

TRAUMA AND SENSORY PROCESSING

A SECRET Clinical Reasoning Tool for Optimal Engagement

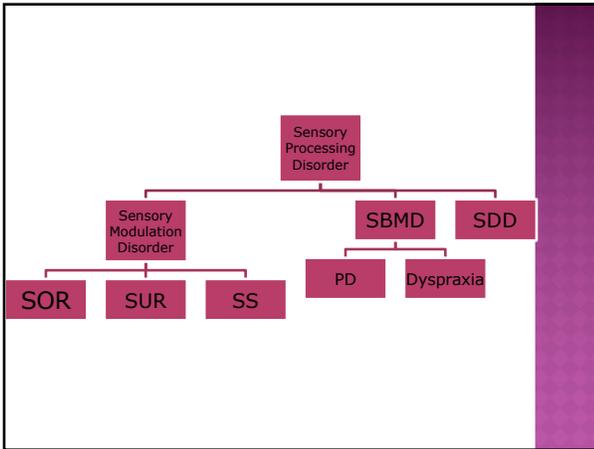
- ## TRAUMA AND SENSORY PROCESSING
- Over or under-reactivity to touch and sound
 - Decreased awareness of and/or dissociation with sensations
 - Can manifest in hypervigilance or over-reactivity
 - Easily startled
 - Always on high-alert
 - Crave high-risk or dangerous activity
 - Impacts participation in play, education, work, rest and self-care activities
- (Atchison, 2007; Atchison & Moritz, 2012; Richardson, Henry, Black-Pond, & Sloane, 2008)

- ## BUILDING RESILIENCE
- Need the ability to self- regulate
 - Affect identification- build understanding of internal states
 - Modulation- maintain optimal level of arousal and expand window of tolerance
 - Affect expression- communication of feelings and needs

- ## SENSORY PROCESSING DISORDER... THE "DIAGNOSIS"
- Miller, Anzalone, Lane, Cermak & Osten (2007). Concept Evolution in Sensory Integration: A Proposed Nosology for Diagnosis. *The American Journal of Occupational Therapy*, 61(2).

- ## OUR SENSES
- 5+2
 - Touch
 - Hearing
 - Vision
 - Smell
 - Taste
 - Vestibular
 - Proprioceptive
 - Interoception
- 

- ## 7 SENSES...
- Visual
 - Auditory
 - Tactile
 - Vestibular
 - Proprioception
 - Taste
 - Smell
- }
 - Modulate
 - Motor Plan
 - Discriminate



WHAT IS MODULATION?

- Regulate, Adjust and Adapt
- Brain Level
 - Balancing of excitatory and inhibitory inputs and adapting to environmental changes
- Behavioral Level
 - Responses that match the demands and expectations of the environment

Miller, 2014

WHY IS MODULATION IMPORTANT?

- “Retreating from the world means brain cells lost and opportunities you can never get back”
- Need to be present and participating to learn, grow and function.

Miller, 2014

SENSORY OVER-RESPONSIVITY (SOR)

- Low Threshold
 - Tactile
 - Vestibular
 - Auditory
 - Taste
 - Smell
 - Vision



Miller, 2014

SOR

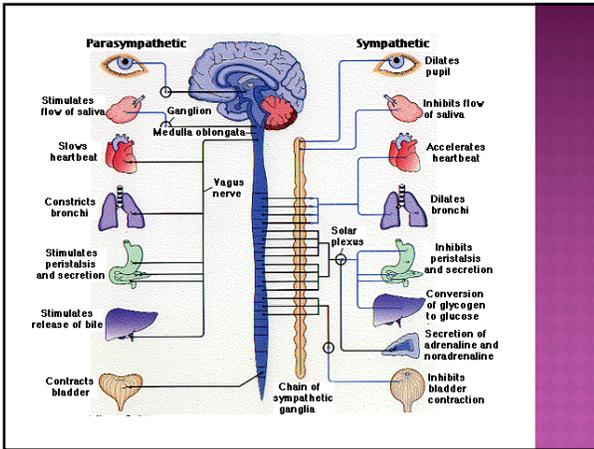
- Tactile
 - Can’t stand tags in shirt
 - Melt-downs with glue on fingers
 - VERY picky eater
- Auditory
 - Cries with unexpected or loud noises
 - Can’t handle public places with lots of people
- Vestibular
 - Resists movement activities where feet are off the ground
 - Struggles to go up and down stairs

SOR RESEARCH

- Astronaut Protocol
 - Electrodermal Activity
 - Vagal Tone



(McIntosh, Miller, & Hagerman, 1999; Schaaf, Miller, Seawell, O’Keefe, 2003)



SOR INTERVENTION

- How do you calm the nervous system?
- Sensation
 - Vestibular
 - Proprioceptive and Tactile
 - Auditory
 - Smell
 - Taste
 - Visual
- Task, Environment and Predictability
 - STRUCTURE and ORGANIZATION
- Self-Monitoring
- Interactions

SENSORY UNDER-RESPONSIVITY (SUR)

- High Threshold
 - Vestibular
 - Auditory
 - Touch
 - Proprioception
 - Smell
 - Taste
 - Visual



Miller, 2014

SUR

- High pain tolerance; doesn't cry when hurt
- Doesn't notice when being touched
- Seems unaware of things around him
- Has to watch hands/feet when using them
- Doesn't notice noxious smells
- Described as lazy, unmotivated
- Prefers sedentary vs active, physical play
- Easily lost in fantasy world
- Passive, quiet withdrawn, apathetic

Miller, 2014

SUR INTERVENTION

- How do you "Wake up" the nervous system?
- Sensation
 - Vestibular
 - Proprioceptive
 - Tactile
 - Auditory
 - Smell
 - Taste
 - Visual
- Task, Environment and Predictability
 - STRUCTURE and ORGANIZATION?
- Self-Monitoring
- Interactions

SENSORY CRAVING/SEEKING (SS)

- High Threshold/or Low
 - Vestibular
 - Auditory
 - Touch
 - Proprioception
 - Smell
 - Taste
 - Visual
 - Symptoms?



Sensory Seeking



Is something we all engage in...

SENSORY SEEKING

- However, sensory seeking can result in disorganized, random behavior that is limited in it's purpose.

SENSORY SEEKING

- Loves to crash, bump, jump
- Loves "roughhousing"
- Constantly touching, poking
- Frequently stares at objects, reflections
- Has difficulty sitting still
- Hard to calm
- "Fidgety"



SC/SS INTERVENTION

- Sensation
 - Frequent, intense and appropriate
 - TEACH and PRACTICE INHIBITION
- Structure and organization
- Give them tools and set expectations
- Interactions

A SECRET CLINICAL REASONING MODEL

MILLER, 2014

SENSORY MODULATION GOALS?

- *Facilitate modulation/self-regulation to improve function in occupation.*

A SECRET (MILLER, 2014)

- Attention: What supports can we provide to increase the child's attention to the task?
- Sensation: What sensations and helpful/challenging to the child and how can we use this information to help them have success?
- Emotion: What emotional state is the child in and how can we regulate the child?
- Culture: What is the family and or clinic culture and how can it be modified to support the child?
- Relationships: How can the child's relationships support performance?
- Environment: Does the environment optimally facilitate function?
- Task: What change can we make to the task to provide the just right challenge for the child?

A SECRET FOR SOR

Attention	Sensation	Emotional Regulation/ Relationship	Context/ Culture	Environment	Task
Picture Schedule	Slow Linear Vestibular	Give the child control	Re-frame behavior	Reduce distraction	Just right challenge
Visual Timer	Deep pressure	Therapeutic use of co-regulation	Name the child's state	Avoid unexpected input	Read cues- Provide breaks
Sequence Strip	Heavy work		Structure: Predictable schedule		
Transition Item	Soft rhythmical music	Show child you have caregiver regard	Use favorite subject to increase emotional investment	Set up space to make activity progression obvious	
	Chew: Gum	Systematic Desensitize			

A SECRET FOR SUR

Attention	Sensation	Emotional Regulation/ Relationship	Context/ Culture	Environment	Task
Require less structure: let them set schedule	Fast movement Less predict Movement Louder music with peaks and valleys Sip something fizzy, eat something crunchy	Co-regulate: Bring them to you. Give child success (dyspraxia/lower self-efficacy) Use favorite subject to increase emotional investment Teach child to recognize own	Reframe behavior Teach family the importance of movement.	Bright, busy, colorful Lots of opportunities for movement	Just right challenge

A SECRET FOR SS

Attention	Sensation	Emotional Regulation/ Relationship	Context/ Culture	Environment	Task
Lots of structure	Input with a purpose • Target • Balance • Timed • Stop and go	Co-regulation: you are in charge Teach fun fast	Teach family to recognize when child is going over the edge	Reduce stimulus	Just right challenge
Picture schedule		Use favorite subject to increase emotional investment	Teach family to set up expectations explicitly	Make sequence of activities obvious	
Visual timer	Heavy work, crash and bump				
LOTS OF STOP and GO	Teach and practice inhibition	Teach child to recognize own state			
Spell out expectations and rules					

CASE APPLICATIONS

CASE EXAMPLE 1:

Evan is a four year old with a history of complex trauma. You walk out into the waiting room and Evan is pulling her foster parent toward the elevator and crying that she wants to go home. When you try to talk to her, she hides her head in her mom's shirt and cries. You walk back to the room with her foster mom carrying Evan and she flinches and covers her ears when passing a little boy playing with a musical toy. In the room, she continues to cry in her mom's arms and refuses to engage with the examiners.

CASE EXAMPLE 2

Braden is a 8 year old boy who can't stop moving. You go out to the waiting room to find all the books scattered around the floor, his foster mom on the floor picking them up and him ready to jump off the table onto her back. He is more than willing to sprint back the assessment room with you and sit to point to one picture in a book before trying to climb on the table again.

CASE EXAMPLE 3

Emily is a 10 year old girl living with her grandparents. You walk out to the waiting room and she is transfixed by the TV. She is slumped in her chair and moves slowly when you ask her to come with you to the assessment room. She engages in some treatment tasks with her head on the table while chewing her hair. She starts to ask when she will be done (after 5 minutes) and often needs to be re-directed from a daydream to the task at hand. After 30 minutes, she is laying on the table and barely responding when asked a question.

QUESTIONS?

REFERENCES

- Atchison, B. (2007). Sensory modulation disorders among children with a history of trauma: A frame of reference for speech pathologists. *Language, Speech and Hearing Services in Schools, 38*, 109-116.
- Atchison, B. & Morkut, B. (2014). Developmental trauma disorder. In B. Atchison & D. Dirette (Eds.), *Conditions in occupational therapy* (pp. 323-335). Baltimore, MD: Lippincott Williams & Wilkins.
- McIntosh, D.N., Miller, L.J. & Hagerman, R.J. (1999) Sensory-modulation disruption, electrodermal responses, and functional behaviors. *Developmental Medicine and Child Neurology, 41*:608-615.
- Miller, L.J. (2014). *Sensational Kids*. New York, New York: Penguin Group.
- Richardson, M., Henry, J., Black-Pond, C. & Sloane, M. (2008). Multiple types of maltreatment: Behavioral and developmental impact on children in the child welfare system. *Journal of Child & Adolescent Trauma, 1*, 1-14.
- Schaaf, R.C., Miller, L.J., Seawell, D. & O'Keefe, S. (2003). Children with disturbances in sensory processing: A pilot study examining the role of the parasympathetic nervous system. *AJOT, 57*(4).