



Trauma
Care

Newsletter

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Sensory Integration Disorder

Often mistaken for ADHD

Long associated with autism, and often mistaken for ADHD and other disorders, SID is now thought (by its believers) to be more widespread.

According to advocates, it is common as a co-morbid condition with such disorders as autism, Asperger's syndrome, pervasive developmental disorders, ADHD, fetal alcohol syndrome, Tourette's syndrome, acute anxiety, and others, although it can exist by itself. It is estimated (Biel & Peske, 2005) that there is at least one student with SID in each classroom.

Ayres defines well functioning sensory integration as "the neurological process that organizes sensations from one's own body and from the environment and makes it possible to use the body effectively within the environment" (Bundy & Murray, 2002, p. 11). In simpler terms, sensory integration (SI) refers to the way in which the brain interprets information sent to it via the senses. The processing of incoming sensory stimuli is accurate and effortless for most of us. We find no difficulty in tuning out the slight hum of our computer or the passing traffic outside our window. Most of us feel pain when we stub our toes and become dizzy when we spin around in circles.

For those of use with intact sensory systems, it may be difficult to conceive, understand or recognize SID. However, some individuals have a dysfunction in interpreting and appropriately responding to the stimuli gathered by their senses. They experience the world differently. They have difficulty making sense of what is happening inside and outside of their bodies. People who experience malfunctions in the interpretation of sensory input may have Sensory Integration Disorder (SID). In SID, the brain either has problems with "facilitation" (attending to the most important sensory input) or "inhibition" (filtering out or dampening unimportant sensory information). Jean Ayres (1973), an occupational therapist, originally developed a description of this condition.



“When I was in elementary school, the school bell ringing hurt my ears like a dentist’s drill hitting a nerve. Loud noises such as balloons popping terrified me. Scratchy petticoats and wool clothes were like sandpaper against my skin. I still wear my underwear inside out so that the stitching does not rub against me. I wear old, well-washed, soft T-shirts under my new shirts to make them tolerable.”

(Temple Grandin, 2005, p. ix)

Because they have difficulties making sense of the world, individuals with SID may react to it in ways that seem odd, lacking in confidence, defiant, rude, or “wacky”. Students with SID might show the following maladaptive responses to ordinary situations handled well by others:

- be distractible, with problems attending to directions or remaining focused on a task
- have a high activity level in order to gather stimuli to send to the brain
- be impulsive, showing little self control
- difficulty attending to directions and lessons
- fidgeting in the seat
- frequent touching of nearby objects
- be lethargic and slow due to problems organizing what is occurring
- tune out or become withdrawn in order to escape over-stimulation
- react in a manner that is out-of-proportion to the frustrating situation
- appear inflexible and stubborn, engaging in the same activities in the same manner
- resist group activities, especially those that occur out of seat
- have difficulty with transitions to the next activity, or from an active level to an inactive one (or vice versa)
- appear clumsy and/or careless
- utter self-deprecating remarks (“I’m stupid.”, “I can’t do this stuff.”)
- utter negative remarks about the request/activity
- playing with items that are unrelated to the lesson

Things are difficult for these youngsters. Low self-esteem and a negative self concept are likely to emerge. You can imagine how scolding, chastisement, and disappointment/avoidance from others might affect a SID child’s sense of self. Adults who work with these youngsters need unswerving patience and consistently even-natured demeanors.

Dysfunctions in sensory integration might be caused by several different factors, including genetic predisposition/determination, prenatal circumstances, premature birth, birth trauma, and environmental pollutants. Every sensory disorder affects its host differently, creating different problems as it affects one or a combination of sensory systems. Some kids are hypo(under)sensitive, while others are hyper(over)sensitive to touch, sights, sounds, movements, tastes, or smells.

A hypersensitive child might have an emotional meltdown when entering the cafeteria due to the sensory overload of sight, sound, and smell (and fear of being touched/bumped). This wild response (as with withdrawal in some situations) is an attempt to shut out the high load of incoming stimuli.



A hyposensitive child may constantly fidget and touch things in an effort to send more information to a sensory starved brain. On the other hand, s/he might also be lethargic and slow because the brain has filtered out too much information and doesn't react to the environment "at the correct speed"

Advocates for SID talk of seven senses (any of which can be hyper or hypo sensitive). There are the "far senses"; hearing, sight, taste, and smell. There are also the "near senses"; tactile (touch), vestibular (balance and movement), and proprioceptive. The latter are also known as "the hidden senses" because they are not under the control of the individual. You can shut your eyes, plug your ears, wear nose clips, or by-pass the taste buds. You can't shut down the far senses. They operate with or without your consent. In all the systems, the sensors take in the information from the environment and send it to the brain for processing and determination of how the body should respond. More information on the "near senses" is provided next.

The Auditory System

While the auditory systems may be intact in students with sensory integration disorder, the ability to use the systems may be impaired. In other words, they can "hear" adequately, but they can't "listen" well. A student with problems in processing (making sense of) auditory input that arrives at the brain might:

- report static (white noise) in the environment.
- find certain pitches/frequencies to be excruciating.
- cover the ears to shut out sounds/voices
- seek out "noisy" environments for their extra stimulation.
- not be able to understand when teachers talk fast.
- follow written directions perfectly, but have great difficulty following oral directions.
- have problems with "figure-ground" listening (being able to filter out unimportant sounds and focus on the important one such as attending to the speaker when an overhead fan makes a clicking noise at every rotation, or being able to locate which person in a group is talking).

The Visual System

Kids who are visually hypersensitive might become overly excited in visually stimulating environments. Hyposensitive kids might not perceive all the visual cues available and have to touch/hold the object to gain information gathered by others who merely viewed it.

A student with problems in processing (making sense of) visual input that arrives at the brain might:

- squint.
- look at objects out of the corner of the eye.
- report that:
 - black print on white background vibrates or jiggles.
 - fluorescent lights and computer monitors flash on and off.
 - there is "snow" or static in their sight.
 - have trouble following moving objects.
 - have trouble refocusing the eyes to objects at different distances (as copying from the board to their paper).
 - have trouble seeing objects in the periphery of the item being observed.
 - be overwhelmed by the visual input such as when sent to a closet to retrieve crayons, but can't find them among the many other items and packages on the same shelf.



The Olfactory (smell) and Gustatory (taste) Systems

If the information sent from the nose to the limbic system of the brain doesn't get processed properly, smells can be a far different sensation from what others are experiencing. Muffins and cookies baking in the oven may smell foul. On the other hand, the scent of rotten meat or skunk might be enjoyed. While preferred and non-preferred smells certainly have an experiential/memory/learning component to them, smell also serves a survival function...one should avoid gas fumes, spoiled milk, etc.



The sense of taste is closely connected to smell. Hold your nose and you won't taste the onion you're biting. Get a cold, and foods just don't taste as flavorful. Kids with taste issues may dislike or prefer certain textures, temperatures, or levels of spiciness (outside of family food preparation practices). The result is that they reject many food offerings enjoyed by others, and seem "picky" with regard to the food that is enjoyed. For example, the French fries served in the cafeteria might not be juicy or flavorful enough (in comparison with the youngster's preferences), may be of the wrong size, shape, color, or temperature, or not be palatable because the smell of the cooking oil is different than that of the favorite restaurant.

The Vestibular System

The vestibular system senses movement of the body, balance, and vibration. It is through this system that we know whether our bodies are moving, the direction of travel, and the speed. We use this system as we attempt to walk around our darkened bedrooms looking for the light switch, or run along side a child learning to ride a bicycle (who is also using the vestibular system along with other ones).

The sensors for this system exist in the inner ear in a part known as "the semi-circular canals". Small hairs with crystals attached, shift position in fluid as the body moves, bends, turns, etc., sending this information to the brain for processing. A student with a hypoactive dysfunction in the vestibular system might be able to spin excessively without becoming dizzy, or may move constantly. A hypersensitive child might not be able to enjoy a see saw/teeter totter, use a swing, or climb the ladder of a slide due to the resulting disorientation and nausea. A very hypersensitive child might resist moving or being moved unexpectedly.

The vestibular system needs to be connected well to the other senses in order to validate the information received. If senses fail to agree on what is occurring, disorientation can result. For example, when traveling in a plane or sailboat (or reading in a moving car...but not while driving!!), your environment (walls, seats, magazine) appear to be stationary while your vestibular system tells you that you are moving. Many folks start to become nauseous (airsick, seasick, carsick) when their systems fail to validate one another.

The Proprioceptive System

The proprioceptive system provides feedback as to where specific body parts are placed, whether the muscles are stretching or contracting, and whether the joints are bending or straightening. The information is sent to the brain for interpretation from receptors located in the muscles and joints. The stimuli for these receptors are movement and the pull of gravity.

Well-functioning proprioceptive systems give us a sense of where the body is placed in space. For example, right now, your proprioceptive system might be telling you that your feet are flat on the floor, buttocks and upper legs are in contact with the horizontal surface of a chair, and that your thumb and fingers of one hand are pressing in opposition while touching the sides of a page. You are able to remain stable, even without thinking about it.

People with proprioceptive difficulties would not have this same bodily awareness and sensations. They would instead have to rely on movement or vision to provide feedback regarding the position of their body parts. Hypersensitive individuals might appear rigid and tense, while hyposensitive youngsters may slump or slouch. Clumsiness and awkward movements result.

The Tactile System

The tactile system receives the sensations of pressure, temperature, and pain through receptors in the skin, mouth, throat, ear canals, etc. There are two types of tactile sensations to be assessed: whether the child can use touch to evaluate objects (for example, pulling a pencil rather than a pen out of his/her desk without looking) and whether the child can identify which area of the body is being touched while his/her eyes are closed. Breakdowns in the tactile system can manifest themselves in one of two ways, depending on whether the children are hypersensitive or hyposensitive to tactile input.

Hypersensitive kids “overreact” to touch (sometimes referred to as being “tactually defensive”). Physical contact might result in the youngsters screaming or striking out. They do not like being in groups, being physically close to others, or being seated in a high-traffic area due to concerns about being touched. They may withdraw socially, even finding parental hugs to be uncomfortable. Those concerns can affect concentration in the classroom.

On the other hand, hypoactive kids are under-responsive to touch and may have difficulty discriminating between different types of tactile input. They may even have difficulty registering pain and pressure. They might unknowingly bump into objects and other people, appearing clumsy or inconsiderate. They may not feel the same degree or type of pressure or pain as others in the same situation. They may seek touch to such a degree that adults become irritated at the seemingly constant need to be touched and held.

Kids with tactile concerns (of either hyper or hyposensitivity) might also be unwilling to try new fine and gross motor activities (due to the irritating feelings in hypersensitive kids or the desire to avoid feeling clumsy in hyposensitive students). It may also be because of co-ordination problems or difficulty in motor planning (doing physical acts in the correct sequence of movements).

Sensory problems in the mouth/brain connections can affect the ability of the student to speak or make his/her needs known to others. Those same problems could result in the avoidance of certain food textures.

In a tactually hyposensitive child, it could result in mouthing of objects, licking others, or biting. In a similar vein, hand sensation problems could affect the desire/ability to use eating utensils, or the intensity of contact with others (hitting or pushing when “just touching” others). They may brush their hair or teeth too hard, wear clothing that seems uncomfortable in fit, or scratch itches too intensely.

Some children have a mixture of the two sensitivities, being hypersensitive to one type of touch (for example, sensations in the mouth) while being hyposensitive to another type of touch (for example, sensations on the skin and pulling of hair strands). Some children’s sensitivities also change from day to day and situation to situation. Each youngster has his/her own idiosyncratic sensory makeup when it comes to the senses.

SUMMARY

A sensory integration disorder is suspected when the child is exhibiting one or more of the common symptoms with greater frequency, intensity, and/or duration than is common among the vast majority of kids. It is important for teachers to understand that if their students display behavior indicative of SID that this behavior lasts for several minutes at any one time and recurs frequently throughout the day over a long period of time. Its persistence despite disciplinary interventions is a key indicator.

One of the most telling ways to distinguish SID from other conditions is to implement sensory intervention and observe whether symptoms subside. If a student responds positively to these sensory techniques, then his or her sensory system was craving the input that you provided. A sensory deficit is “confirmed”.



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ARE NOT
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AGAINST US BUT
RATHER THE
SITUATION.**

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