SO WHAT DOES SENSORY HAVE TO DO WITH ANYTHING?

Presentation by:
EASA Occupational Therapists
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All behavior has meaning

- Behavior is a reflection of the organization of your nervous systems at that moment and under those circumstances.
  - One way to look at it, is through a sensory lens
Sensory Systems

- Our sensory systems:
  - Tell us about the world around us
  - Help us to regulate our alert and calm levels for our best functioning
  - Help to keep us safe
  - Help us to attach and form social relationships
Sensory Systems—continued

- There are some sensory systems that tell us about the world around us:
  - Vision
  - Smell
  - Hearing
  - Taste

- And there are some that tell us about the world inside us:
  - Touch
  - Vestibular
  - Proprioception
  - Interoception
Sensory Systems – Experiential

- Vestibular- balance
- Proprioceptive- chair exercises
- Touch- self massage
- Vision – picture
- Sound – music
- Tastes- hot, sour, mint –bowls on table
- Interoceptive- hunger
- Smell- lunch!
Visual
1). Tells us about the world around us

Everything we learn about the world around us (and in us) comes through our sensory system.

It is usually at an unconscious level, so we are unaware of it.

This input should occur in a smooth and automatic way.

This is not a problem with the sensory receptors (like blindness, deafness, etc).
Tells us about the world around us—continued

- When all our sensory systems are working together we are able to take in sights, sounds, smells, and movement.

- This helps us to function in our lives by learning, loving, interacting, and appreciating the world around us.
2). Self Regulation

- We use our sensory system every day, throughout the day to regulate ourselves
  - It is the way nervous system is set up to work
  - Individualized since each nervous system is unique
  - Learned to do this as an infant
    - Relied on other to read our messages at first
    - Then learned to do this on our own
    - We learn to do what works for us, even if not always socially acceptable and whether it is effective or not
Self Regulation – continued

- Our alert system varies throughout the day and we have our highs and lows

- Each system is unique and individualized - so what works for you may not work for others

- We have learned set routines that work for us and our environments
  - AM/PM routines
  - When stressed
  - When bored
Self Regulation – continued

- We want to be in the “just right state” for as much of our day as we can.

- We vary from being in a too low or little to a too much
Normal development is based on self regulation:

- To be able to explore the world around us
- To learn from interacting with objects/people
- To be able to interact with others
- Cannot regulate self – cannot regulate body or emotions

- Foundation of other skills
Self Regulation – continued

[Circular diagram showing levels of the nervous system including Cognition, Intellect, Development, Sensory, Motor, Perceptual, and Central Nervous System structures.

- Cognition: Academic Learning, Daily Living Activities, Behavior
- Intellect: Attention Center Functions, Ocular Motor Control, Postural Adjustment
- Development: Eye-hand Coordination, Olfactory, Visual, Auditory, Gustatory, Tactile, Vestibular, Proprioception
- Sensory: Body Scheme, Reflex Maturity, Ability to Screen Input
- Motor: Sensory Security, Awareness of Two Sides of Body, Motor Planning
- Perceptual: Auditory Language Skills, Visual-Spatial Perception, Attention Center Functions
- Central Nervous System: Whole system structure.
Self Regulation – continued

- So how can we change our alert/calm levels?
  - Through our sensory systems
    - Vision
    - Hearing
    - Taste
    - Smell
    - Movement
    - Touch
3). Safety

- Our bodies are wired for protection and survival
- Sensory input comes in- brain evaluates it to see if we need to pay attention to it or not
- If not, then our bodies go back to what we were doing
- If so, then heart rate increases, opens up eyes, shuts down digestion= gets ready for fight or flight
- It too much stimuli to handle or the above is not working, then shuts down= goes into fright
Safety—continued

- If we are in fight or flight, we burn off the extra stress and energy
- If not, we need to get to a pre-stress state= relaxation techniques
- Also the longer a system is in stress state, the stress point is reset over time
- Today’s stress= traffic jams, paperwork, deadlines, mental stress not physical stress
- We need to burn off the excess cortisol and energy
4). Social Interactions and Connections

- Remember how the brain receives a stimulus and then evaluates whether it is a threat or not?
- We need to be in a calm state, not fight or flight to interact with others
- Need a calm state:
  - Eyes open
  - Heart rate even
  - Breathing relaxed
  - Focused on outside world
  - Muscles relaxed in order to make expressions or speak
Social Interactions and Connections – continued

- This makes attachment possible and bonding with infant and caregiver – dance between

- Facial expressions
- Vocalizations
- Eye contact
Sensory Processing

- We are all sensory beings, that is the way we are wired to function.

- Everyone has a unique sensory system – so what works for you, may not work for others.

- You already know your sensory system and what works for you or not.

- You have different sensory behaviors for different situations and times of the day.
Sensory Profile

- In EASA the Occupational Therapist uses the Sensory Profile to find out about the youth’s sensory processing.

- This helps us to know how to support them, interventions to develop, what environments they can function in and ways to teach them self regulation.
Dunn’s Model of Sensory Processing

- **Neurological threshold** -
  - The amount of a stimuli required for a neuron to respond
    - Low to high

- **Behavioral Response** –
  - The way a person acts in consideration of their neurological threshold
    - Passive to Active
Neurological Threshold Continuum

Dunn’s Model of Sensory Processing

Neurological Threshold Continuum  Behavioral Response Continuum

- Passive
  - HIGH threshold (habituation)
- Active
  - LOW threshold (sensitization)
Neurological Threshold

- brain has difficulty shutting out uncomfortable, confusing sensations
- distracted by reacting to overwhelming stimulation
- emotions, memory & thinking become disorganized

Alert + Calm
Able to regulate emotions, organize thoughts

- low sensory fuel = “hibernation mode”
- difficulty paying attention, processing thoughts
- may feel irritable, on edge, or zoned out
### Dunn’s Model of Sensory Processing

#### A Model of Sensory Processing

(Winnie Dunn, 1997)

<table>
<thead>
<tr>
<th>Passive Behavioural Response</th>
<th>Active Behavioural response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Under-Reactive System</strong></td>
<td><strong>Low Registration</strong></td>
</tr>
<tr>
<td>High neurological threshold: ‘Big glass’</td>
<td>Misses sensory stimuli/ slowed responses/ doesn’t notice what others do</td>
</tr>
<tr>
<td><strong>Over-Reactive System</strong></td>
<td><strong>Sensation Seeking</strong></td>
</tr>
<tr>
<td>Low neurological threshold: ‘Small glass’</td>
<td>Enjoys sensory stimuli / creates sensation in the environment</td>
</tr>
<tr>
<td><strong>Sensitivity to Stimuli</strong></td>
<td><strong>Sensation Avoiding</strong></td>
</tr>
<tr>
<td>Distractibility or discomfort with sensation</td>
<td>Limits exposure to sensory stimuli</td>
</tr>
</tbody>
</table>
Model of Sensory Processing—continued

- Low registration – needs more stimuli, tends to miss things, low energy

- Sensation seeking- seeks more input, lies sensory rich, actively seeks out

- Sensory sensitivity-reacts quickly and easily, distracted, irritable and disorganized

- Sensation avoiding – likes order and routine, tries to get away, gets overwhelmed easily
Model of Sensory Processing

- We need to identify what the sensory profile is
- Look at how it is impacting them
- Look at ways they have learned to cope with it (acceptable and not acceptable)
- Educate them about sensory processing
- Give them tools and sensory strategies to use
Model of Sensory Processing—continued

- How does it impact the youth?
  - School
  - Work
  - Self care
  - Leisure
  - Social
What can we do about these behaviors?

- Even if don’t have an Occupational Therapist on your team
- Be a detective and observe the youth -
  ◦ What do they like and seek
  ◦ What do they respond to +/-
  ◦ What helps to calm them
  ◦ Meet them where they are and support their sensory systems
  ◦ Teach the brain to regulate not stimulate
  ◦ Awareness and education
What can we do about these behaviors? –continued

- Sensory processing is a brain based disorder – so need to use the sensory system to change it

- Top down vs bottom up approach

- How does talking to these youth work? Or yourself?

- Need to go in from the bottom up (sensory/nervous system) to get the most impact and be the most effective
Move! Movement = changes in the brain and connections

- Stretching
- Walking – some of the best therapy happens on a walk
- Exercise
- Isometrics- wall push ups- chair pushups-
- Crawling under pillows- mats-rollup blanket
- Sit on a therapy ball
- Brain Gym activities
- Obstacle courses
- Yoga, stretches, tai chi
- Dance –shake-stomp
- Add music and really have a good time
Touch

- Deep pressure- hand massages, face massages
- Hand fidgets- koosh balls, shells, tangles, animals, figures
- Play- pladoh- use hands not tools,
- Soft fuzzy toys
- Weighted toys, blankets or lap pads
- Ankle weights
- Nerf balls –squish balls
Sight and Smell

- Pictures of calm scenes
- Colors

- Smell- has an emotional component so be careful
Sound and rhythm

- Rhythm of life
- Rhythm is organizing
  - Connects 2 sides of brain
  - Connects the frontal lobe to lower parts of brain for integration, insight and calming
  - Has physiological changes that last after the music is over
  - Helps with attention and concentration

  - Singing= social engagement, breathing, voice/tone, posture
Mouth—more than just for eating

- **Suck**—is calming and focusing
  - Straws-water bottles
  - Hard candy-suckers—don’t let chew

- **Blow**—is alerting and takes visual focus
  - Bubbles, straws-play a game blowing pingpong ball back and forth, pinwheels, knock down papers

- **Crunch**—alerting
  - Veggies, popcorn, ice, apples, pretzels

- **Chew**
  - gum, gummy bears, fruit rollups

- **Taste**
  - hot, sour, mint, cinnamon
Interoception

- Breathing-
  - Conscious, controlled breathing
    - Breathe in through your nose- fills all the cavities in skull and gets more oxygen into the blood
    - Breathing deeply to abdomen increases amount of oxygen and effects vagus nerve
    - Inhalation increases stress- need to breath when exercise
    - Exhalation= integrates mind and calms
    - Starts to reduce stress in 90 seconds when done correctly
How to impact the sensory systems

We combine several of the systems and use the power houses:

- Oral motor– proprioception, touch, taste, smell, breathing

- Movement- deep pressure touch, proprioception, vestibular (Heavy work, cross the midline)

- Hand fidgets- touch, proprioception, visual
Environment

- The world is a sensory place
- Look at the environment

  - Color
  - Lighting
  - Furniture
  - Smells
  - Sounds
  - Objects in the room
Remember

- Top down vs bottom up strategies
- Use the brain and body to regulate – doing, not talking
- Use the environment to support success
- Structure and boundaries
- Adapt activities for success
- Give them hope
- Have Fun!
Resources

- Uptight and Off Center, Sharon Heller (Symmetry, 2015) a good book for adults with SPD
- The Out of Sync Series, Carol Stock Kranowitz (Penguin Random House)
- Dunn’s Model of Sensory Processing
Resources

- Sensory-processing-disorder.com
- Spdlife.org
- Spdfoundation.net
- Out-of-sync-child.com
- Spnetwork.org
- Ottoolbox.com
EASA Occupational Therapists

- Heather Welker- Deschutes
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- Tracy Nguyen –Lane
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- Sue Wimmer- Marion, Polk and Linn
- Kylie McDermott- Clackamas
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