





REVIEW OF **SENSORY PROCESSING** AND PRACTICAL STRATEGIES FOR TEACHING SELF REGULATION

 Low Registration	 Sensory Avoiding
 Sensory Seeking	 Sensory Sensitive

What is Sensory Integration

- Our senses make up the sensory system
- They are the foundation blocks of who we are
- The process of how we make sense of it is called **Sensory Integration**
- Sensory Integration is the neurological process
- We constantly take in sensory information through our bodies from the environment
- As our brains organize or integrate this sensory information it becomes meaningful to us
- Sensory integration allows us to respond to the specific sensory input we receive automatically, efficiently and comfortably

Our Senses and Brain Plasticity

- Sensations come into nerve endings in our body traveling to many areas of our brain
- Our brain compares each incoming sensation with other incoming sensations and then decides how to respond
- The more we challenge our brain by learning and doing the more connections and pathways our nervous system makes, from stringing beads to playing an instrument
- The more we repeat the new skill, the stronger the pathways in the brain become, and the skill becomes automatic

Example of Brain Plasticity

Learning to play the guitar

- When you first play a chord, a neural connection is made
- Each time you play the chord, the connection is facilitated
- Eventually, your fingers know how to play it without conscious thought
- You have, in effect, remodeled your brain



The Familiar Senses

- We have 5 familiar senses that respond to sensory input from outside our body

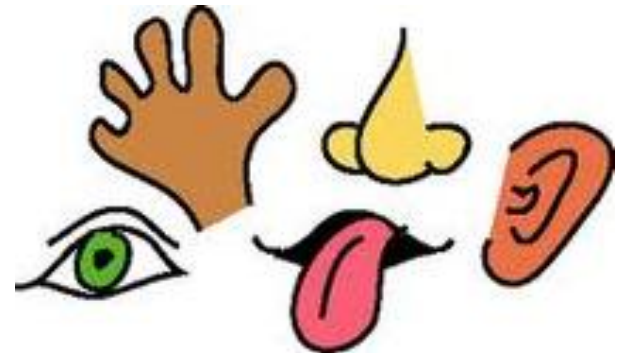
Auditory (sound) – Information through the ears

Gustatory (taste) – Information through the mouth

Olfactory (smell) – Information through the nose

Visual (seeing) – Information through the eyes

Tactile (touch) – Information through the hands & skin



The Hidden Senses

We have 2 hidden sense that respond to sensory input **inside** our body

- **Vestibular** – Information about movement through the inner ear
- **Proprioceptive** – Information from muscles, ligaments and joints



The Two Hidden Senses: Vestibular and Proprioceptive

- Along with the Tactile (touch) system, the **vestibular and proprioceptive** senses are fundamental in laying the ground work for a child's healthy development
- When the hidden senses operate automatically and efficiently a child is able to focus his eyes, ears and attention (familiar senses) to the task at hand

Normal Development of Sensory Integration in Infants and Children

- The development of Sensory Integration is similar to a child building with blocks
- Each block rests on the building blocks under it.



☐ Level 1 – **Hidden senses**

(Proprioceptive & Vestibular) + Tactile

☐ Level 2 – **Perceptual Motor Foundations**

☐ Level 3 – **Perceptual Motor Skills**

The Four Levels of Sensory Integration

LEVEL FOUR – ACADEMIC READINESS BY 6 YEARS

Academic Skills
Complex Motor Skills
Regulation of Attention
Organized Behavior
Specialization of Body and Brain
Visualization
Self-Esteem and Self Control

LEVEL THREE – PERCEPTUAL-MOTOR SKILLS BY 3 YEARS

Auditory Perception
Visual Perception
Eye-Hand Coordination (Pencil Skills)
Visual-Motor Integration
Purposeful Activity

LEVEL TWO – PERCEPTUAL-MOTOR FOUNDATIONS BY 1 YEAR

Body Percept (Body Awareness)
Bilateral Coordination (Using Both Sides of Body)
Lateralization (Hand Preference)
Motor Planning (Praxis)

LEVEL ONE – PRIMARY SENSORY SYSTEMS BY 2 MONTHS

Tactile Sense (Touch)
Vestibular Sense (Balance and Movement)
Proprioceptive Sense (Body Position)
(Visual and Auditory Senses)

What is Sensory Integration Dysfunction?

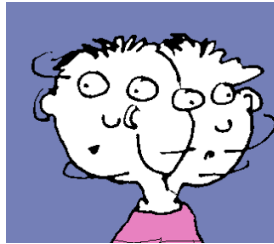
- **The inability to take in, organize and respond to sensory information in a meaningful & appropriate way**

Also called:

- Sensory Integration Disorder
- Sensory Processing Disorder
- SI Dysfunction

What Does It Look Like

- Some individual may be overly sensitive, while others are under-responsive



- Everyone processes sensory input differently
- What matters: when any sensory input is negatively impacting the child's life & causing problems

The Sensory Defensive Child

Common behaviors:

- Responds negatively or emotionally to light touch sensations
- Avoids messy play such as sand, finger paint, paste, glue, mud and clay
- Avoids touching certain textures
- May appear irritable or fearful when others are too close
- Fearful of climbing or descending stairs



The Sensory Defensive Child

- Withdraws from classroom participation and avoid group movement activities
- Be distressed by loud and sudden noises
- Avoids bright lights and sunlight
- Avoids eye contact
- Over-responds to physically painful experiences
- Exhibits behavior that seems stubborn, rigid, inflexible, willful, verbally or physically pushy

Strategies for Sensory Defensiveness

- Watch for cues – overly stimulating environment
- Provide quiet spaces to help the child regroup and organize
- Allow tactile defensive children to stand on the end of the line or arrange classroom seating
- Seating away from open windows and doors
- Use tools such as paintbrushes in activities that involve the use of glue or finger paints

Types of Sensory Defensiveness

- Auditory Defensiveness – Sound
- Tactile Defensiveness – Touch
- Oral Defensiveness – Taste/Smell/Tactile
- Vestibular Insecurity – Balance and Movement

Auditory Defensiveness

Common behaviors:

- Student may show extreme sensitivity to different sounds (vacuum, bell, door slam)
- Frequently cover their ears to block out 'loud' noises
- Anxious or uncomfortable in noisy environment – may refuse or delay going into an assemble.
- Avoids activities that most children enjoy, (recess, birthday parties)
- May focus on wrong sounds and not complete the task

Strategies for Auditory Defensiveness

- Prepare the student for bells, fire drills (desensitize)
- Provide ear plugs or headset for assemblies (to decrease noise) ‘White noise’
- “Buddy system” or hand over hand assist
- Headset to focus on task
- Music therapy
- Provide alternate environment if possible, a quiet area

Tactile Defensiveness

Common behaviors:

- Student may overreact to ordinary touch experiences (touching playdoh, being touched by others, shirt/sock tag aversion)
- They dislike the 'feel' and are hesitant to try
- Avoids daily hygiene and certain clothes
- Avoids light touch but seeks out deep touch (hugs)
- Fidgets inappropriately (rocking, clapping, shaking hands, rubbing same spot)

Strategies for Tactile Defensiveness

- Provide desensitization – rice/beans box
- Hand over hand to guide and touch new things
- Fun activities – pretend play for hygiene, demonstration, sequence, repetition, pictures
- Crafts with various textures
- Brushing, weighted objects
- Provide fidget toys and limits

Oral Defensiveness

Common behaviors:

- Student may be a 'picky' eater
- May gag from certain textures, taste or smells
- Avoids messy meals (does not like food items to touch – will eat items separate)
- Dislikes brushing teeth or washing face
- Aversion to food or cleaning smells, may show agitation
- Inappropriate tasting/mouthing non food items

Strategies for Oral Defensiveness

- Work with family to identify and obtain favorite foods
- Keep hygiene items in recognizable container
- Introduce one food item at a time
- Avoid or modify environment – smell
- Provide chewy items for self stimulation

Vestibular Insecurity

Common behaviors:

- Student may have excessive fear of falling during ordinary movement
- Dislikes swinging, riding a bike, climbing, sliding
- Poor endurance/tires easy/poor muscle tone
- Overall weak muscles, especially pencil grip
- Walk on toes or very stiff with joints “locked”
- Doesn’t like to walk on uneven surfaces
- Can not sit still on a desk; sits on feet, head down
- Poor socialization, avoids groups, poor boundaries

Strategies for Vestibular Insecurity

Common behaviors:

- Encourage hand over hand assist during play time to climb, slide and ride
- Elicit peer assist or a “Buddy system” to play or socialize
- Adjust writing angle, size of pencil/color
- Provide stretching, movement, Yoga type activity
- Utilize flexible seating and/or weighted vest; heavy work
- Role play

The Sensory Seeking Child

Common behaviors:

- Needs to touch and feel everything in sight
- Frequently removing socks and shoes
- Gets very close to others and touching them even if his touches are unwelcome
- Enjoys movement that provides strong sensory feedback

The Sensory Seeking Child

- Needs to keep moving as much as possible
- Constantly chewing on objects
- Appears to be aggressive
- Seeks bright lights and direct sunlight
- Seeks visual stimulation
- Schoolwork is often messy or disorganized

Strategies for Sensory Seeking Children

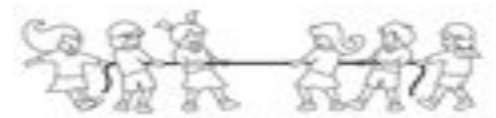
- Let child be a teacher's assistant
- Allow the child to stand by the desk or work on the floor or his/her stomach
- Wrap bungee cord or elastic band around chair legs to provide sensory input
- Allow the child to sit on gym ball or move-and-sit cushion placed on the chair

Strategies for Sensory Seeking Children

Encourage active recess:

- Swinging on play equipment
- Rope climbing, pulling
- Pushing wagons
- Carrying weighed objects
- Wheelbarrow walking

Allow for movement breaks



The Sensory Under-Responsive Child

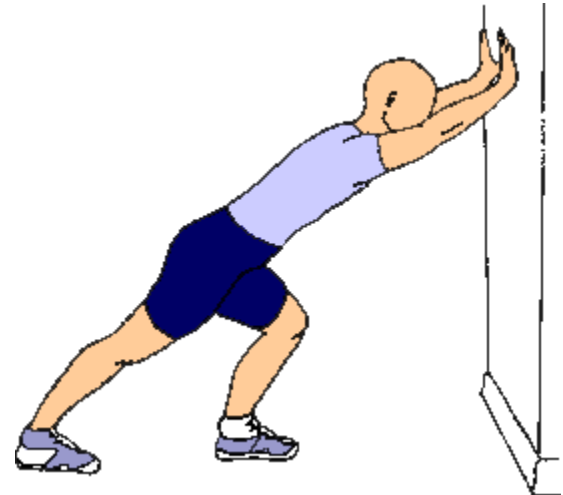
Common behaviors:

- Unaware of messiness on his face
- Shows little or no response to pain from scrapes, bruises or cut
- Fails to realize he has dropped something
- Hurts other children during play
- Appear clumsy and uncoordinated
- Seems to lack inner drive to move actively



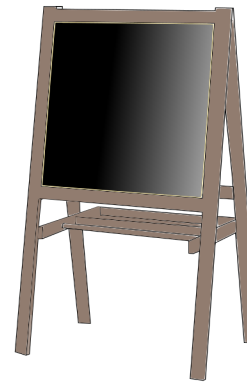
Strategies for Sensory Under-Responsive Children

- Provide interactive input and exaggerated gestures
- Use visual prompts that are colorful and of high interest
- Movement breaks with proprioceptive exercises
 - Wall Push-ups and Chair Push-ups
 - Hand Rub
 - Clapping
 - Stretching activities



Strategies for Sensory Under-Responsive Children

- Incorporate tactile component to task
 - Writing on vertical or inclined surface, (an easel or slant board)
 - Sandpaper under writing surface



Sensory Diet

- A personalized schedule of sensory activities that gives your child the sensory fuel his/her body needs to get into an organized state and stay there.
- Provides the sensory input at regular intervals throughout the day to maintain appropriate arousal a person needs to stay focused and organized.

Developing A Sensory Diet

- Begin with observations, what behaviors are you seeing
- Look for patterns or differences in behavior in various environments & with different stimuli
- Give the child the sensations they are needing in a safer, healthier way
- Long term goal is for the child to be able to self-regulate

Sensory Diet – Individualized

- Individualized per student – some students are oversensitive to touch, but under responsive to movement
- Remains flexible and changeable with environment
- Identify '**triggers**' to inappropriate behavior/or reaction to sensory stimuli
- Transitions – what makes it smoother
- Identify likes/dislikes
- Note any gross or fine motor problems (does student fall or bump into things, balance problems, writing, coordination problems)

Sensory Diet

- Environmental
- Schedule
- Auditory, Sight, Smell
- Tactile – Touch
- Oral – Motor
- Vestibular – Movement and Balance
- Proprioception – Movement and Resistance



Environment

- Limit extraneous visual material; provide written instructions/assignments/notes
- Organize class materials with labels (colors, words and pictures)
- Use note cards or tape number/letter line on desk
- Use tactile manipulatives
- Limit auditory distractions – prepare SID student for scheduled drills
- Define student space with visual and tactile aide

Schedules

- Flexible but structured and organized
- Pictures or color coded
- Encourage families to share home schedules & changes anticipated
- Encourage staff to recognize student needs for flexibility in schedules – allow space for ‘melt downs’

Auditory, Sight, Smell

- Quiet Space – calming, safe space
- Headphones – concentration, overload
- Highlighter strip – decreases visual stimuli, organizes
- Calm music – low volume, no change tempo
- Alerting music – medium volume, frequent changes
- Calming scents – lavender & vanilla – calm
- Alerting scents – peppermint & lime - alerting

Tactile - Touch

- Deep touch – ‘hug yourself’ deep pressure – Calming
- Textures – glue on sticks – focus & attention
- Playdoh – hide items, make shapes, letters – Calm, proprioceptive input, strengthen hands & fingers for handwriting
- Box of beans/rice – hide item – Alerting, whole body discriminative light touch

Oral Motor

- Gum – mix flavors – Calming
- Chew device – Deep pressure to jaw
- Water bottle – add lemon – Calming, Proprioceptive input
- Wide straw (less effort) – Facilitates convergence of eyes. Prepares eyes for reading/computer work

Vestibular – Movement & Balance

- Rocking chair, glider, ball chair – Calming, improves attention, motor planning and body awareness; decrease fidgeting
- Scooter board, swinging, trampoline, rolling, net swing, spinning – Alerting, facilitates upper body strength and stability; improves head & eye control; integrates visual & vestibular systems

Proprioception – Movement & Resistance

- Weighted vest, blanket, lap pad, pencil weight – Calming, increases focus, attention & body awareness; use the least amount of time for desired result
- Burrito, pillow crash – Calming, deep pressure, body awareness
- Wall & chair push ups – Calming, strengthens upper extremities, prepares hands for writing
- Funny face – lace your fingers together, place hands on top head & press down, suck in your cheeks to make fish face – Calming provides organizing input, especially after sensory overload

Classroom Tips

- Preferential seating
- Visual cues to secure student attention
- Have student repeat instruction prior to beginning task
- Keep tone even and moderate pace
- Provide outline & vocabulary list
- Provide notes and let student highlight
- Sequential steps for directions
- Define specific boundaries & rules

Handwriting Tips

- Encourage strengthening by modifying surface (vertical & horizontal)
- Small pencil for tripod grasp
- Typing/keyboard skills may be an alternate form of writing. Start early showing the student how to type his name
- Graph paper used to align numbers, letters
- Alternate forms of paper – large lines, colored lines, raised lines
- Directional maze tracing & cutting
- Stencils for letter formation
- Tactile letter formation (playdoh, sponge, trace shaded or dots)
- Cutting cardboard, playdoh, darkened outlines objects

Take-home message

- Each child is different.
- Proprioceptive exercise help kids who have both high and low alert levels to be just right.
- In-class strategies will help them attain a just right alert level, increasing their capacity to learn in class.

The End

Thank You

