

Understanding Sensory Processing Disorders in the Autistic Child

March 2007

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Sensory Processing is the ability to receive information from the environment and one's body, process it within the central nervous system, and respond appropriately to the stimulus. Primary sensory systems include the vestibular, tactile, proprioceptive, visual, and auditory.

Many children with autism misinterpret everyday sensory information, such as touch, movement, and sound. They may feel bombarded by the information or unaware of the sensations or may seek out intense sensory input. Sensory processing disorders may be an underlying factor with development of gross and fine motor skills, speech and language development, attention to task, and behavior deficits.

- I. Neurobiology of Sensory Processing:
 - A. Structural Changes: Structural changes associated with sensory processing and the ability to change the brain "plasticity" neurocircuitry.
 1. Brain stem – "the engine"
 2. Neuron – makes brain power happen
 - a. Axon
 - b. Dendrites
 - B. Chemical Changes: Chemical changes associated with sensation and plasticity, the neurochemistry.
 1. Neurotrophins – nerve growth factor
 2. Neurotransmitters – communicated between cells.
 - a. Excitatory
 - b. Inhibitory
 - c. Biogenetic amines
 3. Cell programmers housed in the brainstem
 - a. Dopamine
 - b. Serotonin
 - c. Neuroepinephrine
 - d. Histamines

II. Power Sensations

A. Vestibular: Gravity and movement detector. Receptors located in the inner ear

1. Function

- Awareness of head position in space-directionality
- Postural tone and equilibrium-muscle tone and balance
- Stabilization of eyes in space during head movementocular pursuits
- Organization of nervous system

2. Vestibular Dysfunction

- Hyper-responsiveness:
 - a. Fear of movement
 - b. Gravitational insecurity
 - c. Poor gross and fine motor coordination
 - d. Poor balance

- Hypo-responsiveness:
 - e. Constant motion
 - f. Disorganized
 - g. Poor balance/equilibrium
 - h. Poor modulation

B. Tactile System: Receives and processes information regarding touch. Receptors and located in our skin.

1. Function

- Protection
- Discrimination

2. Tactile Dysfunction

- Hyper-responsiveness:
 - a. Tactile defensiveness
 - b. Behavior issues
 - c. Picky eater
 - d. Avoidance behavior

- Hypo-responsiveness:
 - a. Low awareness
 - b. Messy eater
 - c. Drooler
 - d. Mouthing behavior

C. Proprioception- Unconscious awareness of where our body is in space. It also has a calming effect upon the nervous system. Receptors are located in our muscles, joints, and tendons.

1. Function

- Body scheme
- Motor coordination
- Motor planning
- Calming

III. Four Types of Sensory Processing Disorders

- A. Sensory Defensiveness
- B. Modulation Difficulties
- C. Poor Registration
- D. Sensory Integration

IV. Identification of Sensory Dysfunction: Informal observation, formal questionnaires, and referral for a full assessment

V. Sensory Strategies to Use Within Speech Therapy Sessions:

- A. Should be specific to child
- B. Every child is unique with their sensory processing
- C. Consult with occupational therapy to get specifics for that child

VI. Question and Answers