


Building early connections through co-occupational engagement: The role of intersensory perception and sensory integration

STAR Sensory Symposium  
*Sensory Health & Sensory Informed Care*

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Kris Pizur-Barnekow, PhD., OTR/L, IMH-E®

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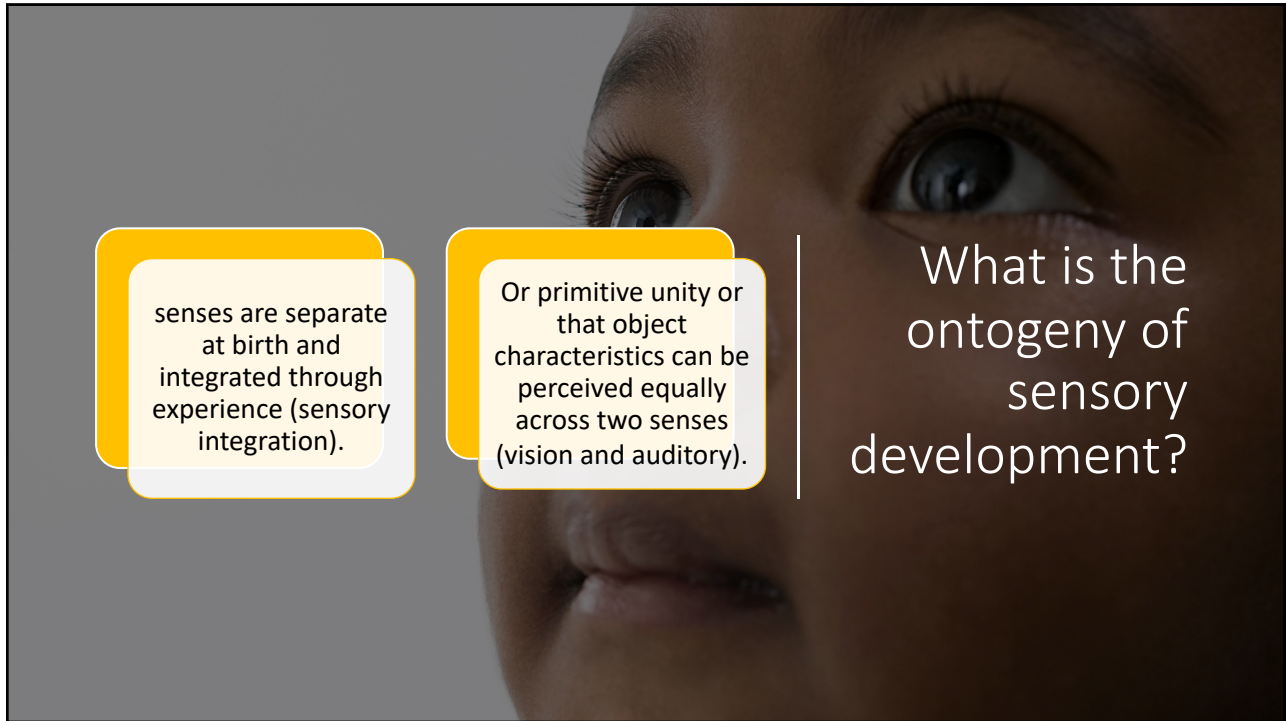


**At the end of this webinar, participants will be able to:**

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1. differentiate between intersensory perception and sensory integration concepts.
2. integrate principles from intersensory redundancy hypothesis into clinical reasoning when serving families of infants.
3. recognize the role that intersensory perception and sensory integration play when evaluating and treating co-occupational engagement in pediatric practice during early childhood.
4. apply concepts learned to pediatric practice.

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senses are separate at birth and integrated through experience (sensory integration).

Or primitive unity or that object characteristics can be perceived equally across two senses (vision and auditory).

What is the ontogeny of sensory development?

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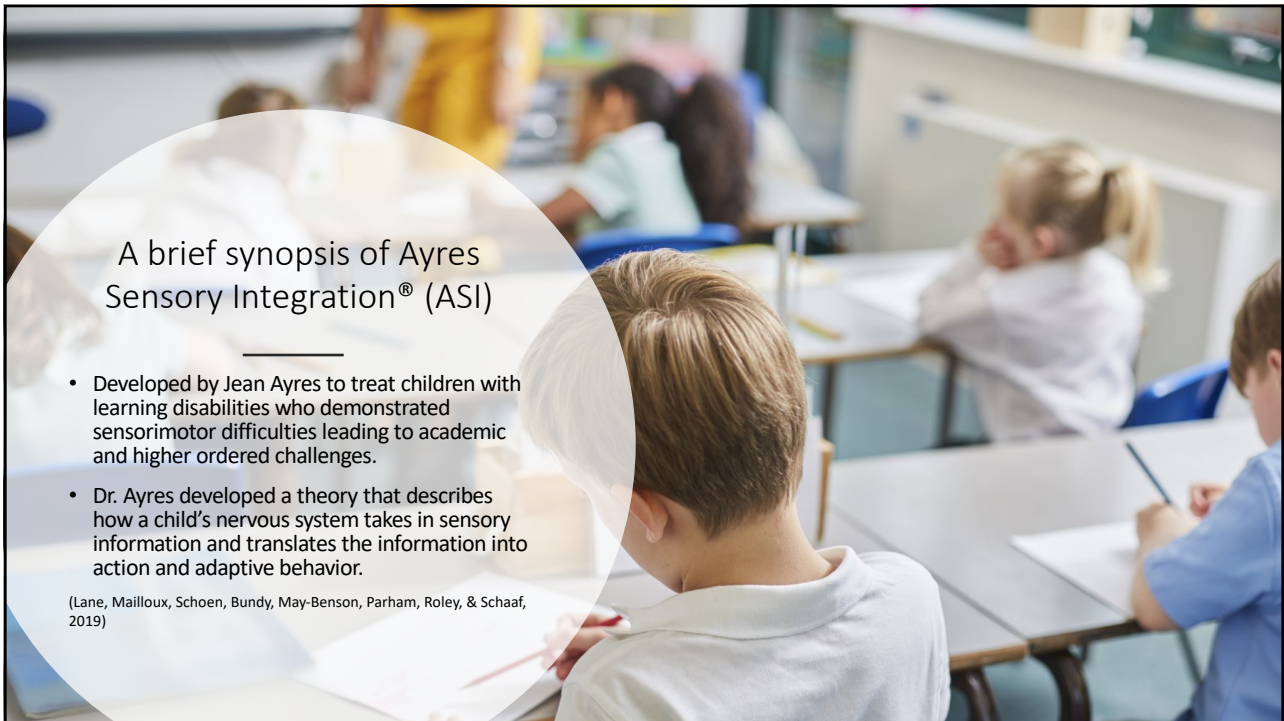
The development of sensory perception is....

A bit of both.....Bushnell, 1981

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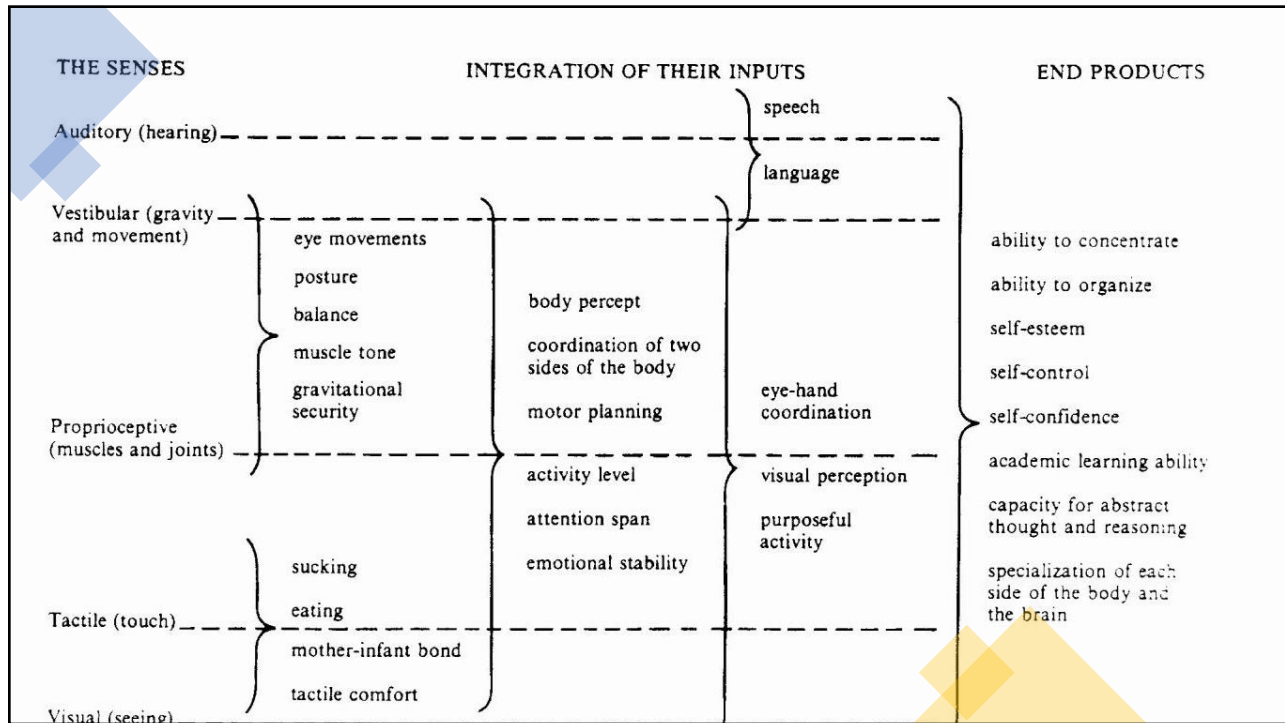


### A brief synopsis of Ayres Sensory Integration® (ASI)

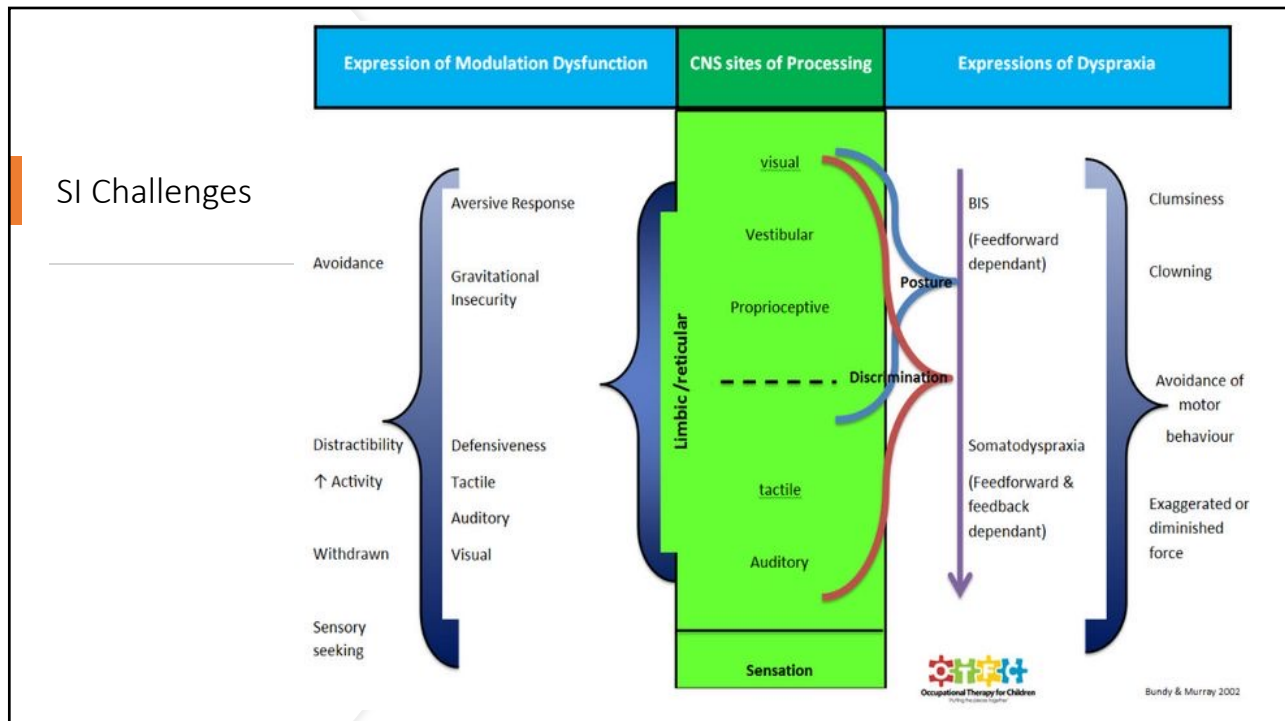
- Developed by Jean Ayres to treat children with learning disabilities who demonstrated sensorimotor difficulties leading to academic and higher ordered challenges.
- Dr. Ayres developed a theory that describes how a child's nervous system takes in sensory information and translates the information into action and adaptive behavior.

(Lane, Mailloux, Schoen, Bundy, May-Benson, Parham, Roley, & Schaaf, 2019)

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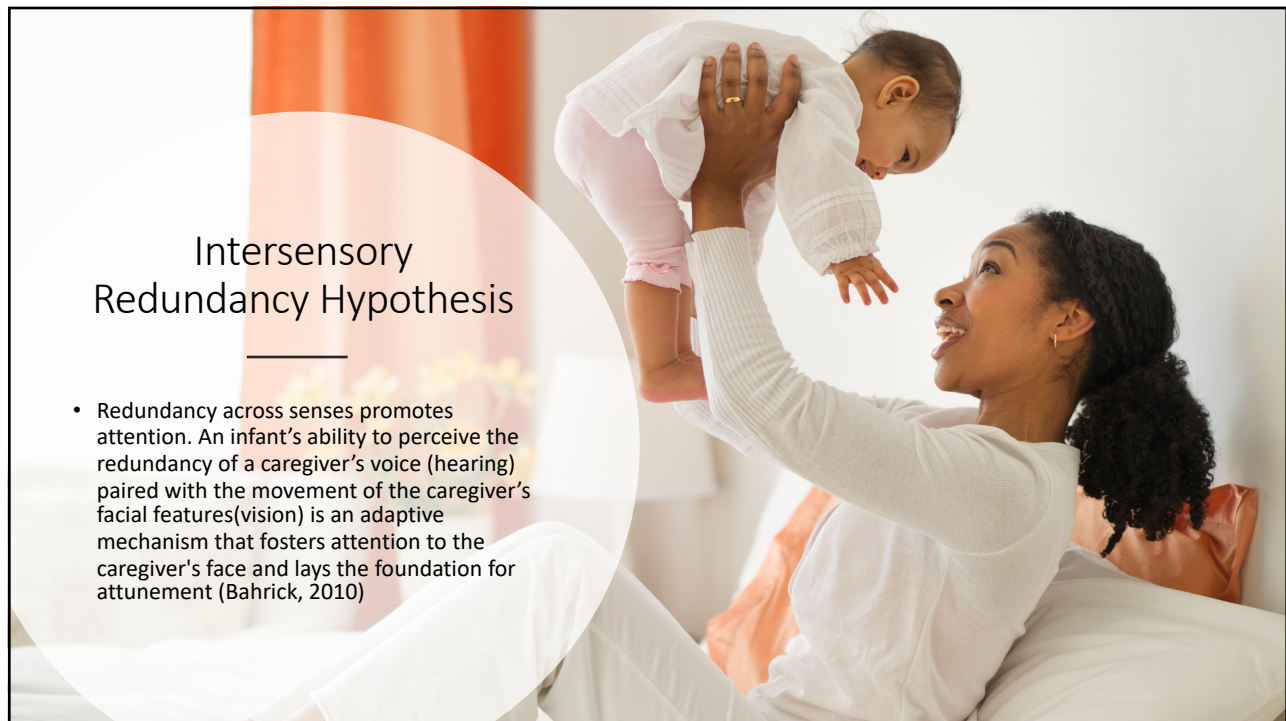


## A Differentiation Approach

- Senses form unity in early development and with experience the perception becomes differentiated.
- Infants perceive amodal information – information that can be perceived across multiple senses.
  - Temporal aspects – synchrony, rhythm, tempo unite visual and auditory senses.
  - Selective attention becomes biased towards sensory stimuli that are redundant across sensory modalities.

(Curtindale, Bahrick, Lickliter, Colombo, 2019)

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## Intersensory Redundancy Hypothesis

- Redundancy across senses promotes attention. An infant's ability to perceive the redundancy of a caregiver's voice (hearing) paired with the movement of the caregiver's facial features (vision) is an adaptive mechanism that fosters attention to the caregiver's face and lays the foundation for attunement (Bahrick, 2010)

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## Early Attachment and Sensory Perception

- Psychobiological Attachment Theory (Kraemer, 1992)
- Infants are born with adaptive mechanisms encoded at the level of the genome that foster attunement with a caregiver (Barnekow, Kraemer & Winters, 2008; Beebe, 2020; Kraemer, 1992).



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## What are adaptive mechanisms that foster attunement during infancy?

- Primitive unity - that object characteristics can be perceived equally across two senses (vision and auditory).
- Amodal characteristics or temporal synchrony including face/voice redundancy foster attunement.



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Once you have the baby's attention????

Serve and Return – promotes sensory integration and adaptive responses.

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Serve and Return occurs within co-occupational engagement



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Who is the unit of assessment and intervention when considering intersensory perception and sensory integration from an early childhood mental health perspective?

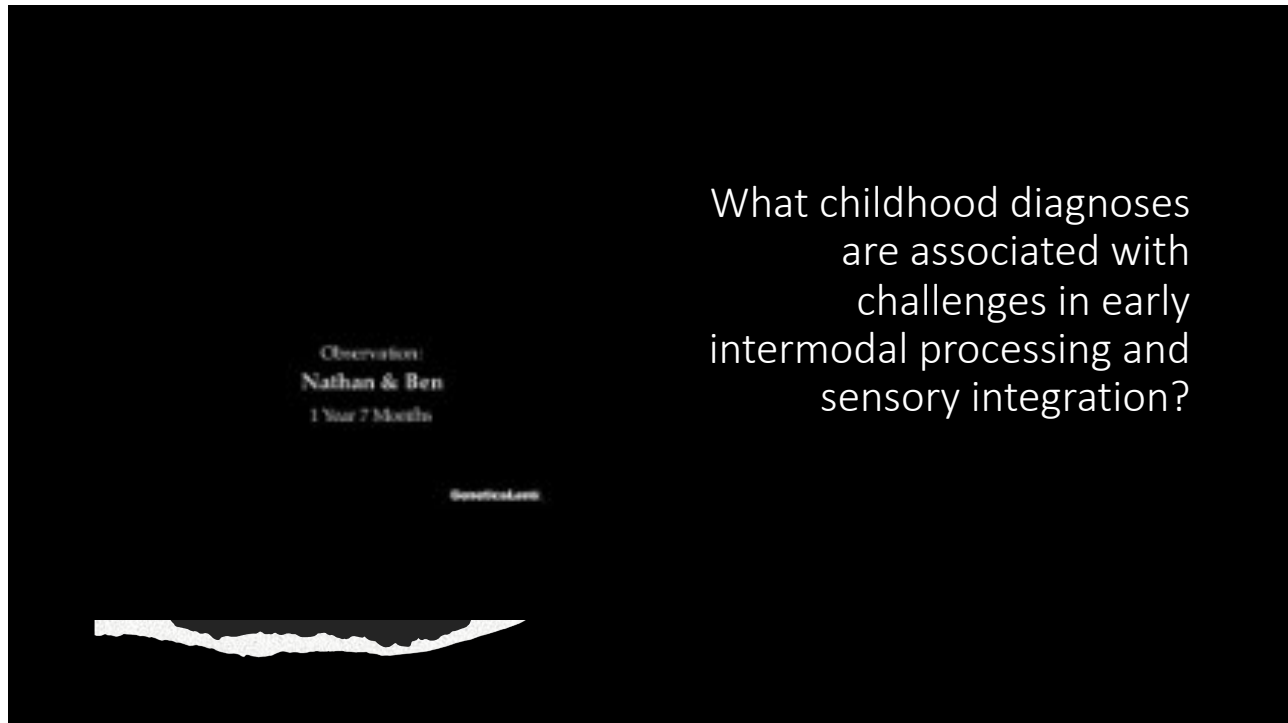
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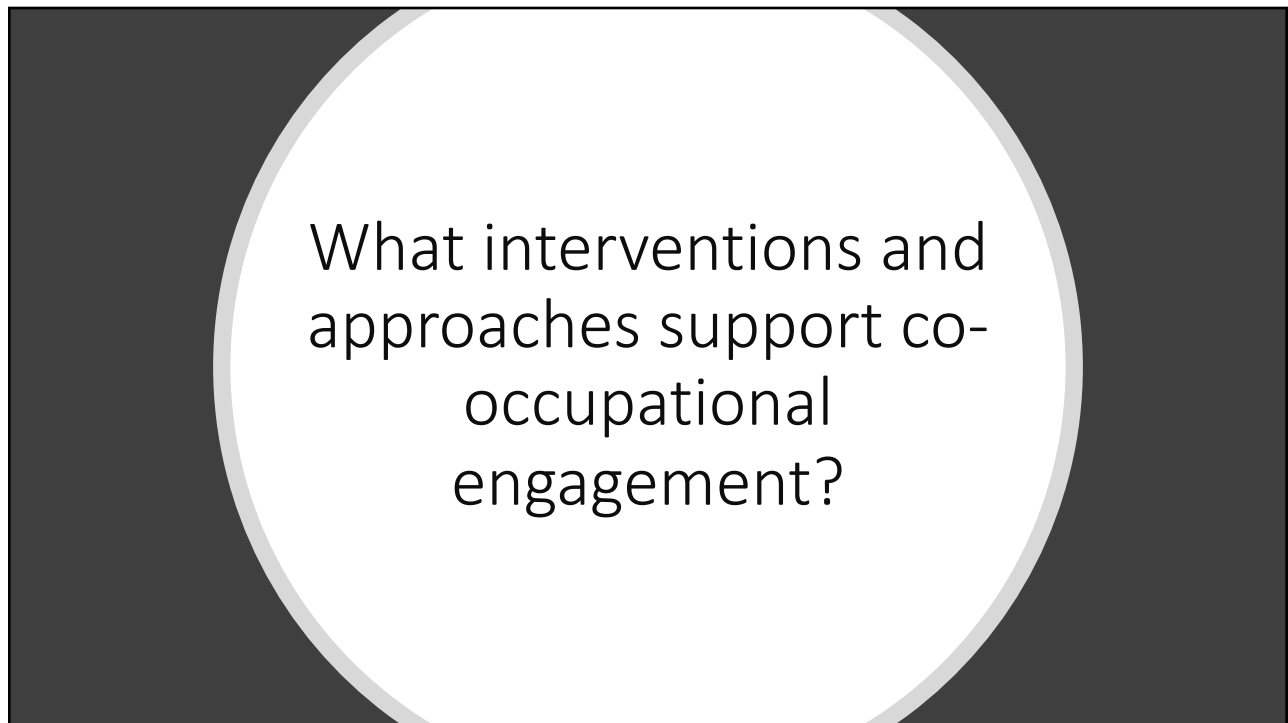
What parental/caregiver concerns should we consider during assessment?

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## The PAUSE Approach (Tomlin & Viewheg, 2016)

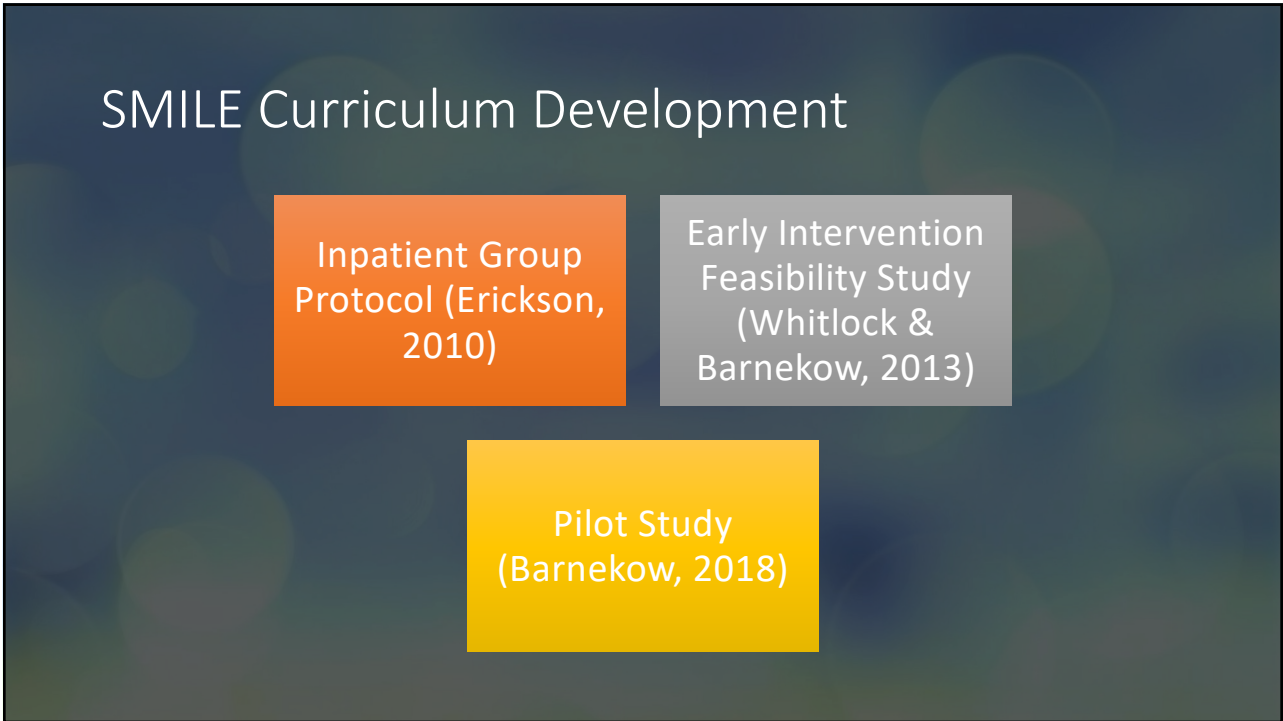
- P – perceiving (what we see may not be the entire story; we need to observe, listen and reflect)
- A- asking - ask questions – (how are you feeling? What do you think the baby is feeling?)
- U – understanding – understanding what is happening from the parents' perspective.
- S – strategizing – plan strategies together
- E – evaluating – did the plan work or do you need to readjust the plan?

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The Safety,  
Matching,  
Interacting, Looking  
and Expecting  
(SMILE) curriculum

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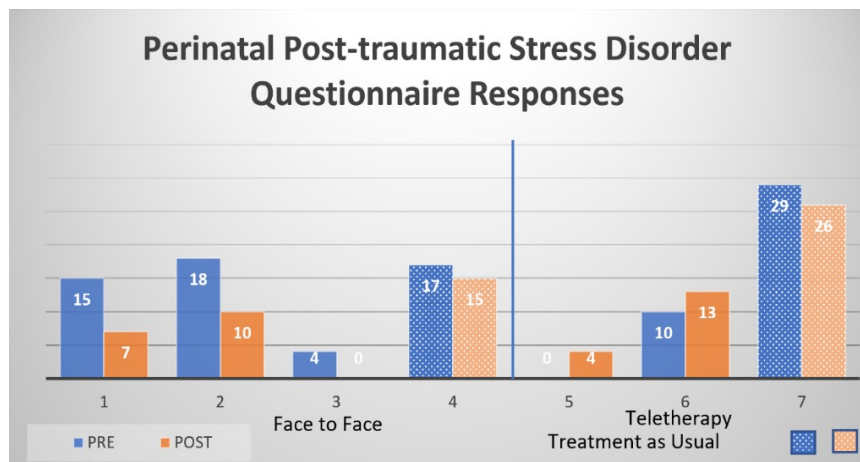
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# Pilot Study

Baseline Characteristics	Face to Face Phase (Control)	Teletherapy Phase (Control)
	n	n
<b>Role</b>		
Mother	3 (1)	2 (1)
Infant	4	4
<b>Previous maternal birth-related trauma</b>	3	1
<b>Degree of prematurity (gestation)</b>		
Extremely Preterm (< 28 weeks)	3	1
Very Preterm (28-32 weeks)	1	2
Moderate to Late Preterm (32-37 weeks)		1
<b>Race/ethnicity</b>		
Black	1	1
Latinx	0	0
White	2	1
Bi-racial	1	1
<b>Highest Level of Maternal Education</b>		
High School/some college	3	2
Associates Degree		1
Bachelor's Degree	1	

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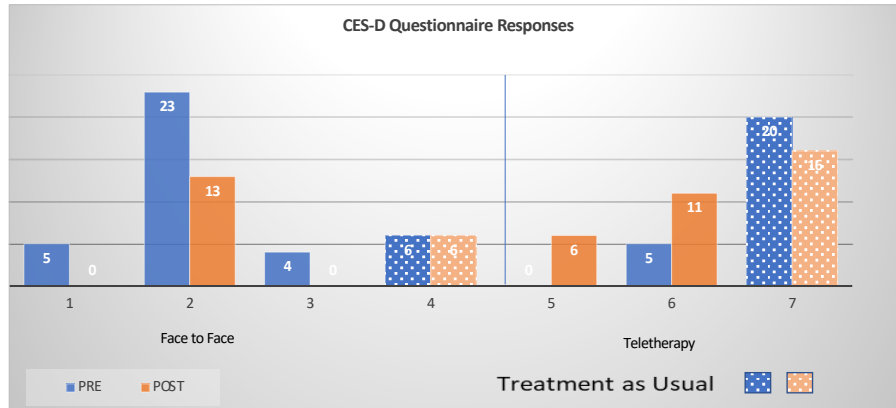
## Maternal Mental Health Measures



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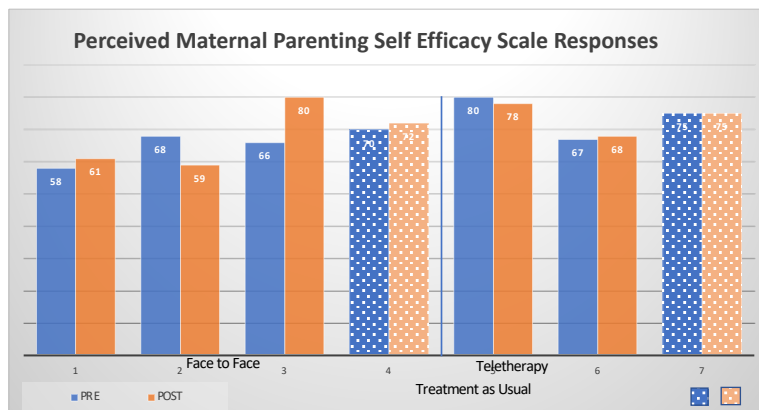


## Maternal Mental Health Measures



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## Maternal Mental Health Measures



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## Qualitative Comments

Post-implementation interviews were conducted with 6 of the 7 participants between 5-7 weeks after completion of the curriculum.

The questions reflected content from the curriculum (i.e., what is a shared activity?) and perceptions about the curriculum (i.e., what were the benefits of the curriculum and how can the curriculum be improved?).

After analyzing the qualitative data from the SMILE curriculum three trends were identified from the SOAP notes and delayed surveys.

### Trends

Mothers using the SMILE curriculum found it beneficial for discovering and implementing new shared activities with more confidence.

Mothers were able to see how the SMILE curriculum and subsequent engagement with their babies in new activities were beneficial to their brain growth and development.

Although each mother was at a different level in their mental and emotional well-being, each was able to identify supports in their lives.

Qualitative research, in addition to quantitative research, is important in understanding the lived experience of caregivers during the NICU to home transition as it provides a more holistic analysis (Aliabadi et al., 2013).

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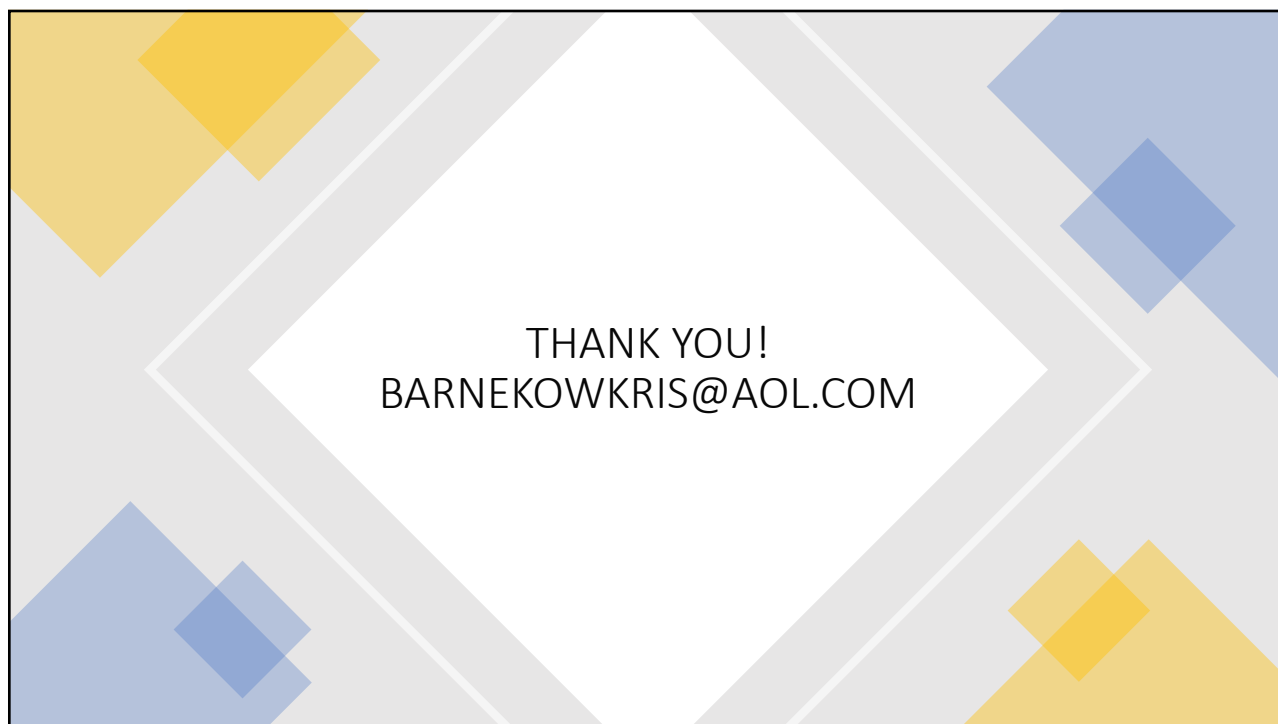
## Relationship of SMILE curriculum to intersensory perception, sensory integration and co-occupation

- Early intervention providers are well suited to identify strengths and risks in children and caregivers that may influence intersensory perception and (focus attention to a caregiver) and sensory integration development (difficulty with serve and return).
- Assess caregiver and child health (including social-emotional health).
- Use the SMILE curriculum as a co-occupational intervention that addresses caregiver social-emotional health in dyads at risk due to prematurity or first-time young parents.

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