


Welcome! 

We'll get started soon. If you'd like, type in the chat:

- From where are you joining the Zoom?
- What's your current EI role?
- Dream vacation spot?

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**A Neuro-Developmental Approach  
to Creating a Strong Foundation  
for Social-Emotional Learning  
in Infants and Toddlers**

Presented by: Ann-Bailey Lipsett, M.Ed.

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**Ann-Bailey Lipsett, M.Ed.**  
 Author & Consultant  
 ✉ annbailey@lipsettlearningconnection.com

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Agenda

Neurodevelopment of Attunement    Serve and Return    Neuroception

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Social-Emotional Development in Infants

- Engage in co-regulation when distressed
- Return to a regulated state
- Engage, observe, and take joy from the world
- Participate in back-and-forth interactions

Greenspan, 2011, ICDL 2023

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At-tune-ment  
Parental ability to be responsive to child signals, understand them, and respond appropriately, while adjusting to the child's needs.

**We may see:**

- Mutual gaze
- Mirroring
- Mentalizing
- Following and joining in with the child's natural rhythms

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Attunement facilitates the infant's neurodevelopment and lays the foundation for an individual's ability to emotionally regulate in times of stress.

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# I see you. You are a being to be seen.

- Baby begins to recognize self
- Builds capacity to regulate emotions
- Supports development of Medial Prefrontal Cortex



Geld, 2017

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## When have you experienced attunement?

What did you:

- see
- hear
- feel
- emotionally experience

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At birth, neurons exist - but not all the synapses and neuropathways have been formed.

Our interactions with infants support building neuropathways.

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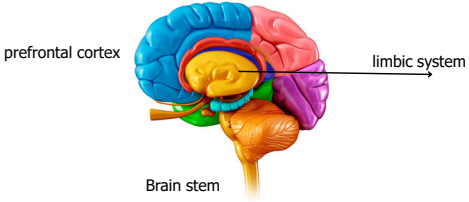
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 Which region of the brain develops first?



prefrontal cortex      limbic system  
Brain stem

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Early Brain Development:



**Bottom Up**  
Lower regions of the brain recognize stressors in environment before upper brain

 Children's Brains Develop from the Bottom Up, Back to Front

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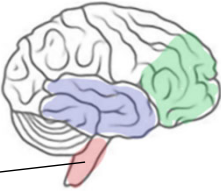
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Early Brain Development:



**Brain Stem**  
"Lizard Brain"  
Responsible for:

- Regulating the body automatic functions
- Eating
- Temperature
- Breathing

Gold, 2017  
Siegel, 2022  
Porges, 2017

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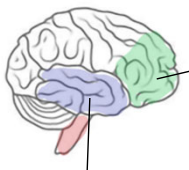
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Early Brain Development:



**Medial Prefrontal Cortex**

Responsible for:

- Emotional Regulation
- Begins to develop in utero
- Continues to develop into a person's 20s
- Hypothalamus connects it with the endocrine system to release stress hormones

Houses the Amygdala

**Amygdala**

"Smoke alarm of the brain"

Responsible for:

- Emotional Regulation: Social Engagement, Fight, Flight, Freeze Responses to stimuli
- Begins developing in third trimester within the medial prefrontal cortex

Gold, 2017  
Porges, 2017

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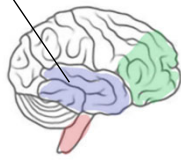
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Early Brain Development:

**Insula**

- Connects visceral organs (heart, intestines, skin)
- Provides us with physical sensations of empathy
- Supports regulation of our emotional state



Gold, 2017

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When you witnessed attunement, what did you observe?

<p><b>Brain Stem Behavior</b></p> <ul style="list-style-type: none"> <li>• Shared breathing patterns</li> <li>• Shared rhythmic patterns</li> <li>• Response to child's basic needs</li> </ul> 	<p><b>Medial Prefrontal Cortex Behavior</b></p> <ul style="list-style-type: none"> <li>• Social engagement state</li> <li>• Calm body</li> <li>• Relaxed but engaged facial expressions</li> </ul> 	<p><b>Insula Behavior</b></p> <ul style="list-style-type: none"> <li>• leaning towards one another</li> <li>• whole body engagement</li> </ul> 
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# Caregiver's Role in Neurodevelopment



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## Research in Rats

### High-Licking Environment

- grew up to be calm adults
- led to turning on a gene involved in cortisol release → rat pups can achieve a baseline calm more quickly.

### Low-Licking Environment

- Gene not turned on → released cortisol remains in the body
- Rats remain in a prolonged anxious state after stressful experiences



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## Supporting Caregivers in Providing Attunement

- Help "see the child" in front of them
- Recognize the story they may tell themselves about the child that prevents them from connection
- Reframe the baby's behavior
- Understand the importance of interacting with baby and the brain



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What do you do to help families connect and attune with their children?

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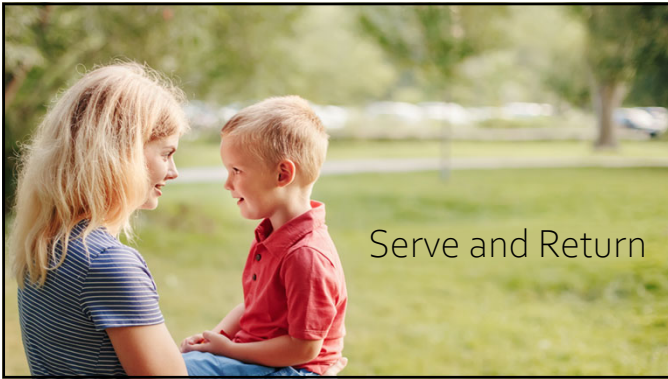
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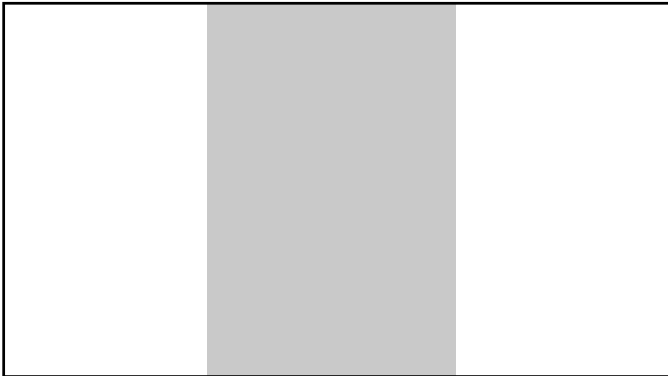
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Serve and Return Supports:

- Fundamental to the early wiring of the brain
- Repetition improves neural circuits - frequent interactions are important
- Supports building a healthy stress response




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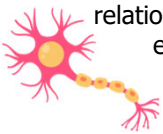
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“Neuroimaging revealed a neural mechanism by which language experience may influence brain development; namely, children who experienced more conversational turns exhibited greater activation in left inferior frontal regions (Broca’s area) during language processing, which explained nearly half the relationship between children’s language exposure and verbal abilities.”



- Romeo, et al, 2018

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Serve and Return Supports:

- Identify of self
- Understanding of where the self stops and others begin
- Co-regulation (foundation of self-regulation)




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Serve and Return Research:

- Mean CTC in children between 18 and 24 months predicted IQ, verbal comprehension, and expressive language skills at 9 to 13 years old.
- Remained significant after adjustments for SES or child language development

**HHS Public Access**  
**Author manuscript**  
Author manuscript; for review only. Published by HHS on 04/11/2023. See this Article's DOI: 10.1101/2023.04.11.23274726.

**Language Experience in the Second Year of Life Predicts Language Outcomes in Late Childhood**

**Julia M. Roberts, PhD<sup>1</sup>, Jeffrey A. Roberts, MA<sup>2</sup>, Steven F. Meisen, PhD<sup>3</sup>, D. Katerine King, PhD<sup>4</sup>, Matthew P. Ryan, MA<sup>5</sup> and Andy Lee, PhD<sup>6</sup>**

**1**Child Research Foundation, Boulder, Colorado; **2**Department of Speech, Language and Hearing Sciences, University of Colorado, Boulder, Colorado; **3**Center for Language Acquisition, University of Kansas, Lawrence, Kansas; **4**Department of Psychological Science and Center for Language Acquisition, University of Colorado, Boulder, Colorado; **5**Department of Psychology, University of Colorado, Boulder, Colorado; **6**Department of Psychology, University of Colorado, Boulder, Colorado

**Abstract**

**Objective:** Studies of child and interaction in the home during early childhood continue to demonstrate that 24-month vocabulary with language and cognitive outcomes. We used a novel method of automated language analysis to examine the relation between 24-month vocabulary and language skills 10 years later and examined if the results are specific to word frequency.

**Methods:** We used a novel method to analyze 24-month vocabulary and language skills 10 years later and examined if the results are specific to word frequency. We used a novel method to analyze 24-month vocabulary and language skills 10 years later and examined if the results are specific to word frequency.

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How do you help families understand the importance of serve and return?

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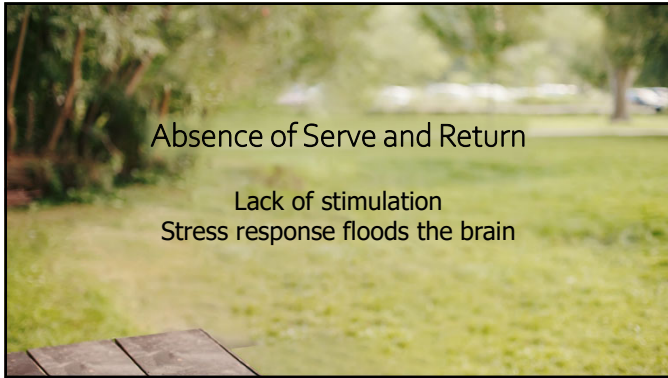
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**Peekaboo**

- Mutual engagement with the smile and surprise - brains receive extra glucose and oxygen
- Triggers neuro-anatomical growth for a sense of joy
- Parent's brain reflects a deepening of attachment and well-being
- Increase pleasurable moments of endorphin receptors on the baby's amygdala



Tippey, G., 2018, Wagenhals, D. 2020

 Helps downregulate the amygdala

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**Anticipation Games**



**"Where is my friend?"**

**"I'm gonna... get you!"**

**Puppet Play**

**"What could be in the box?"**

 Draw out serve and return exchange to hold the child's attention.

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### Anticipation Games

- Engages the prefrontal medial cortex
- Releases dopamine
- Anticipation is an intrinsic brain response present by 4 months.



Mento, et al (2022)

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What are your favorite peekaboo and anticipation games?

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### Neuroception

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 **Developmental Progression**

 **Top Down**

- Brain activity that reflects our conscious mind
- Occurs in cerebral cortex
- Conscious thought

 **Bottom Up**

Lower regions of the brain recognize stressors in environment before upper brain

 **Children's Brains Develop from the Bottom Up**

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Underlying Neurophysiological States:




**SOCIAL**



**FIGHT**



**FLIGHT**



**FREEZE**

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 **Neurophysiological State: Social Engagement**

Myelinated branch of parasympathetic system is active - relaxed, hug

Vagus innervates muscles of the face, larynx, middle ear - Muscles convey emotion through expression of face, tone, rhythm, prosody



Gold, 2017, Porges, 2017

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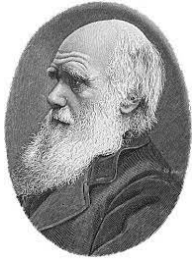
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**Darwin** wrote it was the evolution of capacity for meaningful connections in this set of muscles that allows humans to survive and thrive



Porges, 2017

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 Neurophysiological State: Fear

Sympathetic system is activated - releases adrenaline  
Heart rate and blood pressure increase



Gold, 2017, Porges, 2017

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 Neurophysiological State: Freeze

- Overwhelming threat
- "Plays dead"
- Ear loses its ability to
- Dissociation



Gold, 2017, Porges, 2017

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 Which of these responses have you seen in infant or toddlers?

 <b>SOCIAL</b>	 <b>FIGHT</b>	 <b>FLIGHT</b>	 <b>FREEZE</b>
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Supporting Children's Neuropsychological States

<p>Regulate, Relate, &amp; Reason</p> <p><small>Perry, 2020</small></p>	<p>Rupture and Repair</p> <p>↓</p> <p>Return to Baseline Builds Resiliency</p> <p><small>Tronic, 2020</small></p>
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**Key Points**

- 1** Caregiver interactions from birth onward support the neurodevelopment
- 2** Interactive games, back and forth communication, and nurturing environments support the developing architecture of the young child's brain
- 3** Understanding and helping caregivers understand neuropsychological states supports the child's neurodevelopment

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Stay tuned for next month, when we ask:

How do we support families when factors interfere with typical development?

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## Thank you!



**Ann-Bailey Lipsett, M.Ed.**

Author & Consultant

✉ [annbailey@lipsettlearningconnection.com](mailto:annbailey@lipsettlearningconnection.com)



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Check Your Inbox

2



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3



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Think of a child on your caseload - how do you know they are in fight or flight?

How do you support them and their family during this time?

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