormalities associated with child abuse

- Limbic irritability
- Deficient Development and differentiation of the left hemisphere
- Deficient left-right hemisphere integration
- Abnormal activity in the cerebellar vermis.

Childhood abuse affects corpus callosum

The morphology of the corpus callosum is significantly affected by early neglect (as well as physical abuse and sexual abuse).

Hippocampal change

- Prospective longitudinal study of emotional development in preschool children

Hippocampus is involved in stress regulation and emotion processing

In summary: trauma effects on overall learning

- Self-regulation is key to achieving new milestones and sign of brain growth, trauma disrupts the regulatory system
- Impulsivity
- Hypervigilance to their environment -> difficulty with attention, focus and memory
- Misreading of cues leading to social challenges (withdrawn or bully behavior)
- Receptive and expressive language challenges

In sum: It is a challenge to learn and ingest new information if one is constantly attending to their environment or lack the integrative brain capacity to adequately store and retrieve information.

What are we going to do for Joey?

- Regulation of “self” precedes emotional regulation or academic skills
- Social-emotional regulation precedes all other skills
- Integration of his neuronal networks depends on his development of secure adult attachments.

Neurosequential Model of Therapeutics

- Goal: find a set of therapeutic activities that meet the child's
- current needs in various domains of functioning.
- Brainstem and Diencephalic functions : music, dance, yoga, drumming, sports, therapeutic massage, hippotherapy.
- Limbic and Cortical functions: consider insight oriented and cognitive behavioral interventions.

Mindsight – 3 elements

- Insight = your own past, present and near future
- Empathy = to sense the inner life of another person
- Integration = to create an interconnected whole -> cohesion

Legacy of Trauma

Adult

(classified unresolved AAI)

Lapses in monitoring of
reason or discourse

Dissociative tendencies/
Psychopathological behavior

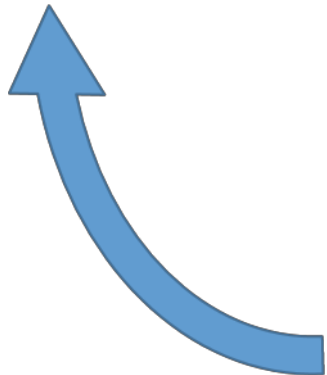
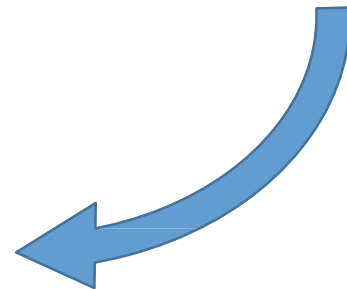
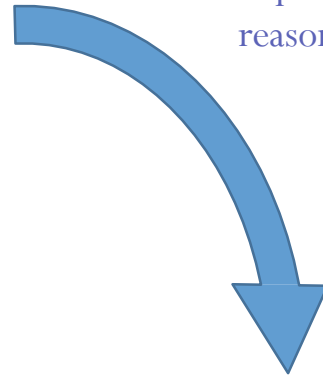
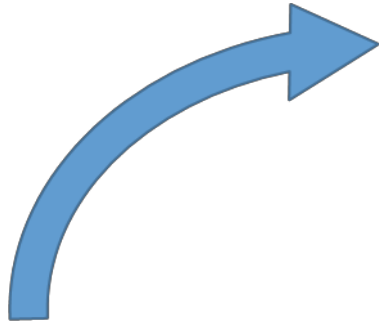
Frightening behavior-
Canine exposure &
looming
Dissociative trauma

Trauma

Baby
(classified disorganized)

Paradoxical
dilemma

A. Sroufe, PhD. "Attachment Theory: A Humanitarian
Approach for Research and Practice Across Cultures" Inter-
american Attachment Conference



Relationships are Central

- Infant/child – Family members
- Child – Other caregivers (teachers, childcare providers, extended family, community)
- Service providers – Family members

“Treat people as if they were what they ought to be and you help them become what they are capable of being.”

-Johann Wolfgang von Goethe