MAKING SENSE OF SENSORY INTEGRATION
WHO WE ARE

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OBJECTIVES

- Define Sensory Processing
- Review Sensory Systems
- Discuss Characteristics of Sensory Processing Disorder
- Attain sensory strategies to enhance a child’s ability to successfully engage in activities of daily living.
The role of an occupational therapist is to promote independence with daily living skills and functional everyday tasks.

A child’s daily living skills include play, self care: eating, dressing, grooming, toileting, sleeping in addition to participating activities with their family and friends.

Sensory processing is one factor that may be influencing a person’s ability to perform their functional daily living tasks.
Sensory integration is our body’s ability to take in the sensory information from our environment, organize the information, and use it to create a functional response.

- The sensory system is constantly processing information in order to understand the world around you.

- This system is responsible for taking in the sensory information and then deciding if it is important to respond or filtering out the unimportant information.

- Based on the work of A. Jean Ayers, PhD, OTR
WHAT’S SENSORY PROCESSING LOOK LIKE?

For Example: Trying a New Food

1. Take In Sensory Information
   - Color, taste, size, shape, smell, wet/dry, smooth/bumpy, temperature

2. Organize The Information
   - Is it a good smell, is it similar or different to foods you like

3. Create A Functional Response

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WHAT ARE THE SENSORY SYSTEMS?

1. Tactile System: Touch
2. Vestibular System: Movement, balance
3. Proprioceptive System: Position, body movements
4. Auditory System: Hearing
5. Visual System: Sight
6. Olfactory System: Smell
7. Oral/Gustatory System: Taste
TACTILE SYSTEM

• The sense of touch

  Responsible for:
  
  • detecting harm
  
  • localizing pressure
  
  • determining the quality of a stimulus (hot/cold, rough/smooth, sharp/dull)
  
  • discriminating between different types of touch (light/deep, tickle/scratch)
VESTIBULAR SYSTEM

• It is a fluid filled system located in the inner ear.

• The sense of movement, balance, and relationship gravity.
  
  – Tells us if we are moving, how fast we are moving, and in what direction we are moving.

  – It coordinates the movements of the eyes, head, and body.

• This sensory system maintains muscle tone, posture, and coordinates the two sides of the body.
The sense of position and movement of the body.

Uses information from the muscles and joints to give awareness of body position.

- This sense makes it possible for a child to adjust their body to prevent from falling out off a chair.
- Ex: Allows us to drink a cup of coffee with our eyes closed

Stimulated by push pull activities.
• The sense of hearing.

• Provides information about sound, pitch, volume, & tone.
  
  – When you are driving and hear an emergency vehicle your auditory system gives you a lot of information
     
     • The noise is high pitched because it needs to alert you
     
     • It is loud so you can orient to it
     
     • You can tell the location or direction it is coming from
     
     • You can notice if it is not near you anymore and it is safe to continue driving.
VISUAL SYSTEM

• The sense of sight.

• Provides information about color, size, brightness, shape, texture, depth, and space.
• The sense of smell.

• Provides information about fragrant, burnt, acid, spicy, foul, pungent, etc.

• Closely related to taste.
ORAL/GUSTATORY SENSE

• The sense of taste.
• Provides information about bitter, sour, salty, and sweet
DIFFICULTIES WITH SENSORY PROCESSING

• A well integrated sensory system is able to process and respond to sensory input efficiently, appropriately, and maintain a constant state of comfort.

• Deficits in sensory processing occur when the brain is not able to organize sensory input effectively or accurately.
  – take in the sensory information from our environment
  – organize the information
  – create a functional response

• When the process of sensory integration is disorganized, a number of problems in learning, skill development, play, and/or behavior may be evident.
WHAT SENSORY PROCESSING DIFFICULTIES MAY LOOK LIKE?

• Overresponsive or underresponsive to sensory input
• Unusually high (impulsive, on the go) or low (sedentary) activity level
• Limited functional play
• Coordination problems/poor motor planning - clumsy, bump into things, trip, fall
• Attention and/or behavior issues
• Low tone, fatigue with motor activities
SENSORY PROCESSING DISORDER CLASSIFICATION

Sensory Modulation Disorder
- Under-responsiveness
- Over-responsiveness

Postural Disorders & Dyspraxia
- Appear clumsy, uncoordinated, poor posture
- Difficulty planning body movements
- Difficulty seeking movement

Sensory Discrimination Disorder
- Can be with any or all sensory systems
- Difficulty using sensory information for skilled activities
- Ex: hearing a siren and know which direction it is coming from
# Sensory Modulation Disorder Defined

<table>
<thead>
<tr>
<th>Sensory Modulation Disorder</th>
<th>Over-Responsive</th>
<th>Under-Responsive</th>
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<tbody>
<tr>
<td></td>
<td>• Low Threshold</td>
<td>• High Threshold</td>
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<td></td>
<td>• Respond too much, too soon, or for too long to sensory stimuli</td>
<td>• Seem unaware of sensory stimuli</td>
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<td>• Have a delay before responding</td>
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<td>• Responds with less intensity</td>
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CONTINUUM OF RESPONSES TO SENSORY INPUT

UNDERRESPONSIVE

- High Sensory Threshold
- Sensory seeking
- Hyporesponsive
- Low Registration
- Sensory Cravings

OVERRESPONSIVE

- Low Sensory Threshold
- Sensory Avoiding
- Hyperresponsive
- Sensory Sensitive

Optimal Arousal Level
CHARACTERISTICS OF AN OVERRESPONSIVE SENSORY SYSTEM

• The child’s central nervous system is hyper alert to sensory input
• Tend to avoid sensory experiences
• May go into sensory overload, fear, or stress which triggers a ‘fight or flight’ or ‘fight or freeze’ response
• Overreact, negatively and emotionally, to ordinary movement sensations
• Cautious, slow moving, sedentary and hesitate to take risks
• Dislike messy play activities
• Distress during grooming and dressing tasks
• Cover ears to protect from noxious sounds
• Refuse certain food textures or temperatures
TOOLS TO ADDRESS OVERRESPONSIVENESS

• Provide deep pressure activities
  – Ball roll, hotdog roll, mat sandwich, weighted vest/pads, firm hugs

• Encourage play with multi-sensory toys
  – Fidgets, textured balls, putty, foam soap, water play

• Slow, gradual, predictable movements

• Activities should be close to the ground

• Warn before loud noises

• Provide a tunnel, tent, fort, or small space
CHARACTERISTICS OF AN UNDER-RESPONSIVE SENSORY SYSTEM

- The child’s central nervous system is hypo-aroused or under-aroused to sensory input
- Child seeks out sensory experiences due to poor registration of sensory input
- Seek alerting input
- Have poor body awareness, requiring firm pressure to know where they have been touched
- Constantly touch people and objects
- Need to move constantly, fidget, difficulty sitting still
- May not respond when called
- May stuff or pocket food
TOOLS TO ADDRESS UNDER-RESPONSIVENESS

- **Hand fidgets**
  - Textured balls, putty, theratubing, vibratory input

- **Use multi-sensory toys**
  - Putty, sand, noodles, shaving cream, foam soap, finger painting, vibration

- **Sit on a rocking chair, T-stool, seat disc, large ball**

- **Vary tone, pitch, and rate of speech**

- **Activities that provide heavy work (stretching and shortening muscles)**
  - Open/close door, help rearrange furniture, push stroller/wagon, tug-o-war, wall push-ups, chair push-ups, erase chalkboard, carry heavy books or backpack, playground activities (monkey bars, trampoline, jump off platform)
ENVIRONMENTAL ADAPTATIONS

- Provide a quiet environment
- Clutter free workspace
- Dim lighting
- Lower voice volume
- Color contrast
- Visuals: daily routines, schedules, checklists
OUTCOMES FOR OT INTERVENTION

• Promote functional, and purposeful activities
• Help children adjust to under/over sensitivities to promote an appropriate arousal level so they can participate optimally.
• Help the child/caregiver identify his or her arousal level
• Help the child and the parent identify appropriate sensory based coping strategies to adjust their child’s arousal level
• Assist families to create supportive sensory environments for their child
IS IT SENSORY OR IS IT BEHAVIOR?

- Children can respond to a sensory need with negative behavior
- The child’s sensory needs should be addressed as well as the behavior
- A sensory “diet” and a behavioral plan can be developed jointly
- Sensory input should be a preventive tool
- Be careful not to reward a child behaving poorly with sensory input
REFERENCES


