

Understanding Sensory Processing and Its Implications on Learning

Amanda Martinage OTR/L, M.Ed
amandamartinage@yahoo.com
March 8, 2017

Objectives

Participants will develop:

- A basic understanding of sensory processing
- An understanding of sensory processing dysfunction
- Awareness of how sensory processing impacts learning

Why Is Understanding Sensory Processing Important?

- It has implications on behavior and learning
- Research indicates that sensory based techniques positively influence behavior
- The Department of Mental Health made the use of sensory strategies mandatory for inpatient psychiatric settings in 2006

What is Sensory Processing?

- How our bodies process and organize information from our senses
- We use the input to respond appropriately to a particular situation
- We use input from our senses, movement and gravity

What is Sensory Modulation?

- “Sensory modulation is the ability to take in sensory information, decide what is relevant, and to make an appropriate adaptive/behavioral response.”
- It enables us to screen out meaningless information and respond to important information/stimulation

Tactile

- Light touch
- Deep pressure
- Vibration
- Hot and cold
- Pain
- Keeps us safe
- Allows us to bond with others and develop socially and emotionally

What Is Tactile Processing?

- How our bodies interpret information from our sense of touch including:
 - Light touch
 - Deep pressure
 - Vibration
 - Temperature (hot and cold)

Functions of the Tactile System

- Keeps us safe
- Allows us to bond with others and to develop socially and emotionally

What is hypersensitivity?

- Overly sensitive to sensory input
- Feels more exaggerated version of what the “typical” individual feels

What is hyposensitivity?

- Needing MORE input to feel what the “typical” individual feels

What Does Tactile Dysfunction Look Like?

- Difficulties with socialization
- Overly self protective

What is Tactile *Hypersensitivity*?

- Overly sensitive to tactile input
- Feels a more exaggerated version of what the “typical” individual feels

What is Tactile *Hyposensitivity*?

- Seeks out tactile input

Hypersensitive (overly sensitive to touch)

- Sensitive to other’s touch (especially light touch)
- Discomfort with certain clothing materials
- Overly aware of the tags or seams in clothing
- Avoids touching messy substances
- Avoids walking barefoot on unfamiliar surfaces
- Difficulty with various food textures
- Resists playing with others
- Arms self with protective “weapons”

Hyposensitivity (seeks out tactile input)

- Unaware of other's touch unless it is very intense
- Unaware of messy hands or face
- Little reaction to pain
- Seeks out tactile experiences
- Relies on a comforting tactile object
- Repeatedly touches items or surfaces
- Uses mouth to explore items or puts frequently puts items in mouth and bites on items
- Hurts others during play without remorse

Vestibular

- Helps you develop a relationship with the earth
- Tells us whether or not we 're moving, how quickly and in what direction
- Sense of safety- knowing our feet are on the ground
- Allows you to maintain an upright body posture to support the visual system
- Receptors found in the inner ear

What Is Vestibular Processing?

- How our bodies interpret movement
 - Whether or not you are moving
 - How quickly
 - In what direction

Functions of the Vestibular System

- Help you develop a relationship with the earth
- Allows you to maintain an upright body posture to support the visual system
- Sense of safety – knowing your feet are on the ground

What Does Vestibular Dysfunction Look Like?

- Children do not feel secure
- Poor self esteem

What is Vestibular *Hypersensitivity*?

- Intolerance for movement
- Includes gravitational insecurity

What is Vestibular *Hyposensitivity*?

- Seeks out movement

Hypersensitive (overly sensitive to movement)

- Dislikes playground activities that involve swinging and spinning
- Cautious
- Slow moving
- Sedentary
- Hesitant to take risks
- Uncomfortable in elevators, escalators and/or moving walkways
- Experiences motion sickness

Gravitational Insecurity (a type of hypersensitivity)

- An excessive fear of ordinary movement, being out of an upright position or having one's feet off the ground
- Excessive fear of falling
- Anxious when feet leave the ground
- Fearful of descending stairs
- Threatened by head being inverted, upside down or tilted

Hyposensitivity (seeking movement)

- Seeks out movement input
- Frequently moving
- Excessive jumping, rocking, swinging
- Craves intense movement experiences such as assuming upside down positions and spinning
- Thrill seekers
- Do not experience dizziness

Proprioception

- Tells us about our own movement or body position
- Helps us integrate touch and movement sensations
- Contributes to body awareness, motor control and motor planning

What Is Proprioception?

- How our bodies interpret information from receptors found in muscles, joints, ligaments, tendons and connective tissue
- Tells us about our own movement or body position
- Helps us integrate touch and movement sensations

What Is Proprioception?_{Cont.}

- Unconscious sense of body movement
- Contributes to body awareness, motor control and motor planning
- Without proprioception you would have to rely on your vision to know what your body is doing

What Does Proprioceptive Dysfunction Look Like?

- Clumsy
- Uncoordinated

What is Proprioceptive *Hypersensitivity*?

- Overly aware of joint, muscles and tendons
- Less common

What is Proprioceptive *Hyposensitivity*?

- Seeks out proprioceptive input

Hyposensitivity (seeks out input to body)

- Deliberately bumps and crashes into people, furniture and objects
- Uses too much force to complete activities
- Frequently breaks materials due to the increased force used
- Holds tools and materials tightly
- Stomps or slaps feet when walking
- Seeks out biting materials
- Prefers shoelaces, hoods and belts tight

Visual Processing

- How our bodies interpret visual input
- Includes seeing, distinguishing colors, depth perception and visual perception

What Is Visual Processing?

- How our bodies interpret visual input
 - Seeing
 - Distinguishing colors
 - Depth perception
 - Visual perception

What is Visual *Hypersensitivity*?

- Overly sensitive to visual input
- Experiences a more exaggerated version compared to the typical individual

What is Visual *Hyposensitivity*?

- Seeks out visual input

Hypersensitive (overly sensitive to visual input)

- Difficulty tolerating bright lights or sunshine
- Trouble making or keeping eye contact
- Overly distracted by visual input in the environment
- Trouble attending to details on paperwork
- Difficulty finding a desired object from a cluttered or competing background
- Misses important visual details in the surrounding environment
- Rubs eye, gets watery eyes or gets headaches after reading or watching TV

Hyposensitivity (seeks out visual input)

- Light gazing or staring into bright light
- Overly drawn to bright or spinning toys
- Difficulty visually tracking an item
- Loses place during reading or copying activities
- Difficulty telling the difference between visually similar items (actual items or 3D materials)
- Difficulty judging spatial relationships in the environment and therefore bumps into objects or misjudges the depth of curbs or stairs

Auditory Processing

- How our bodies interpret auditory input
- Includes hearing volume, tone, direction of sound, distinguishing difference between sounds

What Is Auditory Processing?

- How our bodies interpret auditory input (hearing)
 - Volume
 - Tone
 - Direction of sound
 - Distinguishing differences between sounds

What is Auditory *Hypersensitivity*?

- Overly sensitive to auditory input
- Experiences a more exaggerated version compared to the “typical individual”

What is Auditory *Hyposensitivity*?

- Seeks out auditory input

Hypersensitive (overly sensitive to auditory input)

- Becomes upset in response to loud sounds – may cover ears or become agitated
- Refuses to go to loud events (assemblies, movie theater, parades, school cafeteria)
- Easily distracted by sounds in the environment that others tune out (fan, heater, humming of lights, ticking of clock)
- Difficulty focusing with background noise
- Fearful of sounds like the flushing toilet, vacuum, hairdryer, loud shoes, dog barking
- Frequently asks others to be quiet
- May decide they like or do not like someone based on the sound of their voice

Hyposensitivity (seeks out auditory input)

- Seems oblivious to loud or sudden sounds
- Difficulty locating the source of sound
- Does not respond to name when it is called or verbal cues
- Produces excessive noise with mouth or body
- Enjoys loud music and spaces
- Uses self talk throughout task, often out loud
- May not speak as clearly as other same aged children
- Difficulty following verbal directions
- Requires repetition of verbal directions

Smell

- Considered the dominant sense in humans
- Important for survival, can warn us of hazardous substances in the environment
- Smell and taste are closely linked

What is Sensory Discrimination?

- Using sensory input to complete functional activities
- It allows us to understand things about ourselves and the world around us without having to test them every time

Sensory Discrimination Allows Us to Perceive

- Qualities of sensations: how fast, how hard, how bright
- Similarities of sensations: rhyming, this looks similar to that
- Differences between sensations: the difference between similar sounding words, the difference between shapes

Sensory Discrimination

- Develops with neurological maturation
- Always takes precedence over sensory defensiveness in day to day situations

What are Postural Responses?

- Allows for upright posture against gravity
- Balance and bilateral coordination allow you to experiment with new movements and positions

Bilateral Coordination

- Using both sides of your body to complete tasks
- It can involve using both sides of your body to complete the same action (clapping your hands)
- It can involve using both sides of your body using alternating movements (climbing stairs)
- It can involve separate actions to achieve the same goal (stabilizing your paper while writing)

What is Praxis?

- Also known as motor planning
- The ability to plan, sequence and execute motor movements
- Does not occur at birth, develops over time with practice

Resource

- Sensory Processing Disorder Checklist: Signs and Symptoms of Dysfunction found at:

www.sensory-processing-disorder.com

Sensory Processing Dysfunction Impacts...

- Ability to attend and focus
- Ability to achieve and maintain an optimal state of alertness for learning
- Social skills
- Behavior

Other Points of Interest

- Differences between ADD and SPD
- Is it sensory or challenging behavior?
- Addressing self stimulatory behaviors
- The more sensory the better?
- Can you fluctuate between hyper and hypo sensitivity?

Next Steps

- Learn about the techniques to address sensory processing difficulties
 - Talk to an occupational therapist
 - Watch Teachable Moments
 - Refer to resources
 - Attend a workshop

Resources

- The Out Of Sync Child by Carol Stock Kranowitz
- Raising A Sensory Smart Child by Lindsey Biel and Nancy Peske
- The Zones of Regulation by Leah M Kuypers
- How Does Your Engine Run by Mary Williams and Sherry Shellenberger