

---

---

# Sensory Processing

— Kerry Fallon, MS, OTR/L —

OT/PT Coordinator

---

---

# What is Sensory Processing?

Sensory Integration is the process in which our central nervous system registers and integrates sensory information from our environment to provide us information about the world around us

Once this information is processed and integrated, we produce an appropriate or adaptive responses based on this information

Ex: When you feel a hot stove, you immediately withdraw your hand

Ex: You walk outside and sense that it is cold so you go back in and grab a coat

# Sensory Processing Difficulties

Sensory processing disorders occur when an individual has difficulty processing and integrating sensory information from their environment and producing an appropriate response in that setting

This can manifest as an individual missing or misinterpreting important sensory information in their environment or demonstrating inappropriate responses to specific types of input

# What do Sensory Processing Difficulties look like?

We all have different thresholds for detecting sensory input within our environment

## High Threshold

An individual needs sensory input at a higher intensity level than most to register it

- A child who doesn't seem to notice when they bump into something or seems to never hear when you call their name

## Low Threshold

An individual detects sensory input at a much lower intensity than most

- Sensitivity to smells or an aversion to tags in their shirts

# High Threshold Individuals

Children who have high thresholds are considered Hypo-responsive to sensory input in their environment

When children have a **Low Registration/Hypo-Responsive** sensory processing style, they tend to present in one of two ways:

**Sensory Seeker:** Because they need more sensory input than most to activate their sensory system, they spend their days seeking out sensory input in their environment to help "wake up" their systems to self-regulate

**Sedentary or Low Arousal Level:** Because it takes so much input to regulate their sensory systems, they choose to remain in a hypo-responsive state due to the energy it takes to try and wake up their sensory systems

Ex: On a day you are absolutely exhausted, you have one of two choices....

Get up and go to the gym, get a cup of coffee, listen to upbeat music to help stay awake and alert

Decide to just have a lazy day on the couch and watch TV and order take out

# Low Threshold Individuals

Children who have low thresholds have a sensory profile that we consider to fall into the **Hyper-Sensitive** category which typically presents in the following ways:

**Sensory Sensitivity-** These children may exhibit strong emotional or behavioral reactions to sensory input in their environment, especially when it is unexpected or unanticipated

**Sensation Avoiding-** These children may flat out refuse to engage in activities or go to environments that have sensory input that they find distressing or aversive

# What types of Sensory Input do we process?

- Tactile Input
- Visual Input
- Auditory Input
- Taste
- Smell
- Proprioceptive Input- Input that is given to our joints and tendons that helps us feel where our body is in space
- Vestibular Input- Movement and balance processed through our inner ear

# Modulation

Sensory Modulation is our brain and body's ability to take in and process the sensory stimuli in our environment and produce an appropriate response

This includes us being able to pay attention to the important and pertinent information in our environment and ignore unnecessary input

- Being able to ignore the sound that the heater is making to be able to carry on a conversation
- Being able to listen to a teacher and not get distracted by the signs and posters on the wall



So what does this  
look like in our kids?

# Tactile Input

---

## Under Processors

- Sedentary/Low Arousal
  - May not notice when you tap them on the shoulder
  - Bump into walls or other students
  - May not notice that their face is messy
- Sensory Seeker
  - Runs their hand along the wall
  - Touches everything around them....including other students
  - Seeks out unusual or strong textured objects

## Hypersensitive

- May become distressed by the tags on their clothing or a certain type of garment
- Dislikes getting their nails clipped or hair cut
- Refuses to engage in activities or art projects where their hands get messy
- Lashes out at other students or teachers when they are touched unexpectedly

\*\*It is important to note that light or soft touch is more aversive than deep pressure touch\*\*

# Visual Input

---

## Under Processors

- Sedentary/Low Arousal
  - Seem to miss problems or important information on a worksheet
  - May have trouble finding their items in their room or desk
  - May have trouble distinguishing between similar looking shapes or letters
- Sensory Seeker
  - Likes toys with exciting or bright lights
  - Walks around looking closely at objects or posters in the room

## Hypersensitive

- May be distracted by posters or signs in the classroom
- Frequently gets distracted by any movement going on around them
  - i.e. May look away from the activity any time someone gets up to go somewhere
- May complain about bright light

# Auditory Input

---

## Under Processors

- Sedentary/Low Arousal
  - Seems to frequently miss oral directions
  - May not hear their name when it is called
- Sensory Seeker
  - Listens to music or the television louder than most
  - Hums or makes noises to themselves
  - Has difficulty modulating the volume of their voice

## Hypersensitive

- Becomes distressed by loud unexpected noises such as a fire drill
- Is anxious in a loud environment such as an assembly or a large group
- Covers their ears during seemingly normal levels of noise
- Tries to avoid or escape activities with music or lots of talking

# Taste and Smell

---

## Under Processors

- Sedentary/Low Arousal
  - May not notice strong smells
  - May not have strong food preferences or seems ambivalent to food choices
- Sensory Seeker
  - Mouths or licks non food objects
  - Chews on their shirt, toys, or pencils
  - Smells or sniffs common objects
  - Enjoys food with strong textures (i.e. crunchy) or tastes (i.e. spicy)

## Hypersensitive

- May dislike the cafeteria or restaurants with strong smells
- Bothered by a person wearing strong perfume
- May have a limited diet (i.e. prefer bland foods)
- Dislikes certain foods due to textures (may gag or show strong emotional reaction to being presented that food)

# Vestibular Input

---

## Under Processors

- Sedentary/Low Arousal
  - Slumps or leans on their chair or desk
  - Rarely engages in active play
- Sensory Seeker
  - Constantly moving around the room
  - Loves spinning or swinging
  - Rocks in their chair or on the floor

## Hypersensitive

- May get motion sick in the car or bus
- Dislikes slides or swings
- Prefers sedentary activities
- Avoids bikes or tricycles

# Proprioceptive Input

---

## Under Processors

- Sedentary/Low Arousal
  - Child appears clumsy and doesn't seem to know where body is in space
  - Leans on objects or furniture
  - Appears to have low muscle tone and may W-Sit
  - Has trouble using the correct amount of force when opening containers or pushing in their chair
  - Doesn't use enough force when writing
- Sensory Seeker
  - Runs, hops, jumps on the stairs
  - Loves to crash and wrestle
  - Walks on toes

## Hypersensitive

- Proprioceptive Input is almost always regulating to the nervous system so it is very unlikely that a child will find proprioceptive input upsetting
- You may find that some children are resistant to deep pressure input if they are not in control of it
  - May not like the feeling of a vest or may not like adults applying pressure to them
  - Look to find alternatives where the child is in control of the input

# How does this tie into behavior?

When we have problematic behaviors, especially around a specific time of day or activity, we have to really consider the environment and factors that may not be so obvious

- Is the child under responsive to auditory stimuli and often doesn't process verbal directions which may be why they seem like they aren't following directives in a timely manner?
- Is a child sensitive to smells at lunch time which puts him on edge and then getting bumped into accidentally sends the child into sensory overload?
- Is a child underresponsive and has decreased body awareness which leaves them constantly seeking out movement and deep pressure input as a way to try and stay engaged in their environment?



# Zones of Regulation

A self-regulation program developed by Leah Kuypers to teach kids how to identify their current physical and emotional state using colors

The key aspect of this is that **NO ZONE IS BAD**, it is whether how we feel matches the expectations of the situation and how you manage those feelings

Ex: It's okay to be silly and loud at recess (yellow zone) or it's expected that you would be sad (blue zone) if your pet died

Ex: It's okay to be angry if a friend is bothering you but it's not okay to hit them

# The ZONES of Regulation

			
<p>Blue Zone</p> <p>Sad Bored Tired Sick</p>	<p>Green Zone</p> <p>Happy Focused Calm Proud</p>	<p>Yellow Zone</p> <p>Worried Frustrated Silly Excited</p>	<p>Red Zone</p> <p>overjoyed/Elated Panicked Angry Terrified</p>

# Sensory Supports to Increase Attention and Energy

- Movement, Movement, Movement
  - Jumping on a trampoline
  - Animal walks
  - Spinning (in office chair, sit and spin)
    - Anytime you do spinning activities where the adult is controlling the pace, start off slow and monitor the child's response
  - Being upside down
  - Scooter board
  - Bouncing on therapy ball
- Glider or rocker chair
- Crunchy snacks or water bottle with a sport top or chewy spout
- Music
- Fidgets

# Sensory Supports for Calming or Organization

- Linear movement (Rocking chair, swing)
- Headphones or calming music
- Playdoh, kinetic sand, sensory bins, popping bubble wrap
- Animal Walks or Wheelbarrow Walks
- Jumping or crashing into pillow/blanket pit
- Body sock or weighted blanket (should be 10% or less of body weight and do not recommend while sleeping without consulting an OT)
- Yoga cards
- “Heavy work”/“deep pressure” that make the muscles work are calming/organizing.
- Push/pull heavy laundry basket
- Push/pull/carry heavy (unbreakable) groceries
- Placing wet laundry into the dryer
- Carry stack or bag of books
- Tug-of-war games
- Obstacle courses (over, under, through, around obstacles)
- Pulling a heavy wagon
- Roll up tightly in a blanket (like a burrito or hot dog)
- Playground activities (swinging, hanging, climbing, sliding)
- Drinking liquids through a straw (or other thicker liquids such as milkshake, pudding, jello, applesauce, yogurt)
- Blowing games such as bubbles, blow cotton ball or ping pong ball across the floor (can use a straw to blow)
- Use spray bottle in bathtub, to water flowers, for water fight
- Place a heavy item (such as a large phone book, heavy blanket, or plastic bottle of water) on lap when sitting
- Lie on floor on his stomach propped up on elbows (this gives sensory input and helps strengthen upper back and arms) while reading books or doing puzzles
- Give deep pressure massages on arms, legs, back

**\*\*If a child needs movement, it's okay to let them run around to “get their energy out” but you need to end with a calming activity to help bring their energy levels back down\*\***