

# **Sensory Processing Disorders Don't Just Happen In Special Education**

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## **Objectives**

- ❖ To gain a better understanding of the sensory system and how it affects the behaviors of both children and adults
- ❖ To understand the two types of sensory responses: under responsive or hyper-sensitive and over-responsive or hypo responsive
- ❖ To gain practical knowledge in how to make adaptations to your classroom routines/curriculum to assist children who are challenged by their sensory differences

***“Seven or eight years of moving and play are required to give the child a sensory motor intelligence that can serve as the foundation for intellectual, social, and personal development.”***  
**Jane Ayres, PhD.**

❖ **Sensory Receptors**

- Visual system: eyes
  - Auditory system-ears
  - Taste system-mouth
  - Smell system-nose
  - Touch system (tactile)-skin
  - Vestibular system-inner ear (force of gravity and movement)
  - Proprioceptive system-muscles and joints (body position)
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- o Each system functions independently as well as integrating with the others to provide useful information for daily living.
  - o Both the proprioceptive and vestibular systems work together to control movement so that individuals do not have to consciously plan out every step.

# Motor Planning

- ❖ Motor planning or Praxis involves 3 components
  - Having an idea about what to do (What)
  - Planning the action (How)
  - Executing the action (doing)
    - Watch a baby try to bring his hands to midline or to reach for a toy
    - Watch an infant attempt to roll over to his tummy
    - Watch a toddler climb on a toy for the first time
    - Watch a preschool age child slide down the fire pole or pump his legs on a swing
    - Remember when you first learned to drive and all the concentration it took to do the movements that you now do without thinking.

## Typical Development and Integration

- ❖ Sensory systems are predominate at birth-rooting, startle reflex, or copying behaviors such as tongue movement with infants as young as 2-5 hours old.
- ❖ These primitive systems stimulate movement and cause the baby to explore.
  - Current brain research supports the idea that when infants are given the opportunity to explore, on the floor, they receive a wealth of input from their environment which allows the brain (central nervous system) to store the information for retrieval when needed.
    - This sequence of developmental milestones become the “building blocks” for more complex and mature development later on.
    - Infants do not know where their arms, hands, legs or feet are. But with practice they begin to learn that they can control what those hands are doing. The first time an infant joins his hand together, its accidental, the second time is practice and the third time it is truly the miracle of motor planning that comes from practice

## Typical Development and Integration

- **Reflexes - accidental movement -repetition – practice-coordination & combination-cause & effect-organized planning & thinking behaviors which leads to SUCCESSFUL SENSORY INTEGRATION**
- Children with motor impairments, visual impairments or who are ill will be limited in the number and quality of sensory experiences. This makes independent mobility in whatever form critical for optimal integration and brain development

## Continuum Key Points

- ❖ Individuals can have responses anywhere along the continuum: varying from system to system
- ❖ Unresponsive-child does not respond at all to stimuli (direct or indirect)
- ❖ Under-responsive-some minimal response, possibly slow to respond
- ❖ Average response
- ❖ Over responsive: out of proportion to stimuli
- ❖ Overload-complete shut down, melt-down and withdrawal
- ❖ Generally, under responsive children will seek input and are referred to as “**Hyposensitive**”. They need more input to understand the input they receive
- ❖ Generally, over responsive children will avoid the input and are referred to as “**Hypersensitive.**” Stimuli is in some sense painful and they avoid it.

## **Observable Behaviors in each System**

**ALWAYS keep in mind what is developmentally appropriate for the child to be doing, as some behaviors are appropriate**

### Vestibular System-balance and position in space

- Hyposensitive or under responsive: will seek spinning, running, swinging, they are always on the go
- Hypersensitive or over responsive will avoid movement, dislike changes in head position, uncomfortable when balance is challenged and are reluctant to leave the ground.

### Proprioceptive System-joint and muscle movements

- Hyposensitive/under responsive: will bang toys, run into things, can be clumsy or have an odd gait, like close and tight spaces, will pile blankets and pillows on top of self, enjoy rough and tumble play, seek hugs, like vibration, usually
- Hypersensitive/over responsive: Very rare but possible. Will resist tasks that provide resistance.

# Tactile System

## Tactile System: Touch and skin

Special Note: there are 2 tactile zones-shoulders up and shoulders down. Children may have different responses in each zone.

-Hyposensitive/under responsive: seeks lots of touch, may cover self with paint or other play substances (sand, playdough, etc), explores by mouthing or licking (a more reliable and primitive sense of information)

-Hypersensitive/over responsive: withdraw from touch, complain of being bumped or become aggressive when bumped, large personal space, avoids messy activities, fussy about certain clothes, may avoid certain foods

## **Auditory/ Visual System and Taste Systems**

### Auditory System

-Hyposensitive/under responsive: prefer noisy toys, seems to like loud places, may have better concentration in noisy environment

-Hypersensitive/over responsive: avoid loud places, cover ears, complain of things being too loud, may hear noises that others do not notice, possible behavior problems due to noises no one else hears

### Visual System

- Hyposensitive/under responsive: prefer play with lots of visual input, lights, spinning, like bright contrasting colors.

-Hypersensitive/over responsive: avoid bright places, may squint outside or stay in the shade, dislike fluorescent lighting

### Taste System

-Hyposensitive/under responsive: prefer spicy strong flavors, may stuff mouth, chew or eat inedibles

-Hypersensitive/over responsive: prefer bland foods, smells

-Very cautious at least with new foods

## Key Points

- ❖ Seeking/avoiding behaviors are observable in every classroom
- ❖ Seeking/avoiding behaviors do control the child's behavior
- ❖ Some seeking/avoiding behaviors are developmentally appropriate
- ❖ Children with seeking/avoiding behaviors will function best when sensory accommodations are made.
- ❖ The greater the response, the more consuming the seeking/avoiding behaviors will be
- ❖ Everyone makes their own minor adjustments daily, without even being aware of it
  - Sun glasses
  - Music volume
  - Choice of clothing

## **Intervention Strategies to Keep in Mind**

- ❖ Children who are hyposensitive must be provided with extra input, regularly, in order for the brain to make sense of and organize the incoming messages. The brain can only organize the information/sensation if the brain knows what the situation/sensation is. The children who seek will be calmer and more focused when the seeking needs are met. Children who avoid will do best in a respectful, supportive environment
- ❖ The more extreme the sensitivity, the more consuming the seeking behavior
- ❖ Children who are hypersensitive must be desensitized by encouraging them to participate in the avoided activities. By triggering the unpleasant sensations the brain can learn to accommodate some of them.
- ❖ It is also necessary to allow children who are hypersensitive to be in control of their environment and the sensory input as much as possible. They are more likely to try unpleasant stimuli if they know they are in control.

## **Vestibular and Proprioceptive Systems**

### **Get them Moving**

#### ➤ **Vestibular System**

-Hyposensitive/under responsive: need frequent opportunities for movement throughout the day. Swinging, both vertically and spinning are extremely important. Moving from one height to another, climbing stairs, going down or up slides, ducking under objects. “T-stool” to sit on at group time gives vestibular input to help child remain focused

-Hypersensitive/over responsive: Need encouragement to participate, take small steps, let them be in control, make it a game. Understand and respect their responses to challenges that require balance. Infants/toddlers who require diapering, find a location that does not require them to be so far off the ground, support their whole body when laying them down and give lots of verbal feedback about what is happening

#### ➤ **Proprioceptive System**

- Hypersensitive/under responsive: provide opportunities for heavy work such as lifting, carrying, pushing, pulling, digging, anything that provides resistance. Provide a cozy space to take a break. Carry a back pack (loaded)
- Hypersensitive/over responsive; Rare but if present, slowly introduce activities that provide resistance. Make it a game and involve other children

## The Tactile System

A system that is fun to make adaptations for

### ➤ Tactile System

-Hyposensitive/under responsive: provide opportunities for tactile exploration.

\*\*\*An “Its okay to be very messy” attitude is a must.

-Provide a fidget /gadget when the child is expected to focus and be still.

-Hypersensitive/over responsive: touch with firm touch (proprioception modulates tactile system), touch only when and where the child knows they will be touched, encourage participation in messy activities by allowing child to use a tool instead of hands. Allow them to be in the front or back of the line, and give them plenty of personal space. Do not approach from the back, let them see you first.

## **Auditory, Visual, Taste and Smell Systems**

### **Challenging but usually not as disruptive to their lives**

#### ➤ **Auditory System:**

-Hyposensitive/under responsive: rare, allow child to use toys that make noise

-Hypersensitive/over responsive: Keep environmental noise to minimum. Provide quiet, safe places, use earphones to muffle or a walk man with soft calming music, allow the child to “tune out”. No need to raise your voice to get their attention, use visual cues, and if possible warn them of upcoming intrusive noises

\*\*some children may appear to seek noisy toys as a way of controlling their auditory environment.

#### ➤ **Visual System:**

-Hyposensitive/under responsive: Provide visually stimulating toys and environment, bright colors

-Hypersensitive/over responsive: Limit visual stimulating in the environment, provide soft lighting, natural light and allow child to use sunglasses

➤ **Taste and Smell Systems**

- Hyposensitive/under responsive: provide a variety of highly spiced textured foods, crunchy foods are a favorite
- Hypersensitive/over responsive: Be prepared for a very limited diet, introduce new foods as child will tolerate. Bland food is okay. Do not mix food textures, place small portion on a divided plate so foods do not touch one another.

## **Final Thoughts**

There is no Magic pill. Therapy/exercises/adaptations will improve responses and make life a bit easier for the child and the family. The more intense the response the less effective or shorter lasting the intervention will be. Interventions will continue throughout the child's life and as the child grows, the strategies will change to ensure that what you are doing is developmentally appropriate.

## **Closing Remarks**

Need to realize that how children perceive input colors how they view the world and that their perceptions will affect their behavior.

Sensory differences do not mean that we excuse the behavior, but rather give us an opportunity to change our view at how we approach the child and how together we can make it a little better.

Look beyond the behavior to the reason. Find an acceptable behavior to provide what the child needs.

Help the child to know what they need, and self-regulate.

## Resources

- Ayres, Jane, PhD, OTR (1979) *Sensory Integration and the Child*. Los Angeles: Western Psychological Services (DDR)
- Kranowitz, Carol Stock, MA (1988) *The Out-of –Sync Child*. New York, New York: The Berkley Publishing Group
- Hendricks, Leanne (2000) *Sensory Integration: A Glimpse From the Inside*. For PDF copy: email [Edd\\_Fear@yahoo.com](mailto:Edd_Fear@yahoo.com) Fee \$8.00
- Hendricks, Leanne: email [leanne.tchr@yahoo.com](mailto:leanne.tchr@yahoo.com)
- Jones, Diane email: [diane.jones@sa.ucsb.edu](mailto:diane.jones@sa.ucsb.edu)