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Sensory Integration: An Educational Overview

A brief overview of the sensory integration theory and some of the ways that sensory integrative dysfunction may manifest itself in the classroom.

Sensory Integration is a theory put forth by Ayres (1979) to explain a variety of neurological disorders in children. It attempts to explain the relationship between sensory processing and behavioral deficits which cannot be attributed to frank, neurological abnormalities. It is, in short, a theory of brain-behavior relationships (Fisher et. al., 1991).

What must be made clear is that sensory integration remains a theory and has limited research support; however, the advances are ever growing. Many authorities in education support the notion that treatment which incorporates an understanding of the interactions and functions of the central nervous system is the most logical.

Most educators choose to use those methods that work best for a particular individual. In most cases, this involves selection of an "eclectic approach, whereby two or more theoretical approaches are blended to fit the individual needs of the person" (Cook, 1990). There is considerable anecdotal evidence that sensory integration therapy does, in fact, "work" for some students with learning and behavioral problems.

Sensory Integration Basics

Sensory integration (variously referred to as sensorimotor integration) is the process by which the nervous system received, organizes, files, and integrates sensory information in order to make an appropriate response. This process works for the individuals as a means for environmental protection and survival, while allowing for environmental interaction and learning.

The sensory integrative process follows a developmental sequence which begins in utero with the stimulation and maturation of three major sensory systems: vestibular (response to movement and gravity), tactile (touch), and proprioceptive (muscle and joint input). At birth, these systems work closely together in an interdependent relationship to help organize the nervous system and maintain a state of equilibrium, so that increasingly complex interactions with the environment and other sensory systems can occur.

Children exhibit an inner drive to develop sensory integration and frequently search for opportunities to do so. Crawling, jumping, rolling, climbing, hugging, and general exploration of

body movements and sensations through play provide the stimulation necessary for further integration and maturation of many processes within the child's developing brain.

Some end products of sensory integration include the ability to register and modulate stimuli, motor coordination, attention, motor planning ability, balance, eye control, emotional stability, behavioral control, body scheme, and self-esteem. Adequate sensory integration also provides the foundation for the development of higher level auditory-language and cognitive abilities.

Sensory integration should be viewed along a continuum. Some people demonstrate good sensory integration, others, just average, and others poor. The extent to which the lack of sensory integration interferes with other development is important in determining sensory integrative dysfunction and the need for intervention.

Characteristics of Dysfunction

Students with sensory integrative dysfunction manifest a wide variety of problems. Within specific areas, some particular problems may be noted.

For example, some possible signs of vestibular problems are self-stimulation such as spinning and rocking; decreases in attention span, balance, eye control and concentration, and increased emotional liability.

Children who have problems in the tactile areas may withdraw from touch but may initiate touch on their own terms. These children often dislike certain textures or distinctly prefer others. They may want only the loosest clothing barely touching their bodies. You may see the pencil held very tightly or very loosely. These children often are unable to determine where something is touching their bodies or exactly where they hurt. They may resist having hair combed or brushed, teeth brushed, or faces washed.

Children with proprioceptive/kinesthetic difficulties may hug very tightly, jump and walk heavily, seek deep pressure by putting on heavy clothing or crawling under heavy objects. These children are often seen as quite clumsy. Hand-flapping may be another sign.

Visual and auditory processing problems are common in students with sensory integrative dysfunction. Children with auditory processing problems may mispronounce words, misunderstand directions, demonstrate poor auditory memory for age, or be highly distracted by environmental noises. They may put their hands over their ears and seem hypersensitive to sounds. Those who consistently hum or sing or produce other sounds while working may be attempting to block out distracting extraneous noises.

Classroom signs of visual integration problems include reversing letters and numbers; skipping or omitting words or phrases when reading; losing place easily; difficulty with copying, especially from the board to paper; inability to organize full written pages; misinterpreting or being confused by visual directions; visual distractibility; and poor visual memory for the student's age.

Working with Students

The following general suggestions are for educators who work with children with sensory integrative dysfunction who become overstimulated:

- Provide a closed-in-quiet area in the room, perhaps a tent-type enclosure. Allow the child to retreat to this area when he becomes overstimulated. This can be very calming and secure for a child.
- Allow the child to chew or suck on gum or sugar free candy. Some suggest that this may help with brain organization.
- When lining up, don't put this child in the middle-front or back is best.
- Provide the child with a small, strong piece of elastic, thera-band, or tubing. Have the child keep it in a pocket or some other place that is readily available to the child. If you see the child becoming upset, have the child get out the "rubber stretchy" and start pulling on it.
- For reading and paperwork activities, try having the child prone on the elbows instead of sitting at a desk or table. Have the child lie on his or her stomach, head up, with weight on elbows and forearms. It is suggested that this position facilitates the development of eye muscles and shoulder girdle muscles.
- Dim lights, deep pressure back rubs, slow rocking, close wrapping in a heavy blanket and weighing the child with carpet squares, bean bag chairs, or couch cushions are also great calming techniques.

If you suspect that a child with whom you are working is experiencing sensory integrative dysfunction, a therapist knowledgeable about sensory integration may be consulted. The therapist can help you determine whether an evaluation and subsequent therapy is appropriate. A therapist also may be able to give you suggestions for classroom activities for the child that will make learning easier.

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