Tigger or Eeyore?
Sensory awareness and finding balance between the extremes
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in Collaboration with Patti Zoeller OTR/L

8/21/2015

"I have become all things to all people, that by all means I might save some. 23 I do it all for the sake of the gospel, that I may share with them in its blessings.”
I Corinthians 9:22-23

"How then will they call on him in whom they have not believed? And how are they to believe in him of whom they have never heard? 3 And how are they to hear without someone preaching? 15 And how are they to preach unless they are sent? As it is written, “How beautiful are the feet of those who preach the good news!”
Romans 10:14-16

"For we are his workmanship, created in Christ Jesus for good works, which God prepared beforehand, that we should walk in them.”
Ephesians 2:10

Occupational Therapy

“Occupational therapy is the therapeutic use of self-care, work, and play activities to increase independent function, enhance development, and prevent disabilities; may include adaptation of task or environment to achieve maximum independence and to enhance the quality of life”
The American Occupational Therapy Association
Occupational Therapy
• Occupational therapy promotes functional abilities and engagement in daily routines i.e. occupation = life skills
• In a pediatric setting, the occupational therapist deals with children whose occupations are play school, and socializing
• OT’s are trained to treat clients holistically, addressing their cognitive, emotional, social, and physical needs through functional, activity-based treatment.

Sensory Integration is one means of treatment occupational therapist may provide to their clients.

A Child’s Perspective
• https://www.youtube.com/watch?v=D1G5ssZlVUw

Sensory Processing
• Sensory Processing: the normal neurological process (body-brain connection) for organizing sensations for our use in everyday life. We use sensations:
  • To survive
  • To satisfy our desires
  • To learn
  • To function smoothly
Sensory Processing Disorder

SPD is a complex disorder of the brain that affects children and adults.
- Difficulty regulating responses, interpreting or responding appropriately to sensory input.
- Significant difficulties organizing sensation coming from the body and environment.
- Inappropriate or problematic motor, behavioral, attentional, or adaptive responses after sensory stimulation.
- Disorder: Manifested by difficulties in the performance in one or more areas of life: productivity, leisure/play or activities of daily living.

Sensory Systems

• Sight
• Sound
• Taste
• Smell
• Touch (Tactile)
• Movement (Vestibular)
• Pressure (Proprioception)
Sensory Integration

- Our brain receives sensory information from our bodies and surroundings.
- The brain interprets these messages and organizes our purposeful responses.
- Sensory integration provides a crucial foundation for later, more complex learning and behavior.

Sensory Integration

- Sensory integration is a model for understanding the brain-body connections in children and adults.
- Do you find yourself longing for a walk outside after being indoors all day? Do you tap your feet under the table during a long meeting? Does background music soothe you or irritate you?
- Your reactions relate to what your body needs and how it processes sensory input.
Sensory Integration

- For most children, sensory integration develops in the course of ordinary childhood activities. But for some children, sensory integration does not develop as efficiently as it should.
- When the process is disordered, a number of problems in learning, development, or behavior become evident.

Self-regulation

- Is the end product of sensory integration.
- Is the ability to attain, maintain, and change arousal/alertness appropriately for a task or situation.
- It interferes with our ability to organize behavior.
- Involves many neurological connections in the brain including the brain stem, reticular formation, hypothalamus, thalamus, autonomic nervous system, cerebellum, limbic system, vestibular system, and cortex.

Sensory Regulation

- **Limbic System**: regulates attention through the coordination of the autonomic, somatic, and behavioral systems. Ex. Monday morning response to school vs. vacation.
- **Vestibular System**: very important for maintaining a calm, alert state. Rocking vs. roller coaster
- **Cortex**: broad areas of the cortex are alerted during arousal; however, other parts of the cortex must be inhibited to allow for selective attention.
Pattern 1: Sensory Modulation Disorder
- Sensory Over-Responsive
- Sensory Under-Responsive
- Sensory Craving

Pattern 2: Sensory-Based Motor Disorder
- Postural Disorder
- Dyspraxia

Pattern 3: Sensory Discrimination Disorder

Sensory Modulation Disorder may occur in each sensory system

- Allows us to focus on what is most important.
- Difficulty adapting behavioral responses to sensory input. Child’s emotional responses are not adjusted to the situation.
- Difficulty achieving and maintaining an optimal range of arousal and adapting to challenges in daily life.

- 3 types of Modulation Disorders:
  1. “Oh, no!” response: Over-Responder
     e.g. Rabbit
  2. “Ho, Hum” response: Under-responder
     e.g. Eeyore
  3. “More!” response: Craver
     e.g. Tigger

- Diagnoses: LD, ADD, ASD, PDD, FRAGILE X, DD
Sensory Gating Theory

- Sensory information comes in and builds connections.
- Gate opens at the point you perceive or feel it.
- The level it opens = threshold.
- Under-responder = High Threshold – needs more, frequent and longer stimulation to respond.
- Over-responder = Low Threshold – needs much less quantity, less intensity and less duration to respond.
- All 3 subtypes are unable to provide correct sensations to themselves for modulation.

Treatment Theory

<table>
<thead>
<tr>
<th></th>
<th>Sensory Over-Responder</th>
<th>Sensory Under-Responder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gate Opens</td>
<td>TOO SOON, FEEL QUICKLY (Rabbit)</td>
<td>TOO LATE, FEELING DELAYED (Eeyore)</td>
</tr>
<tr>
<td>Threshold</td>
<td>LOW, LOW STIMULATION</td>
<td>TOO HIGH, HIGH STIMULATION</td>
</tr>
<tr>
<td>Treatment Goal</td>
<td>RAISE THRESHOLD</td>
<td>LOWER THRESHOLD</td>
</tr>
<tr>
<td>Treatment</td>
<td>LOW/SLOW</td>
<td>FAST/BLAST</td>
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</tbody>
</table>

Over-responder

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**Over-responder**

“Sensory Defensiveness”

- Over-responsiveness of the protective responses of the nervous system
- Hyper-responsive to sensation. Most commonly to touch and sound in combination.
- Their bodies feel sensation too easily or too intensely. They respond too much, too frequently, or for too long to sensory input.
- They feel as if they are being constantly bombarded with information and their brains perceive this sensory input as dangerous even when it is not.
- These child often have a fight or flight or freeze response to sensation.
- Constant state of "high alert" (over active sympathetic nervous system or under active parasympathetic nervous system).

**Red Flags**

- Aggressive or impulsive when overwhelmed by sensory stimulation.
- Irritable, fussy, and moody. Lots of anxiety!
- Unsocialable. They try to minimize sensation — avoid groups and relationships.
- Upset by transitions and unexpected changes.
- Extremely cautious and afraid to try new things (problem eaters).
- Often labeled a fussy baby, difficult or out of control.

**Over-responder Sensory System**

<table>
<thead>
<tr>
<th>Sensory System</th>
<th>Sensory Stimuli</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tactile</td>
<td>Light touch</td>
<td>Clothing tags</td>
</tr>
<tr>
<td>Visual</td>
<td>Avoids or is threatened by eye contact</td>
<td>Poor social skills</td>
</tr>
<tr>
<td>Taste/Smell</td>
<td>Gags on food</td>
<td>Picky eater</td>
</tr>
<tr>
<td>Auditory</td>
<td>High frequency sounds</td>
<td>Covers ears</td>
</tr>
<tr>
<td>Vestibular</td>
<td>Fearful of movement</td>
<td>Changing diapers (moving backwards)</td>
</tr>
<tr>
<td>Interoceptive (internal)</td>
<td>Stress or worry</td>
<td>Headaches, body aches</td>
</tr>
<tr>
<td>Proprioceptive</td>
<td>Slow, high intensity input</td>
<td>Calming and organizing</td>
</tr>
</tbody>
</table>
Principles of Treatment

1. Normalize the child's arousal. Child taught how to prevent over-arousal.
2. Heavy work to calm over-arousal-better is child administers sensation to self.
4. Adult must stay calm. Time and choosing battles.
5. Keep child busy with predictable tasks when in busy or new environments.
6. Slowly expose child to normal sensations.
7. Sensory tools-smooth, soft and squishy, and weighted.

Under-responder

• SUR is less sensitive to and less aware of sensory stimuli than most people.
• Examples:
  1. Doesn’t cry when seriously hurt.
  2. Doesn’t seem to notice when touched.
  3. Nearly always prefers sedentary activities.
  4. Is or was unaware of the need to use the toilet, eat, drink or fall asleep.
• Theory: over active para-sympathetic nervous system.
Red Flags

- Passive, quiet, withdrawn. They rarely initiate interactions with people.
- Apathetic and easily exhausted.
- Excessively slow to respond to directions or complete a task.
- Poor inner drive, uninterested in exploring games or objects or the world around them. Need a lot of prompts to stay engaged.
- Easily lost in own fantasy world.
- Under-responsivity to tactile, vestibular and deep pressure may lead to poor body awareness, clumsiness, or not grading movements appropriately.

Principles of Treatment

1. Use alerting, fast, or intense sensory input to generate arousal.
2. Use fast blasts of tactile, proprioceptive, and vestibular sensory input to alert whole body responses.
3. Use stimulation of taste and smell to activate arousal. Preparatory activities
4. Motivating to the child-star wars, cars etc. to tap inner drive.

Under-responder

<table>
<thead>
<tr>
<th>Sensory Domain</th>
<th>Sensory Stimuli</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditory</td>
<td>Name called repeatedly</td>
<td>Doesn't orient to or respond</td>
</tr>
<tr>
<td>Visual</td>
<td>Moving objects</td>
<td>Poor ball skills, loses place in reading</td>
</tr>
<tr>
<td>Taste &amp; Smell</td>
<td>Doesn't notice food properties</td>
<td>Eats too much/safety concerns</td>
</tr>
<tr>
<td>Touch</td>
<td>Light touch</td>
<td>Clothing askew on body, food on face</td>
</tr>
<tr>
<td>Vestibular</td>
<td>Movement experiences</td>
<td>Decreased desire to explore, seated tasks</td>
</tr>
<tr>
<td>Proprioceptive</td>
<td>Gravity external forces</td>
<td>Slumps, pushes too hard on pencil</td>
</tr>
<tr>
<td>Interoceptive</td>
<td>Under awareness of body needs</td>
<td>Has &quot;accidents&quot;</td>
</tr>
</tbody>
</table>
**Sensory Craving**

- “More, More, More!” Seems to need much more sensory stimuli than most people.
- Typically found in the **vestibular** system and **proprioceptive** system.
- They are on the move constantly, like jumping, crashing, rough housing and excessive swinging or spinning. They are constantly touching objects or people. They crave vibration and love watching spinning objects.
- Don’t accept limits; insatiable desire for sensory input.
- Can’t fill their “leaky buckets” or nervous systems (addiction theory).
- Over–aroused - (weak parasympathetic nervous system- less habituation).

**Red Flags**

- Overly “affectionate”, not understanding what is “their space” vs. “other’s space”.
- Constantly want control over every situation.
- Does not wait turn, interrupts constantly.
- Angry or even explosive when required to sit still or stop what he is doing.
- Prone to create situations others perceive as dangerous or disruptive (brain feels “normal” with chaos so kids seek equilibrium).
- Intense, demanding and hard to calm- become more aroused and disorganized with more sensory input (seekers will respond to increased input).

*Teach them to Stop, Wait, Watch, and Listen.*
Sensory Craving

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<tr>
<th>Sensory System</th>
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<tbody>
<tr>
<td>Proprioceptive</td>
<td>Muscles stretching and contracting</td>
<td>Excessive jumping, crashing and bumping</td>
</tr>
<tr>
<td>Vestibular</td>
<td>Changes in head position</td>
<td>Excessive rolling, rough housing, spinning</td>
</tr>
<tr>
<td>Oral</td>
<td>Cravings for mouthing</td>
<td>Licks, smells, bites</td>
</tr>
<tr>
<td>Visual</td>
<td>2 dimensional</td>
<td>Screen obsession</td>
</tr>
<tr>
<td>Auditory</td>
<td>Noise-louder the better</td>
<td>Very loud speaking voice</td>
</tr>
</tbody>
</table>

Principles for Treatment

1. Create organized movement experiences that are goal directed and purposeful.
2. Use intermittent, varying, or interrupted vestibular input.
3. Use program that incorporate “heavy work” with purposeful tasks.
4. Use environmental modifications when socializing with peers. (tape/ carpet square/ towels).
5. Use enclosed or small spaces to control activity.

Sensory Lifestyle

Sensory diet or lifestyle: providing purposeful sensory input as part of the daily routine to help a child feel organized and focused so able to:
- Tolerate sensations and situations he/she finds challenging
- Regulate his/her alertness and increase attention span
- Limit sensory seeking and sensory avoiding behaviors
- Handle transitions with less stress
How does your engine run?

• Imagine your body like a car engine.
• You may feel like your engine is running in “HIGH SPEED”; you may find it difficult to pay attention, sit still, and complete work.
• In “LOW SPEED”; you may find it hard to concentrate because you are daydreaming. Your body feels like a couch potato—no energy!
• Or “JUST RIGHT”; in this place it is easier to pay attention and complete your work.

Sensory Checklist

• When you are needing to concentrate at your work space, what sensory input do you prefer to work most efficiently?
  a. What do you put in or around your mouth? (food, gum, etc)
  b. What do you prefer to touch (clothing, fidget items, etc.)
  c. What types of movement do you use (rock in chair, tap fingers, move foot, stretch breaks, etc)
  d. What are your visual preferences? (natural lighting, visual distractions, clutter, etc)
  e. What auditory input do you use? (music, people talking, TV in background, etc.)

Vision

• Sense of seeing, perception (not to be confused with eyesight)
• Allows us to identify sights, anticipate what is coming at us, prepare for a response
Vision Activity

- Take turns watching the pinwheel spin—first in front of your face, then out of your periphery
- How are they different?
- Do you prefer one way over another?

Dysfunction

**Over-responsive**
- Bothered by bright lights/sun
- Avoids eye contact
- Dislikes visually busy places
- Prefers dim lighting, rubs eyes a lot

**Under-responsive**
- Loves shiny, spinning, moving objects
- Difficulty with eye-hand coordination tasks and visual tracking eg ball play, reading
- Loves, action-packed tv shows, electronic games
- Difficulty distinguishing between similar letters/shapes
- Not understanding concepts such as up/down, before/after, first/second, top/bottom

What can you do to help?

**Alerting**
- Bright lights, colors
- High contrast
- Visually busy environments/boards
- Technology eg ipad, computer limit to 15min

**Calming**
- Talk side by side, in mirror, or across room to decrease intensity of eye contact
- Natural light vs fluorescent
- Low lighting toys eg lava lamp, fish tank, fiber optic, busy bottle
- Visual schedule
- Decrease visual distractions
- Eliminate art hanging from the ceilings
- Restrict visual field e.g. folder
- Sunglasses
- Decrease contrast, colored acetate used with projectors
Toys

- Busy bottle
- Lava lamp, bubble dropper
- Fiberoptic toys
- Visual schedule

Case Study

1. Start talking next to, across room, or through the mirror for less intensity
   - Look through the Ipad camera to watch teacher during circle time (Eeyore kiddos)
2. First/then, limited time (10min)
   - Exchanges with the Ipad take turns, bring over toys related to the app they are playing eg farm animals
3. Model another way to play with toys and get them to imitate, new perspective of toy so if rolling on the floor roll on furniture instead
   - Give them a variety of things to spin

Hearing

- Sense of hearing to receive sounds
- Ability to process sounds to interpret meaning
**Hearing Activity**

- Try to tell person across the group a story while everyone around you has side conversations
- How difficult is it to get the details of the message clearly?

**Dysfunction**

**Over-responsive**
- Unable to pay attention with background noise
- Dislikes loud, sudden, or high pitched sounds that don’t bother others
- Covers ears and cries, asks others to be quiet
- May miss verbal directions or only be able to follow 1-2 directions in sequence

**Under-responsive**
- May not consistently respond to name
- Makes own silly sounds
- May appear oblivious to some sounds, has difficulty locating sound
- May use self-talk to get through a task

**What can you do to help?**

**Alerting**
- Fast-paced, loud music
- Increased facial expressions, tone of voice, proximity when giving directions

**Calming**
- Slow, rhythmic, quiet music
- White noise
- Metronome
- Earmuffs or headphones
Toys
• Musical instruments
• Soft background music eg ipad app
• Busy bottle soundmakers

Case Study
1. Use picture schedule let them know its coming, headphones or hands over ears
2. Get close to child and use big gestures and facial expressions to get attention. Guide them to next activity, but try to avoid just pulling by hand ie passenger in a car no idea directions to get to destination

Taste & Smell
• Taste and smell linked
• May result in picky eating or tasting inedible objects
• Sense of smell most powerful sense because directly linked to brain
Taste/Smell Activity

- Everyone in the group close your eyes except for leader who will spray a body spray mist
- What does it smell like? How does it make you feel?
- Now take a piece of gum and chew. How does it make you feel compared to the spray?

Dysfunction

Over-responsive
- Picky eating: object to textures or temperatures
- Talks about smell a lot, notices odors others do not, plugs nose,

Under-responsive
- May prefer spicy or hot foods
- Prefers strong odors eg perfume, cleaning product
- Licking inedible objects

What can you do to help?

Alerting
- Crunchy foods eg pretzels, raw veggies
- Lemon heads, mints
- Cold fruits eg oranges, grapes
- Scented markers

Calming
- Brush teeth with vibrating toothbrush to desensitize
- Chewy tube
- Chewing foods eg dry fruit, gummies
- Suck thick liquid through camelback water bottle or a straw eg yogurt
- Essential oils in sweatband eg lavender
- Lollipop, hard candy
- Bubbles
- Lotion
- Picky eating-draw picture of meal
Toys

- Chewy tube
- Electric toothbrush
- Sensory bins with scented materials
- Scented markers

Case Study

1. Let them touch food, make food journal ie draw picture of food, suck thick liquid through straw or water bottle
2. Use chewy tube, electric toothbrush, camel back water bottle as alternatives or give them heavy work to do for alternative input

Tactile

- Gives information about texture, touch, pain, and temperature
- Helps the person make sense of the world and respond appropriately to touch
Tactile Activity

• Pick a partner. One person closes their eyes, while other lightly touches their arm with fingertip. Try to determine where they touched your arm.
• Give your partner a tennis ball massage on their back

Dysfunction

Over-responsive
• Sensitivity to textures eg clothing
• Avoidance of getting messy
• Avoidance of affectionate touch esp light touch
• Dislikes nail trimming/hair-cutting/hair-brushing/tooth-brushing
• Limited food preferences
• Difficulty standing in line with others

Under-responsive
• Doesn’t notice messy hands/face
• Touches everything, brings objects and toys to mouth
• Doesn’t notice cut/scrapes/pain
• Unintentionally rough with other kids or pets

What can you do to help?

Alerting
• Light touch, tickling
• Sensory bins eg rice, sand, beans
• Find hidden objects
• Painting with various textures
• Matching textures, tactile puzzle
• Vibrating toys

Calming
• Deep pressure, hug
• Weighted blanket, stuffed animal
• Fidget toy
• Compression vest, Spandex
• Massage
Toys
- Weighted blanket
- Kinetic sand
- Fidgets

Case Study
- Walk at end of line so no one behind them who could accidentally touch them
- Give them carpet square for own play space
- Use deep pressure hugs to show affection
- If child hits someone, teach them to touch their own body instead of others e.g. find your "hands" and squeeze or tap "knees"

Vestibular (movement)
- The sense of movement
- Info provided to the inner ear about gravity/ space, balance/movement, and our head/body in relation to the surface of the earth
- Spinning, swinging, and hanging upside down provide the most intense, longest lasting input.
Vestibular Activity

- One person close their eyes and spin 5x in the middle of circle with other group members ready to catch them
- Tell person to complete motor command eg. touch nose

Dysfunction

Over-responsive
- Avoidance of movement
- Avoid head being tipped backward or being upside down
- Dislike of physical activities
- Poor balance, falls easily, bumps into objects
- Difficulty with directionality

Under-responsive
- Crave fast, spinning movement without getting dizzy, rocks self
- Thrill seeker jumping/climbing
- Enjoys being upside down
- Cant sit still at desk, constantly moving
- May have low muscle tone (muscles seem too soft and floppy), W sitting, slumped posture

What can you do to help?

Alerting
- Rotation movement spinning, rolling, sliding, dancing
- Upside down, rolling on incline
- Bouncing on ball
- Disc seat
- Scooterboard

Calming
- Linear movement, rocking, swinging
- Jumping on trampoline
- Crawling through tunnels, up inclines, obstacle course
Toys
- Therapy ball
- Disc Seat
- Compression Swing
- Wedge cushion

Case Study
- Give them a disc seat or theraband on chair legs to give movement input while sitting at the table
- Give movement breaks eg animal walk, carry something for the teacher, swing in sensory room

Proprioception
- the sense of joint and muscle position in space
- lifting, pushing, and pulling heavy objects, including one's own weight
Proprioceptive Activity
• Close eyes and have group members position body parts so person has to mirror with other limb or describe positioning of each body part

Dysfunction
Under-responsive
• Poor sense of body awareness
• Sucks thumb or fingers, chews on clothes, and toys
• Grinds teeth, cracks, knuckles
• Poor fine motor skills
• Lean, bump, or crash into objects and people
• Difficulty grading movements
• Stiff, uncoordinated, clumsy
• Walks on toes or walks heavily
• Loves tight hugs and “squishing” activities/chooses thick/heavy blankets
• Prefers tight-fitting clothes
• Invade other’s personal space
• Self-abusive behaviors

What can you do to help
Heavy Work
• Class chores
• Isometrics eg push against wall, push hands together, hook hands and pull apart, chair push-up etc.
• Push/pull eg joint compressions (weight-bearing or person pressing joints together eg hands and ankles, theraband, “row, row, row your boat”
• Weighted items eg backpack, lap pillow, weighted vest, ankle weights
• Weight-bearing eg yoga, animal walks, wheelbarrow, commando crawl
• Jumping eg trampoline, crashing games into cushions
• Deep pressure eg spandex, hug, massage, sandwich with blanket/pillow, steamroll with therapy ball, manipulative play putty/playdoh, stressball
• Chewy foods or water bottle eg camelback, coffee stirrer
Toys
- Ball pit
- Therapy ball
- Body sock
- Bean bag
- Lap weight
- Theraband
- Stressball
- Yoga cards
- Spandex
- Camelback

Case Study
1. Teach them not to be a "space invader." Give them defined space eg carpet square or body sock, fidget toy, lap weight for circle time activities
2. Have them march somewhere or do animal walk for extra input to joints to increase body awareness

Other Support Strategies
- Environment: lighting, noise level, seating
- Simplify directions
- Ease transitions: visual schedule, social stories, transition object/job
- Movement breaks
- Positive reinforcement: sticker chart
- Emotional needs: stoplight
- Buddy system: peer model
- Safe space: quiet corner