Pathways to Professional Development

Building Foundations in Infant and Early Childhood Mental Health

The Interpersonal Nature of Brain Development and The Need for Safety

Gerard Costa, Ph.D., IMH-E®-Clinical Mentor

New York Center for Child Development
Professor, Department Family Science and Human Development
Founding Director, Center for Autism and Early Childhood Mental Health
Montclair State University (NJ)

Pathways to Professional Development Building Foundations in Infant and Early Childhood Mental Health

Pathways to Professional Development was developed to build workforce competence and to prepare professionals working in the perinatal and birth to 5 periods

- 21 webinars focused on the foundations of Infant and Early Childhood Mental Health.
  - Provided live virtually
  - Recorded for viewing as LMS modules

- Diagnostic Classification of Mental Health And Developmental Disorders of Infancy and Early Childhood (DC:0-5) offered virtually and in-person.

  - View all offerings here→ https://www.ctacny.org/special-initiatives/pathways-to-professional-development/

The aim is to develop a well prepared and competent workforce trained to **identify** and address mental health concerns early, to **promote** awareness of mental health, to **prevent** long-term problems and to **intervene** to help children stay on developmental track.

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Pathways to Professional Development Webinar Series

- **Module I:** Developmental and Psychodynamic Foundations of Infant and Early Childhood Mental Health – 6 Webinars
- **Module II:** Assessment, Diagnosis, Formulation and Professional Development – 4 Webinars
- **Module III:** Risk, Stress, Protection and Resilience – 2 Webinars
- **Module IV:** Through the Lens of Family, Community and Culture – 2 Webinars
- **Module V:** Specific Disorders: A Closer Look: 4 Webinars
- **Module VI:** Helping in Infant and Early Childhood Mental Health – 3 Webinars

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Who we are

These trainings are funded by the New York State Office of Mental Health (OMH) and provided by the New York Center for Child Development (NYCCD) in collaboration with CTAC.

- **New York Center for Child Development** (NYCCD) has been a major provider of early childhood mental health services in New York with a long history of providing system-level expertise to inform policy and support the field of Early Childhood Mental Health through training and direct practice.

- **NYU McSilver Institute for Poverty Policy and Research** houses the Community and Managed Care Technical Assistance Centers (CTAC & MCTAC), Peer TAC, and the Center for Workforce Excellence (CWE). These TA centers offer clinic, business, and system transformation supports statewide to all behavioral healthcare providers across NYS.

  - **NYCCD and McSilver** also run the **NYC Early Childhood Training and Technical Assistance Center(TTAC)** which offers ongoing training and technical assistance for those working during the perinatal period to age 5

https://ttacny.org/

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Module 1- Webinar 3. - Overview

The Interpersonal Nature of Brain Development and The Need for Safety

The human brain is a relational organ largely formed by interpersonal experiences. The period of life from pregnancy through age two is characterized by an unparalleled "growth spurt" of connections in the brain.

This presentation will provide Infant and Early Childhood Mental Health (IECMH) professionals and those who work with the 0–6-year-old population with knowledge about the unfolding nature of the infant brain, and the ways in which relationships form the human brain – creating actual physical and chemical changes that for good or for bad, form the bases for mental – and brain health – in infants and children, setting the stage for whom they become!

We will examine this new science through ideas such as the "neuro-relational" framework and interpersonal neurobiology. We will learn that most of what we become and most of the unique wiring of our brains are *experience dependent* –all related to the interconnectedness of our biological "givens" and the experiences – mostly the RELATIONSHIPS - we have in our lives. We will also learn about the critical need for "safety" as brain and psychological "imperatives".

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Infant Mental Health
A field of study

Infant Mental Health is an interdisciplinary field concerned with the optimal physical, social, emotional and cognitive development of the human infant within the context of his/her family. The infant is principally viewed within a primary relationship – often, but not always the mother - and this pair or *dyad* is the principal focus of infant mental health.

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Infant Mental Health
The emotional capacities

The capacity that infants and children develop to:

- Self regulate
- Experience the full range of human emotions
- Engage in loving, reciprocal relationships
- Represent the world in thought and language
- Engage in shared emotional thinking and relatedness
- Become intimate and care for others interdependently
- Engage in productive activities

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What We Plan to Cover

- What is the “Neurorelational Framework”
- The Power of Relationships: Serve and Return
- The Face to Heart Connection: Safety and Polyvagal Theory
- The “Way we must feed”
- An IECMH- Informed Framework - AGILE

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Neurorelational Perspective
Seven Notions

The Neurorelational Perspective - (e.g. Neurorelational Framework – NRF, Lilas & Turnbull, 2009) is rooted in the following notions:

1. The human brain is a “social organ” formed through emotional, interpersonal “lived” relationship experiences, and the earliest experiences form foundational circuits that support higher brain/mental systems. Through repeated experiences, brain circuits and “procedural memories” are formed that serve as beliefs and organizing “expectancies” about life.
2. The brain is organized with specialized “brains” – and one model, the “triune” brain describes three levels (lower to higher): 1) the “reptilian brain”, 2) the Limbic system and 3) the Neocortex. The first two levels represent the “survival brain” and the third level represents the “thinking brain”.
3. Stress can disrupt brain systems, and when the stress load is too high, the “survival brain” activates and the “thinking brain” is derailed.

Neurorelational Perspective
Seven Notions

4. Understanding development, problems and solutions requires an integrated, multidisciplinary process.
5. Stress is normal and can promote growth, but mental health and developmental problems emerge when stress levels are unmanageable. (e.g. Shanker, 2016)
6. Individual differences exist and must be honored in support and intervention systems.
7. The brain changes through experiences mediated through relationships.

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Relevance to the IECMH Field

- Our brains are formed from early and repeated experiences – to be open, empathic, loving, and reflective or to be closed, fearful, angry and reactive.
- You form relationships with children who have often suffered early and repeated trauma, disruptions and insecurity.
- You will be treated by children and families not only based on who you really are, but on who you remind them of. **This old notion of TRANSFERENCE is both psychological and neurobiological!**
- When you REACT to behavioral challenges in angry, fearful and hurtful ways, children will react to you based on both ***who you are and who you remind them of***.

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Relevance to the IECMH Field

- This happens below the RADAR – unconscious to unconscious – brain to brain!
- Our brains need to first feel safe – then calm – then open to words and ideas.
- You first goal is NOT to change the behavior of the child, but to first CHANGE YOURSELF!
- You must learn to:
    - Be Reflective
    - To Pause and wonder (MENTALIZE)
    - Help the children do the same!

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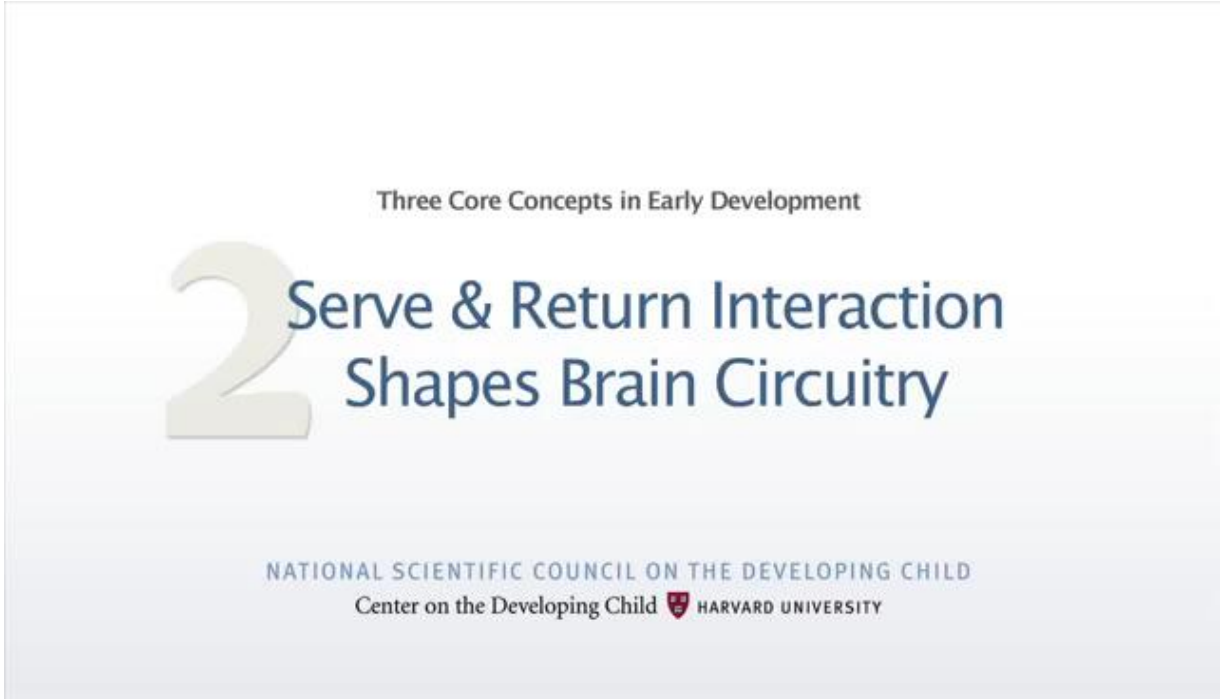
Serve and Return



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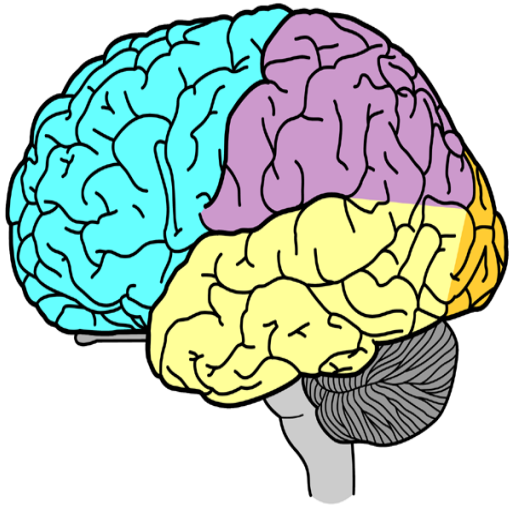
What we know
about children, brains and relationships!



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The Brain

PARIETAL	Intelligence, language, reading, sensation
FRONTAL	Behaviour, intelligence, memory, movement
OCCIPITAL	Lobe, vision
TEMPORAL	Behaviour, hearing, speech, vision, memory
CEREBELLUM	Balance, coordination
BRAIN STEM	Blood pressure, breathing, heartbeat, swallowin

Source of brain image: https://brainconnection.brainhq.com/2016/12/09/your-amazing-brain/

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The Brain and Numbers to Know!

- By 5 months gestation, the fetus has 100 billion neurons – the amount of the adult cortex, and the number of stars in the Milky Way
- 20% of the neurons are interconnected related to genetics and intrauterine life.
- 80% of the connections are formed through the nature of experiences and interpersonal relationships.
- Each neuron can form up to 10,000 connections!
- Connections (synapses) can occur at the rate of 700/second in the first years of life.
- In the first years of life, connections are formed more easily than they are broken!

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What we now know about the brain in infants and young children?

- The right side of the brain (affect, rhythm, tonality) comes “online” before the left brain!
- The sub-cortex – particularly the amygdala – is “wired” and interconnected, early in development through the nature of the earliest relationships.

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What we now know about the brain in infants and young children?

- Children in securely attached relationships have brains that are more efficiently organized!
- The baby's brain is more sensitive to affective, gestural and intonational cues ("musicality") than the words themselves!

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BUT – Even benign – "good" things may be frightening!

Consider the "Jack in the Box" Moment

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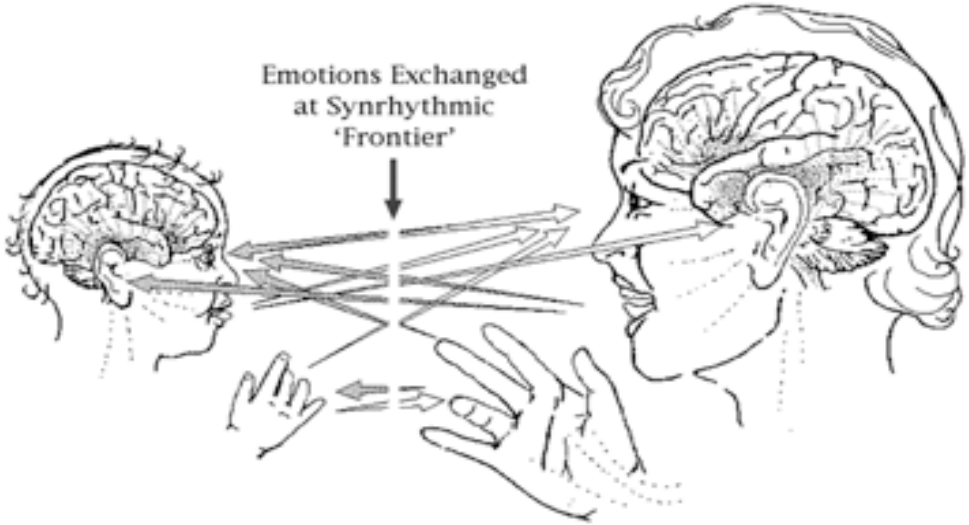
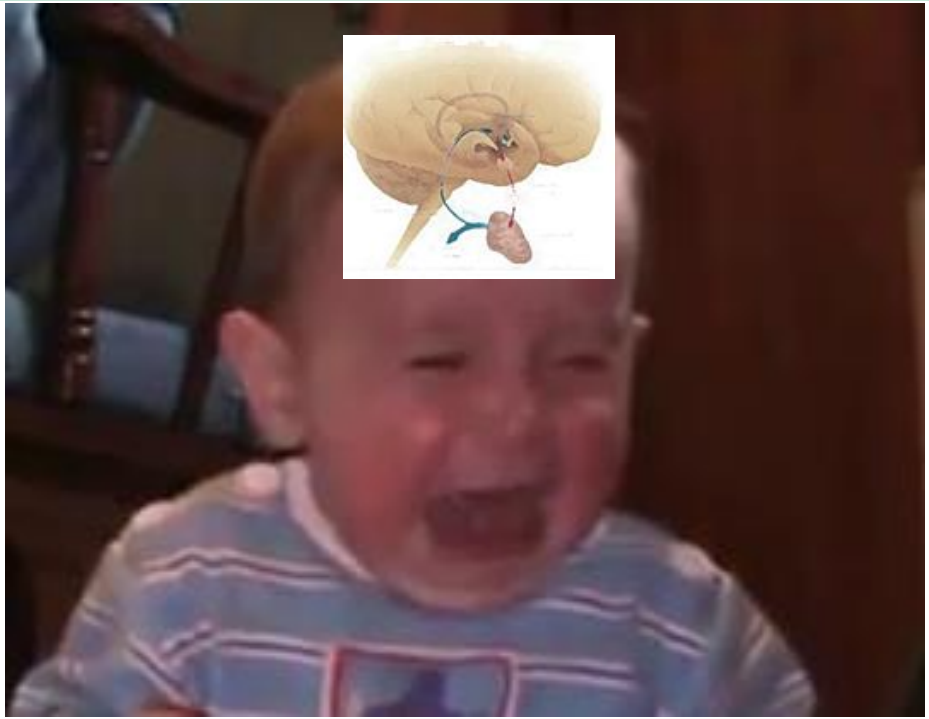

Emotions Exchanged
at Synrhythmic
'Frontier'



While the ways in which the brain forms from conception are organized by genes, the brain is fundamentally……

A social organism that is developed through interactions and relationships!

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Based on Dan Stern "schema-of-being-with"

Our "lived experiences" are fused, integrated, dynamic unfoldings of:

Somato-psychologic-ideational- affective - interpersonal bundles

We develop representations, "anticipations" and affective-neurological- behavioral responses to ourselves and others.

Repeated patterns become "procedural memories" for "good" or "for bad".
"Neural signatures"/"schema-of-being with"

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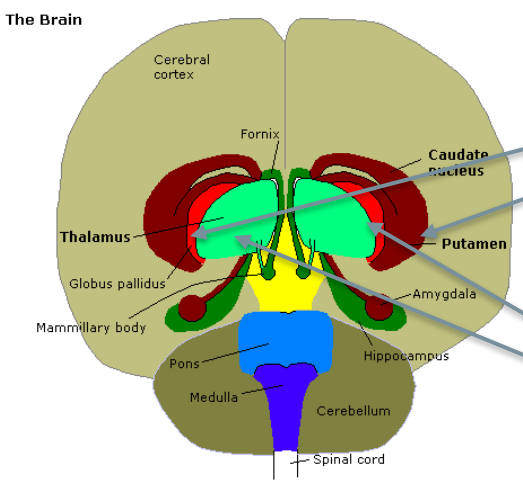
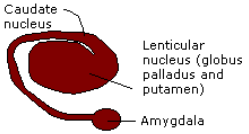


The brain as viewed from the underside and front. The thalamus and Corpus Striatum (Putamen, caudate and amygdala) have been splayed out to show detail.

Corpus Striatum



Amygdala Social Processor

Hippocampus
Memory Processor

Source: Anatomy only
https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=2ahUKEwiBv7XpqobeAhXxQd8KHSxqDXgQjRx6BAgBEAU&url=https%3A%2F%2Fen.wikibooks.org%2Fwiki%2FConsciousness_Studies%2FThe_Neuroscience_Of_Consciousness&psig=AOvVaw21YxhbeosgeG6HpGLJlanQ&ust=1539620331481051

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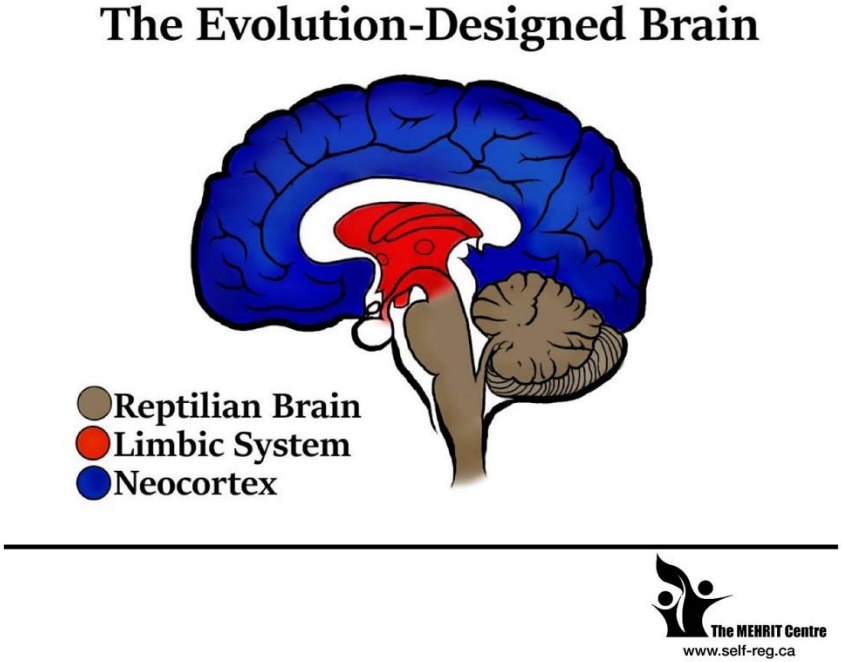
The Triune Brain



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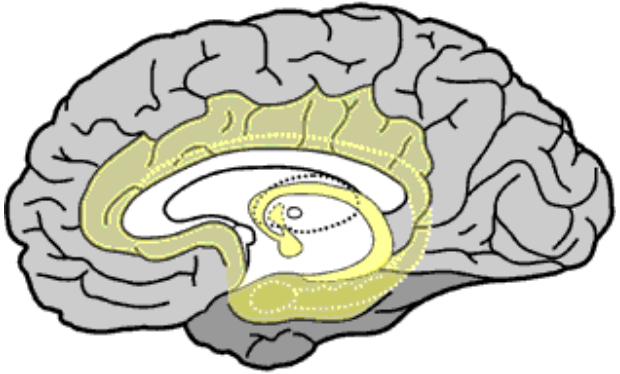
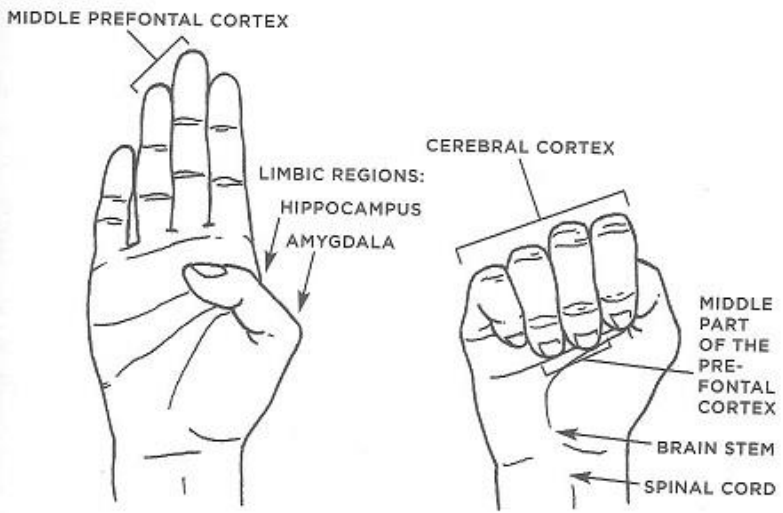
https://brainconnection.brainhq.com/2016/12/09/your-amazing-brain/



Amygdala

This structure is part of the Limbic System- and in the development of brains in babies, this structure (based on real experiences with caregivers and the world) begins to get “wired” to “process” (interpret the meaning of) new experiences. Because the amygdala is connected to other brain regions, what happens in the amygdala affects the entire brain!


MIDDLE PREFONTAL CORTEX
LIMBIC REGIONS:
HIPPOCAMPUS
AMYGDALA
CEREBRAL CORTEX
MIDDLE PART OF THE PRE-FONTAL CORTEX
BRAIN STEM
SPINAL CORD
Place your thumb in the middle of your palm as in this figure.
Now fold your fingers over your thumb as the cortex is folded over the limbic areas of the brain.

Daniel Siegel
The "Hand Model of the Brain"

"....Lift up your fingers and you'll have an image of how we 'flip our lids' and head down the 'low road' in our interaction with others."

Mindsight (2010), p. 22

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Unlike Las Vegas….

. *What happens in the amygdala does **NOT** stay in the amygdala!*

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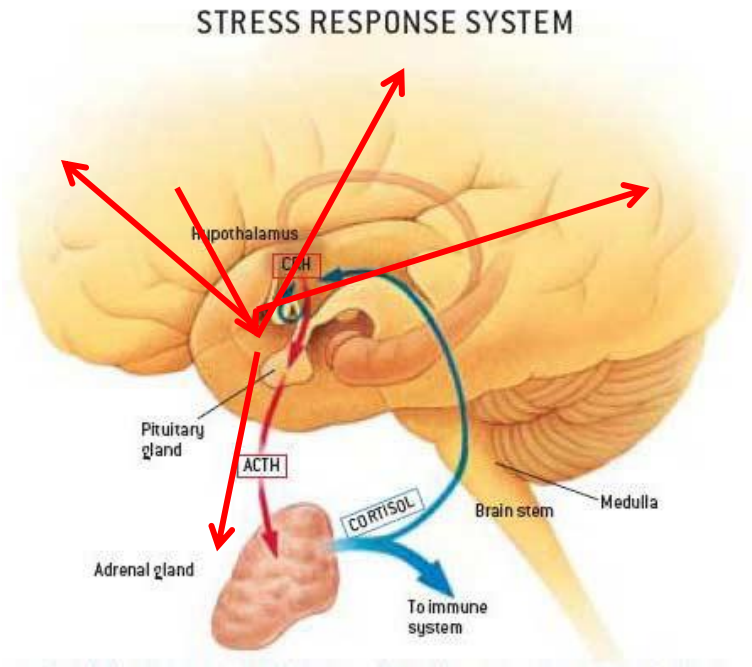

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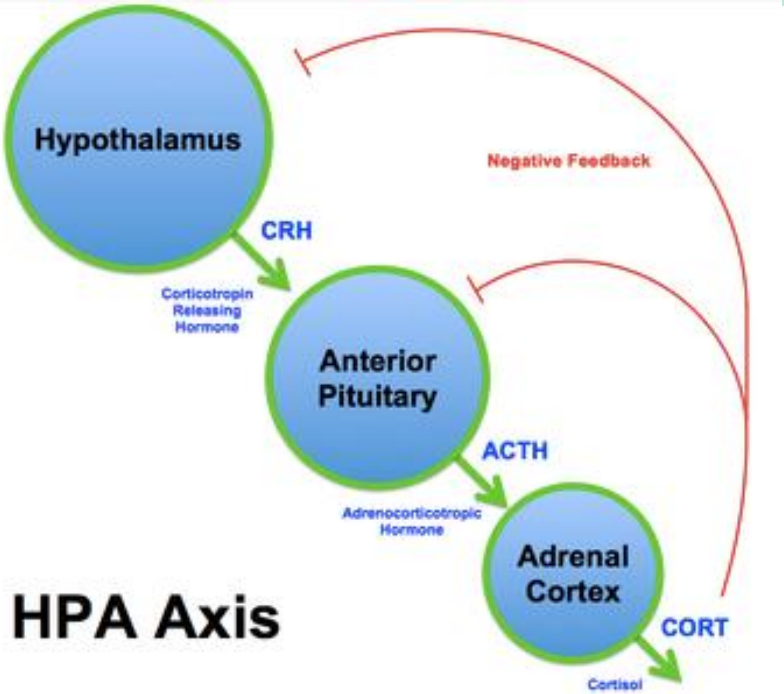
Hypothalamic-Pituitary Adrenal (HPA) Axis

Fear
Trauma
Danger



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BUT….
Allan Schore (1994)

The mother's limbic system communicates directly to the infant's limbic system!

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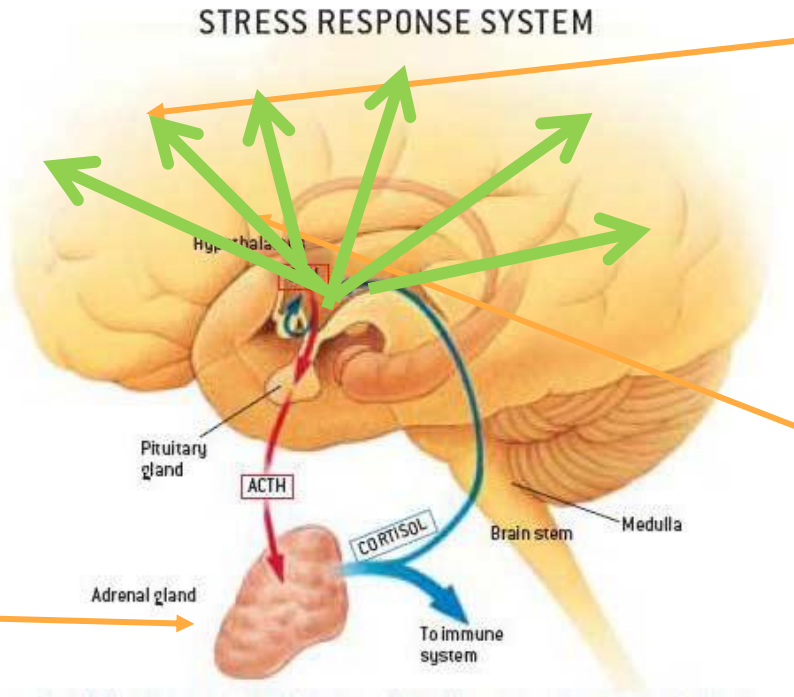
Prefrontal Cortex engaged for thought and reciprocity

Elevated Positive Mood Centers in Cortex Activated



HPA Not Activated

Adrenaline “rush” <u>not</u> activated

Source- Anatomy only: https://www.behance.net/gallery/59621145/The-Dangers-of-High-Cortisol-Levels

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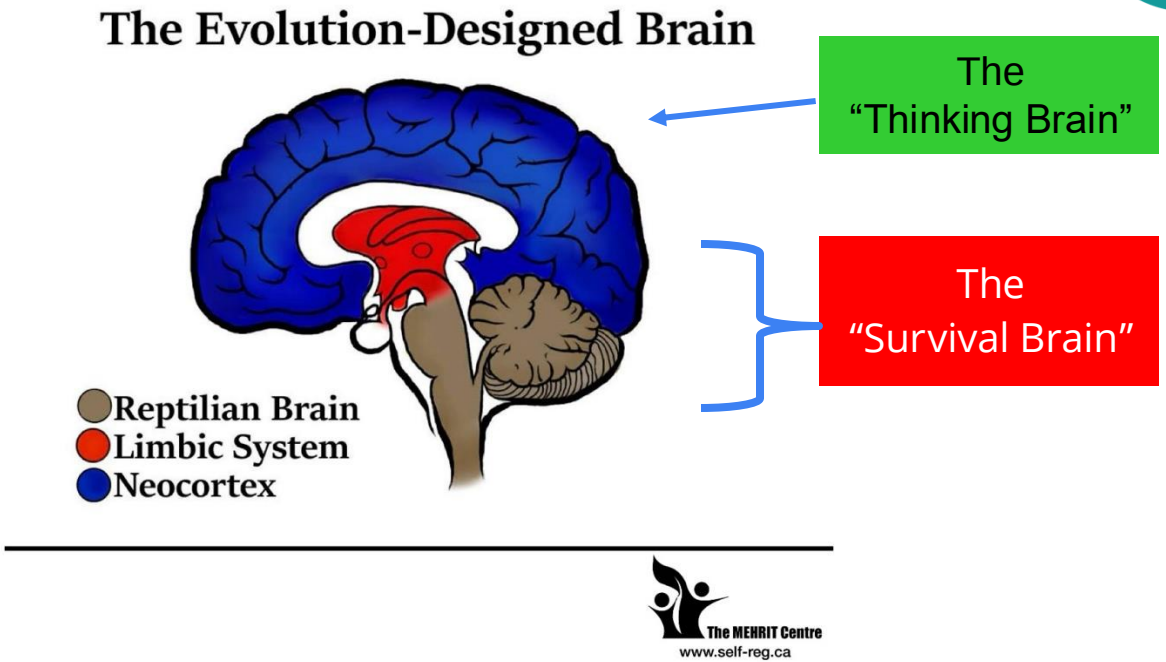
The Triune Brain



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Relationships and the Brain

1. **Stress Regulation**
2. **Engagement – attunement and contingency**
3. **Reciprocity – "Serve and Return"**
4. **Emerging shared representational thinking- mentalization**
5. **Textured communications and "growth of the mind**

Perhaps….

Socio-Emotional Development

Social Emotional Learning

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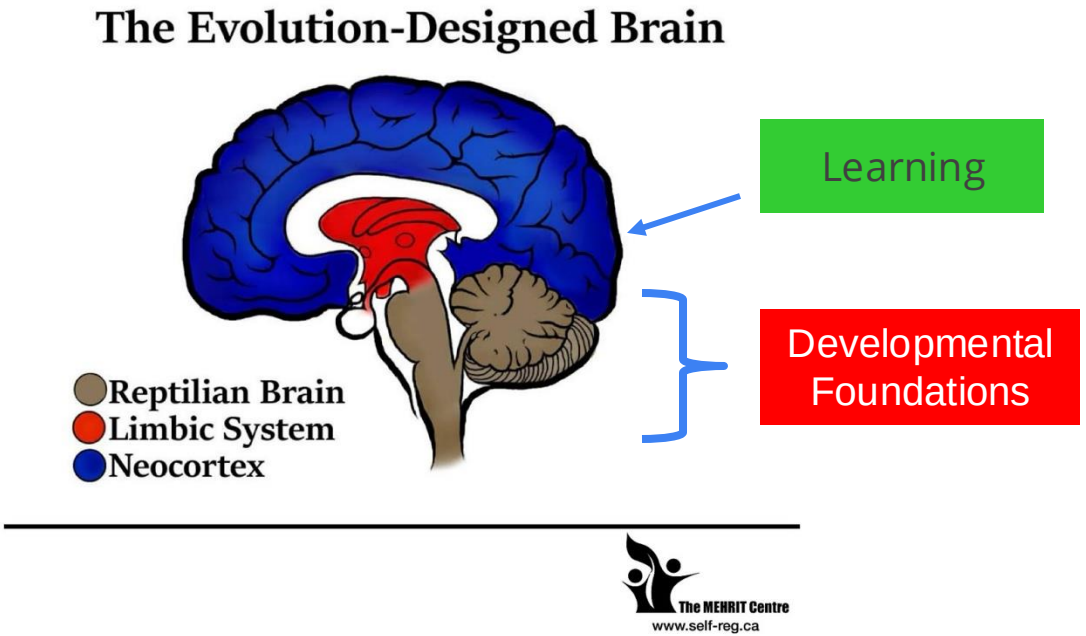
An Artificial but Helpful Distinction



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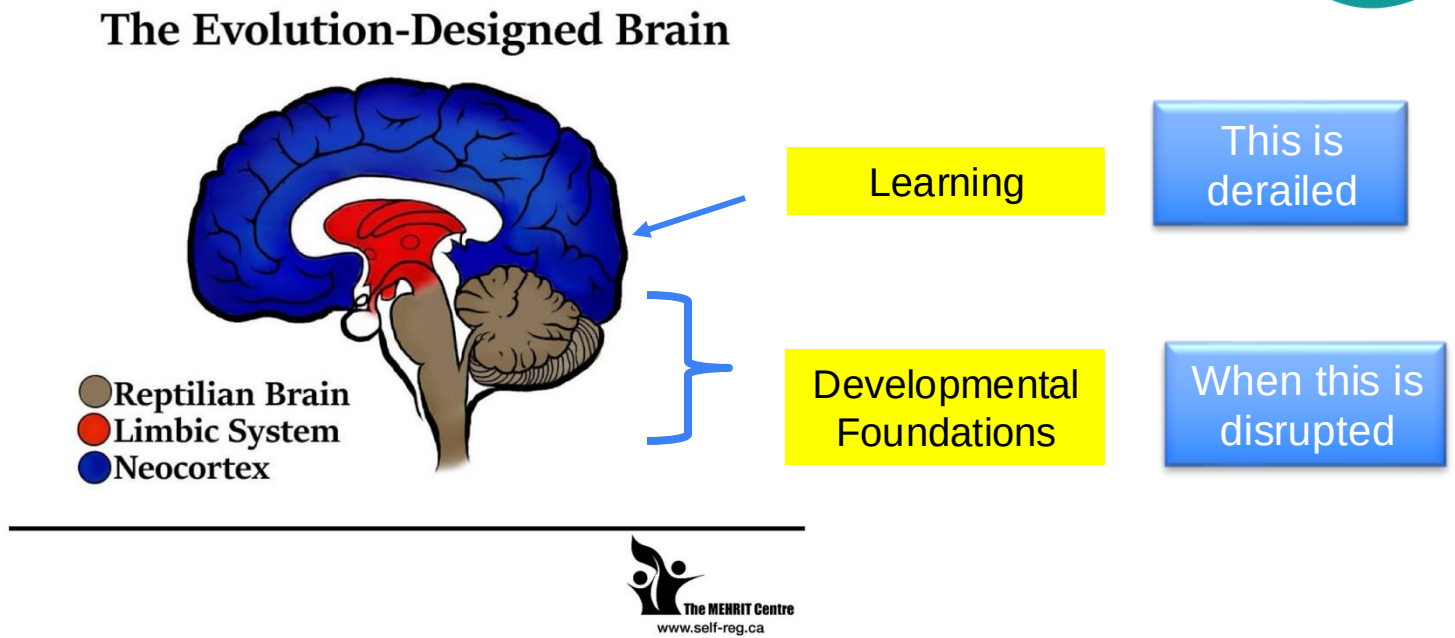

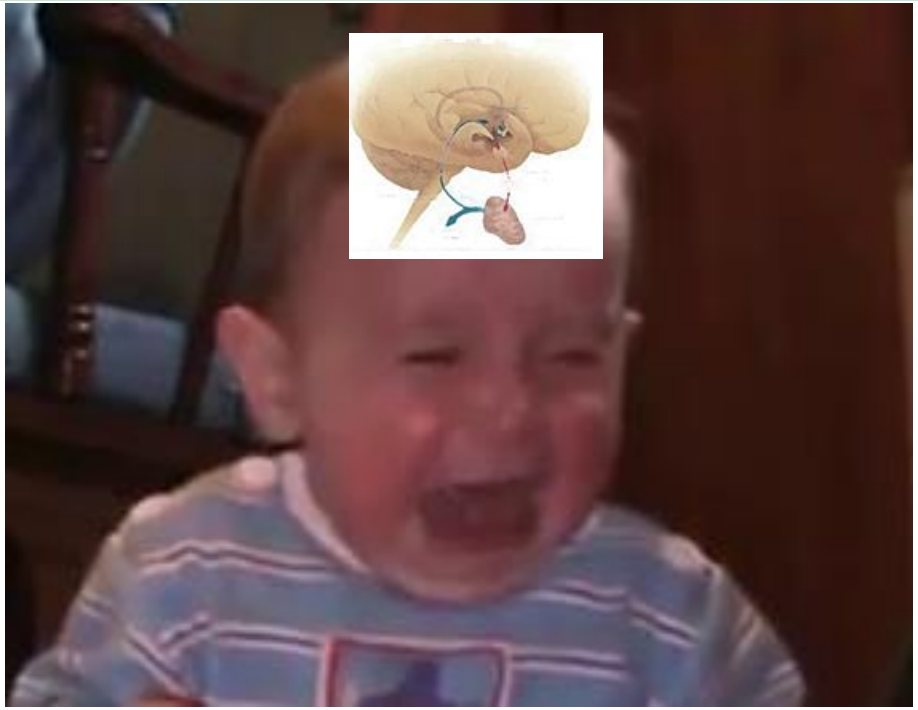

Growth and Development Through Relationships

Source: https://www.youtube.com/watch?v=wi-sDcNfvzo

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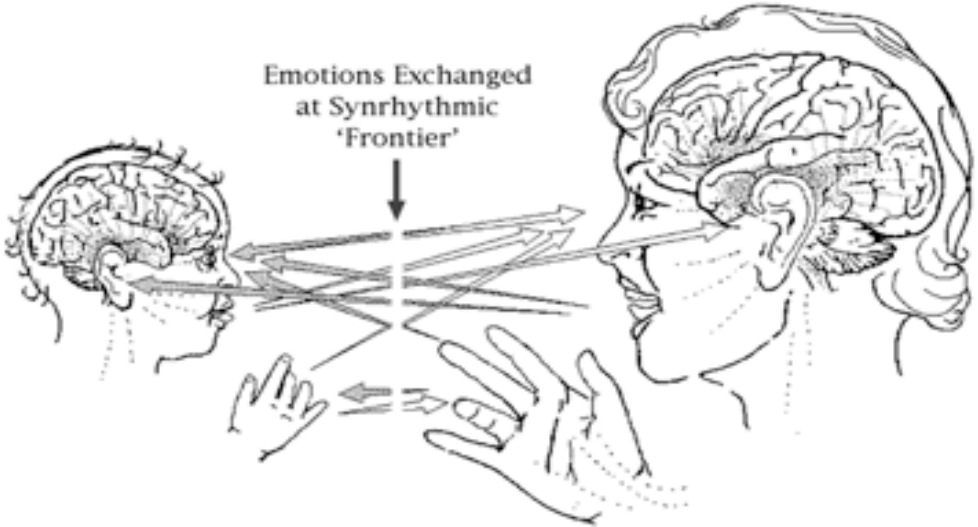
Colwyn Trevarthen



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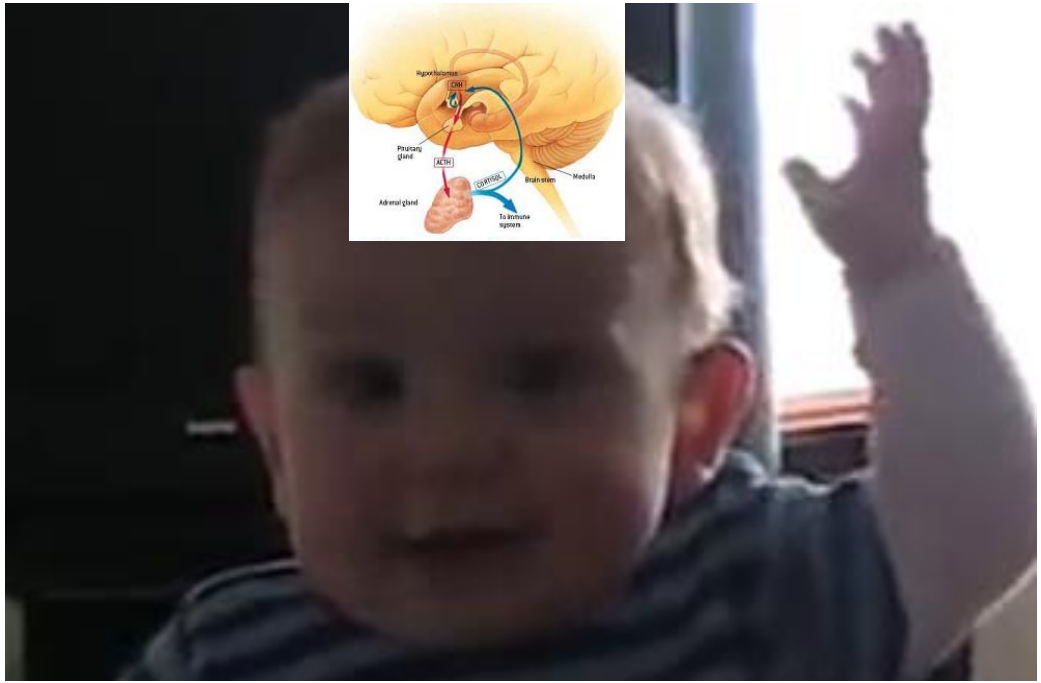

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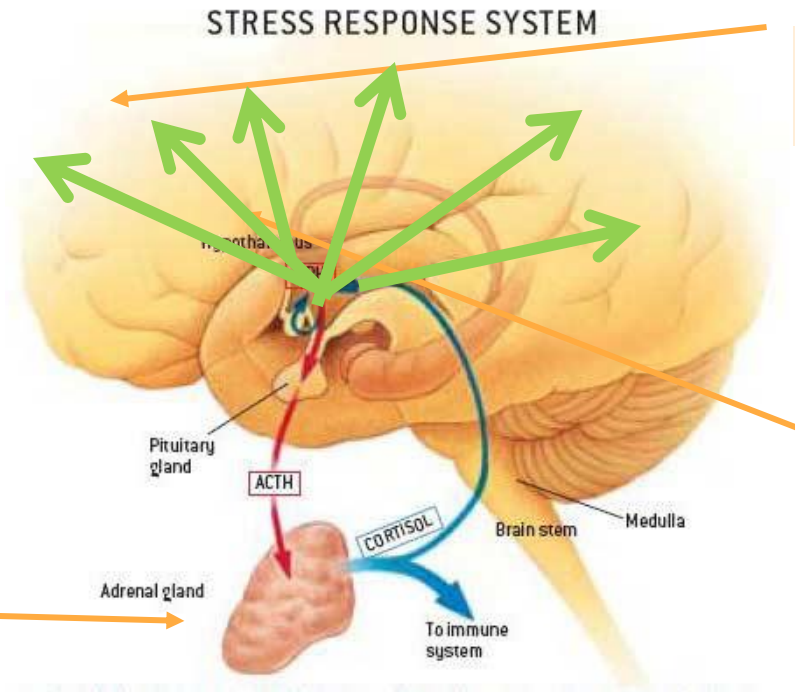
Prefrontal Cortex engaged for thought and reciprocity



Elevated Positive Mood Centers in Cortex Activated

HPA Not Activated

Adrenaline “rush” <u>not</u> activated

Source- Anatomy only: https://www.behance.net/gallery/59621145/The-Dangers-of-High-Cortisol-Levels

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So consider the interpersonal experiences of "Millions of Moments"

From: The musical "Rent"

"Five hundred and twenty-five thousand, six hundred minutes, what does it take to measure a year?"

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Based on Dan Stern

Our “lived experiences” are fused, integrated, dynamic unfoldings of:

Somato-psychologic-ideational- affective - interpersonal bundles

We develop representations, “anticipations” and affective-neurological- behavioral responses to ourselves and others.

Repeated patterns become “procedural memories” for “good” or “for bad”.
“Neural signatures”/”schema-of-being with”

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BUT- in Tronick's Paradigm- Mom as "Still-face"

The “INTERBRAIN” is lost! - A Rupture Occurs!

Ah! REPAIR!

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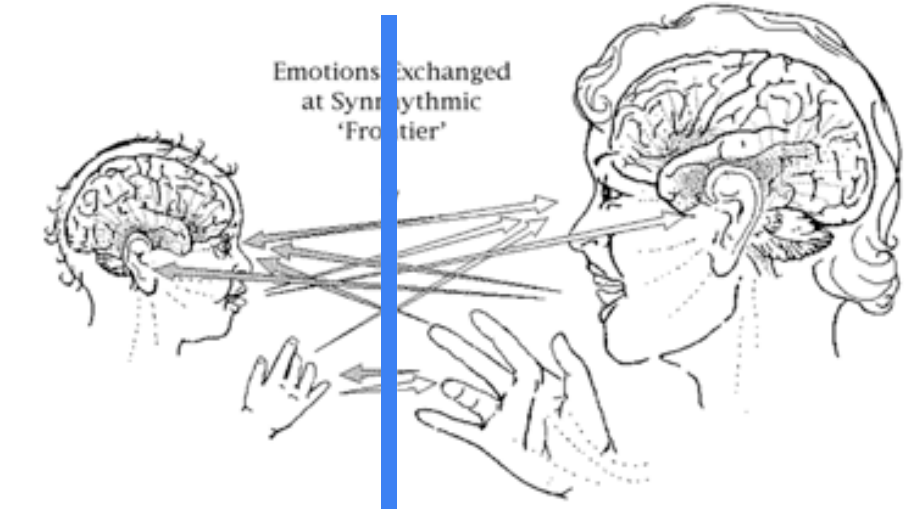
Emotions Exchanged
at Syn ythmic
'Fro tier'

So lets talk a bit about what is going on in the infant brain(and ours) when we are stressed.

Reconsidering STRESS and the Brain

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Three Categories of Stress

Positive Stress

Short, stressful events like meeting new people or starting the first day of school are healthy for brain development. They prepare the brain and body for stressful situations later in life.

Tolerable Stress

Tragic, unavoidable events like a natural disaster or losing a loved one aren't good for us. But if supportive caregivers are around to buffer the stress response, these events won't do lasting damage to the brain and body.

Toxic Stress

Ongoing, repeated exposure to abuse or neglect is bad for brain development. If no supportive adults are present to help buffer the stress response, stress hormones will damage developing structures in the child's brain. The result is an increased vulnerability to lifelong physical and mental health problems, including addiction.

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Three Categories of Stress

Stress is not always avoidable and is not always bad!!!

How Children Succeed (2012) - Paul Tough

The “firehouse” effect!

The result of a chronic activation of the HPA system, and the **prefrontal cortex** is most affected!

- What suffers? Executive Functioning!
- What happens? The “air-traffic” control system of our brain is derailed.(Shonkoff)

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Two states of brain/mind

- Open receptive state (lid intact)
- Closed, reactive state (lid flipped)

What we now know about the brain in infants?

- The infant brain is organized through the nature of relationships.
- The brain grows from the “inside-out”, meaning that earlier and sub-cortical areas that are most responsible for regulation, attention and “fight or flight” responses are “wired” earlier than the higher brain centers. This occurs before language and symbol formation.
- Exposure to neglect, abuse, violence and dysregulation adversely changes the brain

IECMH Informed Framework for Responding to Children

FIRST

- A- **Assess**- Consider bio-psycho-social influences
- H- **Hypothesize** – wonder about ways to support regulation through affect and interaction
- A- **Act** – Act and evaluate the hypothesis and modulate as needed, using the AGILE guidelines

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Consider these elements in "how" you respond

- **A- Affect – This is what a child experiences first and most!**
- **G- Gesture** – Modulate and be attuned in facial expressions, hands, movement, posture and pacing
- **I- Intonation** – Modulate the tone of your voice as this conveys affect and social/emotional meaning
- **L- Latency (Wait)** – Wait and allow the child time to "take you in"
- **E- Engagement** – Before you continue, be sure you have engaged the child

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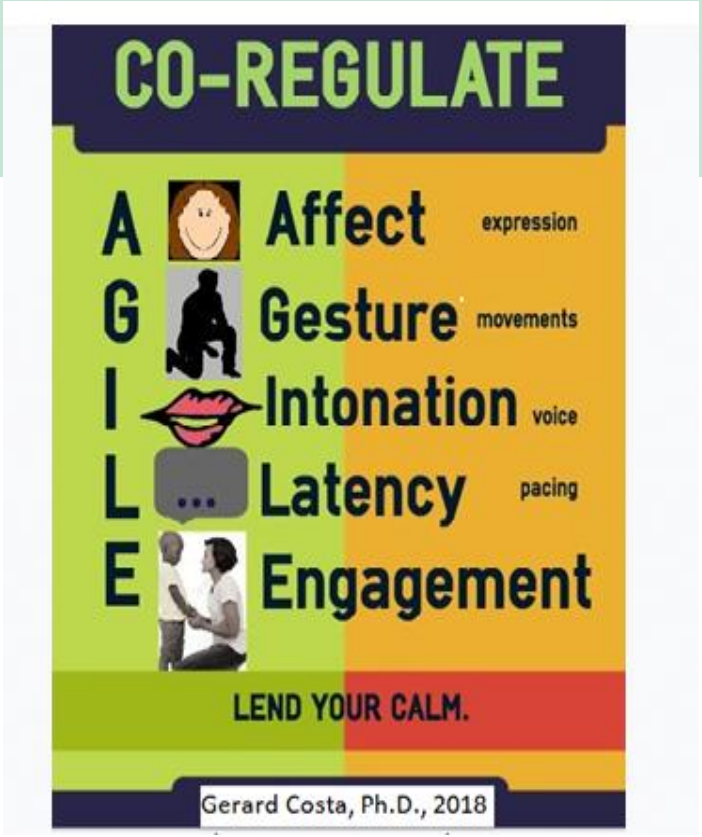

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Polyvagal Theory- Stephen Porges

- The vagus is a large cranial nerve that originates in the brainstem and connects visceral organs with the brain.
- In mammals, the vagal pathways originate from a part of the brainstem that regulates the heart ***but also regulates the striated muscles of the face and head – a face to heart connection, that forms an integrated SOCIAL ENGAGEMENT SYSTEM, that provides and senses signals of safety.***

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Polyvagal Theory- Stephen Porges

- Our nervous system needs to feel safe!
- Our nervous system expects features of safety to be present, such as caring face-to-face interactions with warmly modulated voices.
- Our "safety" brain, when activated, deactivates our thinking brain, and these "defenses" limit learning, growth and *restoration.*
- *Connectedness is a biological imperative!*

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Polyvagal Theory- Stephen Porges

"...(H)umans are on a quest to calm neural defense systems by detecting features of safety. This quest is initiated at birth when an infant's need to be soothed is dependent on the caregiver." (Porges, 2015, p. 2)

Polyvagal Theory- Stephen Porges

- This allows us to “share” our bodily state of excitement through facial expression and or tone of allowing us to use **facial expression and voice to calm our bodily state and others!**
- Physiological state is signaled by changes in the face and voice.
- This happens often below our level of awareness That’s called “NEUROCEPTION” vs. perception – as if our “nerve” (brain) is perceiving danger of safety without our awareness!

Polyvagal Theory- Stephen Porges

"Thus, the neuroception of familiar individuals and ***individuals with the appropriately prosodic voices and warm expressive faces*** translates into a social interaction that down-regulates defense and enables feelings of safety." (Porges, 2015. p. 6)

In the evolutionary transition from reptiles to mammals, ***social behavior emerged as the prepotent regulator of physiology!***

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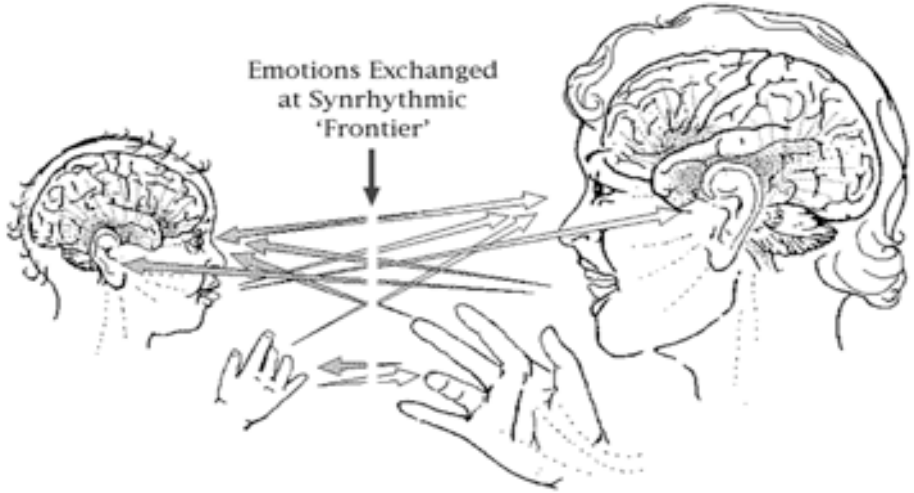
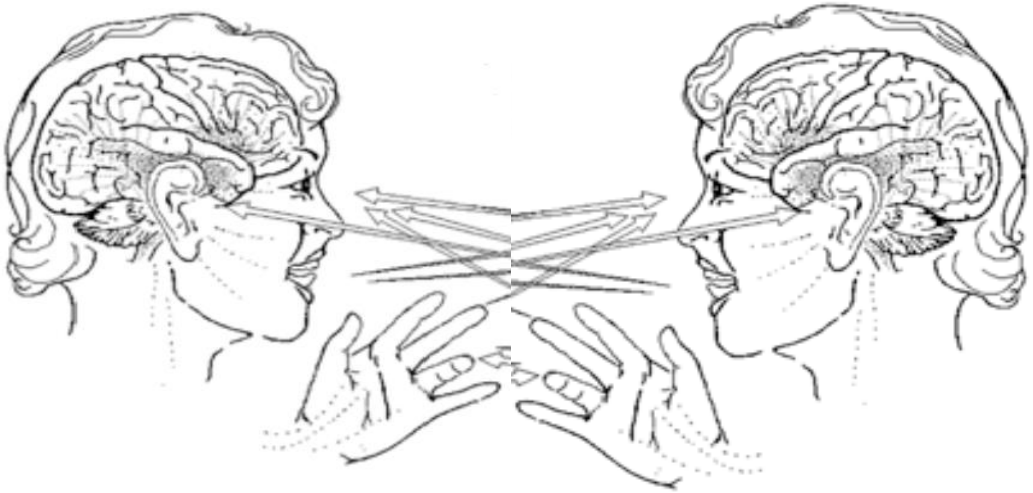
From the beginning....



Throughout life!



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Everyone thinks that I'm arguing WHILE I'M ACTUALLY JUST TALKING!

In all cultures, prosadic, acoutistical stimulation (moving up and down voices, singing, music, etc.) whether vocal or instrumental, is an effective strategy for signaling safety and calming infants

Adults too!

And Even NEWBORNS!

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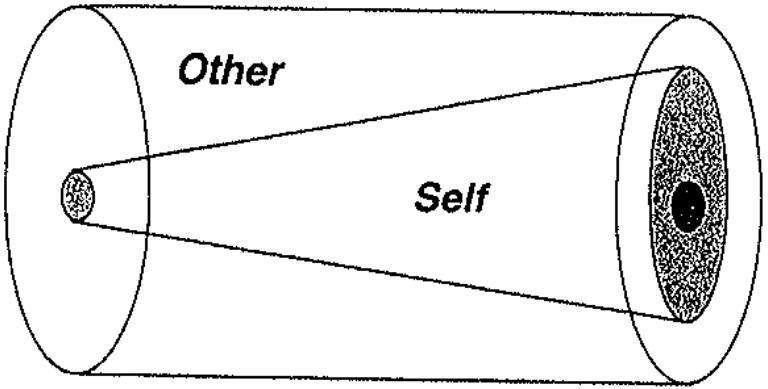
Your facial expressions, tone of voice, movement and gestures are more powerful than your words! When you speak with an infant and young child, move to their eye level (monitoring how they "take you in"), keep a respectful distance to be sure he/she "is in control", convey in all of your "body language", calmness, interest and willingness to "follow the child's lead".

Samaroff (2004)
Co-regulation to Self-Regulation

- Your regulatory state changes the regulatory state of the other, and the other's state, changes your!
- Over time, through these repeated relationship experiences, the capacity for "self-regulation" grows and becomes internalized.
- BUT
- When stress becomes unmanageable, we still need others to help us become regulated!



The Changing balance between other-regulation and self-regulation as a child develops into an adult

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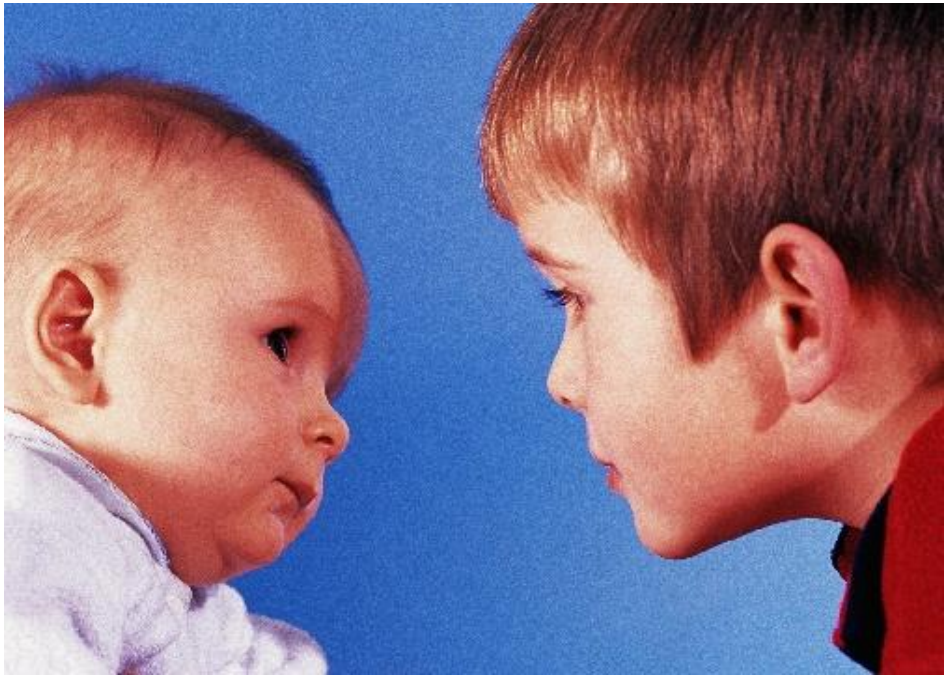
Michael Jr.



Source: https://www.google.com/imgres?imgurl=https://www.lakecumberlandhospital.com/Content/Uploads/Lake%2520Cumberland%2520Regional%2520Hospital/images/web_babies.jpg&imgrefurl=https://www.lakecumberlandhospital.com/patients-and-visitors/web-babies&h=214&w=300&tbnid=LIcDnUwH__qd5M&tbnh=190&tbnw=266&usg=K_EkNjrKj_o939sVA8uMQVojB3raY=&hl=en&docid=HPeQiSUG1bl9wM

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