

# **RESOURCE PACKET:**

# **Sensory Integration**

**FAMILY & COMMUNITY RESOURCE CENTER**

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September 2014

## **Sensory Integration**

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Children and adults with autism, as well as those with other developmental disabilities, may have a dysfunctional sensory system. Sometimes one or more senses are either over- or under-reactive to stimulation. Such sensory problems may be the underlying reason for such behaviors as rocking, spinning, and hand-flapping. Although the receptors for the senses are located in the peripheral nervous system (which includes everything but the brain and spinal cord), it is believed that the problem stems from neurological dysfunction in the central nervous system--the brain. As described by individuals with autism, sensory integration techniques, such as pressure-touch can facilitate attention and awareness, and reduce overall arousal. Temple Grandin, in her descriptive book, *Emergence: Labeled Autistic*, relates the distress and relief of her sensory experiences.

Sensory integration is an innate neurobiological process and refers to the integration and interpretation of sensory stimulation from the environment by the brain. In contrast, sensory integrative dysfunction is a disorder in which sensory input is not integrated or organized appropriately in the brain and may produce varying degrees of problems in development, information processing, and behavior. A general theory of sensory integration and treatment has been developed by Dr. A. Jean Ayres from studies in the neurosciences and those pertaining to physical development and neuromuscular function. This theory is presented in this paper.

Sensory integration focuses primarily on three basic senses--tactile, vestibular, and proprioceptive. Their interconnections start forming before birth and continue to develop as the person matures and interacts with his/her environment. The three senses are not only interconnected but are also connected with other systems in the brain. Although these three sensory systems are less familiar than vision and audition, they are critical to our basic survival. The inter-relationship among these three senses is complex. Basically, they allow us to experience, interpret, and respond to different stimuli in our environment. The three sensory systems will be discussed below.

**Tactile System:** The tactile system includes nerves under the skin's surface that send information to the brain. This information includes light touch, pain, temperature, and pressure. These play an important role in perceiving the environment as well as protective reactions for survival.

Dysfunction in the tactile system can be seen in withdrawing when being touched, refusing to eat certain 'textured' foods and/or to wear certain types of clothing, complaining about having one's hair or face washed, avoiding getting one's hands dirty (i.e., glue, sand, mud, finger-paint), and using one's finger tips rather than whole hands to manipulate objects. A dysfunctional tactile system may lead to a misperception of touch and/or pain (hyper- or hyposensitive) and may lead to self-imposed isolation, general irritability, distractibility, and hyperactivity.

Tactile defensiveness is a condition in which an individual is extremely sensitive to light touch. Theoretically, when the tactile system is immature and working improperly, abnormal neural signals are sent to the cortex in the brain which can interfere with other brain processes. This, in turn, causes the brain to be overly stimulated and may lead to excessive brain activity, which can neither be turned off nor organized. This type of over-stimulation in the brain can make it difficult for an individual to organize one's behavior and concentrate and may lead to a negative emotional response to touch sensations.

**Vestibular System:** The vestibular system refers to structures within the inner ear (the semi-circular canals) that detect movement and changes in the position of the head. For example, the vestibular system tells you when your head is upright or tilted (even with your eyes closed). Dysfunction within this system may manifest itself in two different ways. Some children may be hypersensitive to vestibular stimulation and have fearful reactions to ordinary movement activities (e.g., swings, slides, ramps, inclines). They may also have trouble learning to climb or descend stairs or hills; and they may be apprehensive walking or crawling on uneven or unstable surfaces. As a result, they seem fearful in space. In general, these children appear clumsy. On the other extreme, the child may actively seek very intense sensory experiences such as excessive body whirling, jumping, and/or spinning. This type of child demonstrates signs of a hypo-reactive vestibular system; that is, they are trying continuously to stimulate their vestibular systems.

**Proprioceptive System:** The proprioceptive system refers to components of muscles, joints, and tendons that provide a person with a subconscious awareness of body position. When proprioception is functioning efficiently, an individual's body position is automatically adjusted in different situations; for example, the proprioceptive system is responsible for providing the body with the necessary signals to allow us to sit properly in a chair and to step off a curb smoothly. It also allows us to manipulate objects using fine motor movements, such as writing with a pencil, using a spoon to drink soup, and buttoning one's shirt. Some common signs of proprioceptive dysfunction are clumsiness, a tendency to fall, a lack of awareness of body position in space, odd body posturing, minimal crawling when young, difficulty manipulating small objects (buttons, snaps), eating in a sloppy manner, and resistance to new motor movement activities.

Another dimension of proprioception is praxis or motor planning. This is the ability to plan and execute different motor tasks. In order for this system to work properly, it must rely on obtaining accurate information from the sensory systems and then organizing and interpreting this information efficiently and effectively.

**Implications:** In general, dysfunction within these three systems manifests itself in many ways. A child may be over- or under-responsive to sensory input; activity level may be either unusually high or unusually low; a child may be in constant motion or fatigue easily. In addition, some children may fluctuate between these extremes. Gross and/or fine motor coordination problems are also common when these three systems are dysfunctional and may result in speech/language delays and in academic under-achievement. Behaviorally, the child may become impulsive, easily distractible, and show a general lack of planning. Some children may also have difficulty adjusting to new situations and may react with frustration, aggression, or withdrawal.

Evaluation and treatment of basic sensory integrative processes is performed by occupational therapists and/or physical therapists. The therapist's general goals are: (1) to provide the child with sensory information which helps organize the central nervous system, (2) to assist the child in inhibiting and/or modulating sensory information, and (3) to assist the child in processing a more organized response to sensory stimuli.

For further information, contact: Sensory Integration International, P.O. Box 9013, Torrance, CA 90508, USA

The Autism Research Institute distributes an information packet on physical therapies: sensory integration, exercise, holding.

[Click here](#) to learn how to obtain this packet.



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## Understanding Sensory Integration

By: Marie E. DiMatties (2004)

Michael is a third grade student who is waiting for the school bus. He is challenged by sensory experiences during everyday activities that most of us don't even think about. While he's still reeling from the battle with mom over brushing his teeth (that peppermint toothpaste tastes like fire in his mouth) the school bus pulls up. Michael runs past the bus monitor's haze of perfume and sits at the back of the bus. In his heightened state, he becomes even more aware of his new school shirt with its stiff label and that awful feeling like a wire brush being poked into the back of his neck. The sensory experiences of the movement of the bus, the sound of his excited classmates laughing and yelling above the roar of the bus engine all contribute to his increased agitation. By the time Michael arrives at school he is wound up and ready to unravel. There is no time to wait for the bus monitor's direction...getting off the bus quickly becomes a matter of survival and he resorts to pushing, shoving and finally kicking his way out. Unfortunately, there is a price to pay for this seemingly outward aggression...he can expect another trip to the principal's office.

This digest defines sensory integration and sensory integration dysfunction (DSI). It outlines evaluation of DSI, treatment approaches and implications for parents and teachers, including compensatory strategies for minimizing the impact of DSI on a child's life.

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### What is Sensory Integration?

Sensory Integration is a theory developed more than 20 years ago by A. Jean Ayres, an occupational therapist with advanced training in neuroscience and educational psychology (Bundy & Murray, 2002). Ayres (1972) defines sensory integration as "the neurological process that organizes sensation from one's own body and from the environment and makes it possible to use the body effectively within the environment" (p. 11). The theory is used to explain the relationship between the brain and behavior and explains why individuals respond in a certain way to sensory input and how it affects behavior. The five main senses are:

- Touch - tactile
- Sound - auditory
- Sight - visual
- Taste - gustatory
- Smell - olfactory

In addition, there are two other powerful senses:

a) vestibular (movement and balance sense)-provides information about where the head and body are in space and in relation to the earth's surface.

b) proprioception (joint/muscle sense)-provides information about where body parts are and what they are doing.

## **What is Sensory Integration Dysfunction (DSI)?**

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Dysfunction in sensory integration is the "inability to modulate, discriminate, coordinate or organize sensation adaptively" (Lane et al., 2000, p. 2).

How efficiently we process sensory information affects our ability to:

a) discriminate sensory information to obtain precise information from the body and the environment in order to physically interact with people and objects. An accurate body scheme is necessary for motor planning, i.e., being able to plan unfamiliar movements. It involves having the idea of what to do, sequencing the required movements, and executing the movements in a well-timed, coordinated manner.

Michael frequently bumps into others and drops items on the way to class because of his poor body scheme. He often hands in crumpled assignments that reflect the challenges of holding a pencil in his hand and making precise movements to achieve legible handwriting. Concentrating on his school work intensely may lead him to fall off his chair. To most people, Michael appears to be a sloppy, clumsy, and forgetful child.

In gym class, Michael cannot master jumping jacks, somersaults make him feel sick, and he has given up on ever being able to connect with a baseball. His timing was always off. He resorts to being the class clown to cover up for his difficulties. Michael certainly doesn't feel good about himself. He can't do what other kids seem to do so effortlessly-and then there is the teasing...

b) modulate sensory information to adjust to the circumstances and maintain optimum arousal for the task at hand. Sensory modulation is the "capacity to regulate and organize the degree, intensity and nature of responses to sensory input in a graded and adaptive manner" (Miller & Lane, 2000).

Sensory defensiveness, a type of sensory modulation problem, is defined by Wilbarger and Wilbarger (1991) as "a constellation of symptoms related to aversive or defensive reactions to non-noxious stimuli across one or more sensory systems" (Wilbarger & Wilbarger, 2002a, p. 335) It can affect changes in the state of alertness, emotional tone, and stress (Wilbarger & Wilbarger, 2002a).

Michael demonstrates many symptoms of sensory defensiveness, which affect his attention, learning, and behavior. His teacher's instructions get lost in competition with a clock ticking, the echo of peers walking and talking in the hall. He is off task and he finds solace in humming or chewing on the end of his pencil, sensory seeking behaviors that help ease the discomfort. Fortunately, he has gym class before lunch. Running bases in gym class gives him a legitimate opportunity for the "heavy work" that his body needs. It sure makes him feel better and prepares him for the biggest challenge of all- eating lunch in the school cafeteria.

## **How is DSI identified?**

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DSI is identified through evaluation by an occupational therapist who has advanced training in sensory integration, using one or more of the following practices:

- Gathering information about the child's performance in daily life tasks within the context of the classroom, school, and/or home environment.
- Skilled observation of the child: the therapist sets up a play environment and observes the child's responses to different types of sensory input and motor planning ability.
- Parent/caregiver sensory questionnaires /standardized checklists, e.g., Sensory Profile (Dunn, 1999),

non-standardized checklists.

- Parent/caregiver interview: the therapist identifies specific functional problems related to problems with sensory processing.
- Standardized tests of general development and motor functioning, e.g., Sensory Integration and Praxis Test Battery (SIPT) (Ayres, 1989).
- Clinical observations of posture, coordination, etc.

## **Intervention for DSI**

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Fostering the child's participation in normal everyday childhood activities or "occupations" is the main goal of occupational therapy. Intervention starts when teachers and parents are taught about DSI and intervention so they can develop strategies that help with adaptation or compensation for dysfunction (Bundy & Koomar, 2002). Based on information gathered, the therapist collaborates with teachers and parents to design an intervention plan to address the child's sensory integration problems.

### **Intervention based on Sensory Integration Theory**

Therapist consultation aims to educate teachers, parents, and older children about sensory integration and to develop strategies to adapt to and compensate for dysfunction such as:

- environmental modifications
- adaptations to daily routines
- changes in how people interact with the child (Wilbarger & Wilbarger, 2002)

Examples are reducing distracting visual materials in the classroom, giving the child an alternative to a messy art activity, or refraining from wearing perfume or bright, floral clothing.

A sensory diet is a strategy that consists of a carefully planned practical program of specific sensory activities that is scheduled according to each child's individual needs. Like a diet designed to meet an individual's nutritional needs, a sensory diet consists of specific elements designed to meet the child's sensory integration needs. The sensory diet is based on the notion that controlled sensory input can affect one's functional abilities (Wilbarger & Wilbarger, 2002b). A sensory diet can help maintain an age appropriate level of attention for optimal function to reduce sensory defensiveness.

Wilbarger & Wilbarger's (2002b) comprehensive approach to treating sensory defensiveness includes education and awareness, a sensory diet, and other professional treatment techniques. One such technique is the Wilbarger Protocol, which uses deep pressure to certain parts of the body followed by proprioception in the form of joint compressions. It is critical that this protocol is not used in isolation and that it is initiated and monitored by an appropriately trained therapist.

The "How Does Your Engine Run?" Program (Williams & Shellenberger, 1994) is a step-by-step method that teaches children simple changes to their daily routine (such as a brisk walk, jumping on a trampoline prior to doing their homework, listening to calming music) that will help them self-regulate or keep their engine running "just right." Through the use of charts, worksheets, and activities, the child is guided in improving awareness and using self-regulation strategies.

### **Traditional sensory integrative therapy**

Traditional sensory integrative therapy takes place on a 1:1 basis in a room with suspended equipment for varying movement and sensory experiences. The goal of therapy is not to teach skills, but to follow the child's lead and artfully select and modify activities according to the child's responses. The activities afford a variety of opportunities to experience tactile, vestibular, and proprioceptive input in a way that provides the "just right" challenge for the child to promote increasingly more complex adaptive responses to environmental challenges. The result is improved performance of skills that relate to life roles, e.g., player, student, (Schaaf & Anzalone, 2001). This type of intervention may be used along with other treatment approaches.

## Summary

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DSI can have a profound effect on a child's participation in everyday childhood "occupations," including play, study and family activities. Collaboration between the therapist, teacher, and parent is the most efficient way to understand the child's behavior and unique sensory needs. Together, they can implement strategies to support the child's performance in roles and occupations across multiple environments.

Sensory Integration Resource Center - provides links to Internet resources and research about Sensory Integration Dysfunction (DSI) for parents, educators, occupational therapists and physicians. Available: <http://www.sinetwork.org/>

The ERIC Clearinghouse on Disabilities and Gifted Education (ERIC EC)

The Council for Exceptional Children

1110 N. Glebe Rd.

Arlington, VA 22201-5704

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E-mail: [ericec@cec.sped.org](mailto:ericec@cec.sped.org)

Internet: <http://ericec.org>

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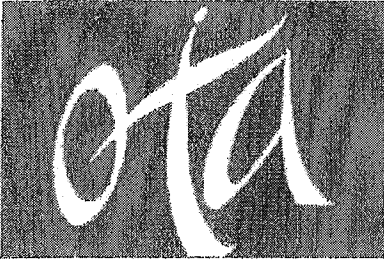
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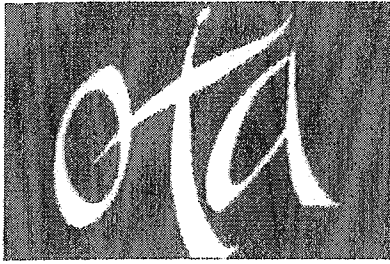
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## How do I know if my infant/toddler has sensory integration dysfunction?

*A child may need to be referred for an occupational therapy evaluation if difficulties are seen in several of these areas or if one area causes major functional problems.*

- 1. Is easily startled
- 2. Has difficulty consoling self; is unusually fussy
- 3. Has poor muscle tone
- 4. Is unable to bring hands together and bang toys
- 5. Is slow to roll over, creep, sit, or stand
- 6. Has difficulty babbling
- 7. Does not explore
- 8. Cries or becomes tense when moved through space
- 9. Frequently makes fists (after six months)
- 10. Has difficulty tolerating a prone (on stomach) position
- 11. Dislikes baths
- 12. Has difficulty playing with age-appropriate toys
- 13. Resists being held or becomes tense when held; dislikes being cuddled
- 14. Has sucking difficulties
- 15. Is overly active; seeks excessive movement
- 16. Is unable to settle down; has sleep difficulties

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## How do I know if my preschool child (3 to 5 years) has sensory integration dysfunction?

*A child may need to be referred for an occupational therapy evaluation if difficulties are seen in several of these areas or if one area causes major functional problems.*

- 1. Says "I can't" or "I won't" to age-appropriate self-care or play activities
- 2. Has low muscle tone; seems weak or floppy
- 3. Is clumsy; falls frequently
- 4. Bumps into furniture or people; has trouble judging body in relation to space around him/her
- 5. Breaks toys or crayons easily
- 6. Does not enjoy jumping, swinging, or having feet off the ground
- 7. Dislikes coloring within lines, doing puzzles, or cutting with scissors
- 8. Has delayed language development
- 9. Is overly active or unable to slow down; moves quickly from one toy to another
- 10. Has difficulty focusing attention or over-focuses and is unable to shift to the next task
- 11. Dislikes bathing, cuddling, or haircuts
- 12. Overreacts to touch, taste, sounds, or odors
- 13. Avoids playground activities
- 14. Is unable to settle down; has sleep difficulties
- 15. Needs more practice than other children to learn new skills

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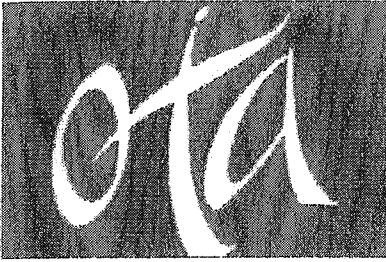
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## How do I know if my school-age child has sensory integration dysfunction?

*A child may need to be referred for an occupational therapy evaluation if difficulties are seen in several of these areas or if one area causes major functional problems.*

- 1. Dislikes bathing, hair combing, and/or haircuts
- 2. Overreacts to touch, taste, sounds, or odors
- 3. Avoids or does poorly in physical education or sports activities
- 4. Has low muscle tone; tends to lean on arms or slump at desk
- 5. Needs more practice than other children to learn new skills
- 6. Breaks pencils frequently or writes with heavy pressure
- 7. Dislikes handwriting; tires quickly during written class work
- 8. Does not enjoy swinging or having feet off the ground
- 9. Has difficulty following several step instructions for motor tasks
- 10. Is overly active or unable to slow down
- 11. Reverses many letters and can't space letters on the lines
- 12. Has poor self-esteem; lacks confidence
- 13. Finds it difficult to make friends with children of the same age; prefers to play with adults or younger children rather than peers

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## How does an adolescent or adult know if he or she has sensory integration dysfunction?

*An individual may need to be referred for an occupational therapy evaluation if difficulties are seen in several of these areas or if one area causes major functional problems.*

- 1. Has difficulties with balance; becomes disoriented and/or fearful on elevators or escalators
- 2. Fatigues easily; tends to lean on arms or slump at desk
- 3. Is accident-prone, clumsy, or awkward in daily activities
- 4. Dislikes crowds or accidental jostling in public situations (e.g., standing in line)
- 5. Has low tolerance for being approached from behind or touched unexpectedly
- 6. Has difficulty maintaining intimate relationships; dislikes physical closeness, hugs, or cuddling
- 7. Is disorganized in work or home activities
- 8. Has difficulty following multiple-step instructions for motor tasks
- 9. Has difficulty with driving (e.g., shifting gears or entering freeways) and parking a car
- 10. Has poor self-esteem; lacks confidence
- 11. Has difficulty focusing attention or over-focuses and is unable to shift to the next task

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## Frequently Asked Questions

### General

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### General

#### **What is the correct diagnostic label for difficulties with sensory integration?**

This is referred to as both *dysfunction in sensory integration* (DSI) and *sensory processing disorder* (SPD). *Sensory processing disorder* is currently used more commonly in the context of research, while clinicians often use the term *sensory integration dysfunction*.

#### **How do I know if my child has SI problems?**

Use one of OTA Watertown's [checklists](#) to determine whether an OT or PT sensory integration-based evaluation might be useful. Speaking to a therapist certified in sensory integration can also assist you in determining if problems might exist.

#### **What are the causes of sensory integration problems?**

We do not have verifiable research in this area yet, but it appears that there may be a variety of causes, such as genetics, prematurity, birth trauma, exposure to toxins, etc.

#### **Can sensory integration dysfunction be cured?**

When occupational or physical therapy is given using a sensory integration framework, the problems can be minimized. The nervous system can be changed, and the ability to process sensation can be improved. Biological research has shown that with therapy, the interference of sensory processing dysfunction with daily life tasks will be greatly minimized.

#### **Will sensory processing issues go away as my child grows up?**

No, it has not been found that these issues go away with time. However, they can appear to be minimized due to the greater flexibility most adults enjoy in choosing daily activities in comparison to children. Adults can also receive sensory integration intervention, and many report making gains with therapy.

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### Relationship Between Sensory Integration and Other Diagnoses

#### **How is sensory integration dysfunction related to diagnoses such as ADHD, ADD, NVLD, autism, LD, etc.? If a child has another diagnosis, will he or she still benefit from sensory integration intervention?**

Sensory integration difficulties can occur alone or can occur in conjunction with many other diagnoses. Children with other diagnoses will likely be receiving a variety of services (speech therapy, ABA, tutoring, etc.). They may also be using medications. Sensory integration intervention is an appropriate service for children who, in addition to their other difficulties, have problems with sensory processing that impact their everyday, functional performance.

#### **How are ADHD and ADD similar and different from sensory integration disorder? Can ADD be cured with SI intervention?**

There can be problems with arousal, attention, and excessive movement with each

disorder. Sensory integration intervention could help to reduce these problems. Some behaviors usually attributed to ADD or ADHD may in actuality indicate sensory integration dysfunction. For example, a child who is sensitive to touch or noise might be easily distracted, and poor postural stability or poor processing of vestibular input from the inner ear could result in constant movement when sitting.

**Do all children with autism have sensory integration difficulties?**

No, it is estimated that approximately 70% of children with autism experience sensory integration problems, and yes, the intervention can help to reduce the devastating effects of autism.

**How is sensory processing disorder related to anxiety disorder?**

Research is needed in this area, but it appears that individuals with sensory integration dysfunction are often prone to anxiety due to the constant frustration in leading one's life. Anxiety may also result from the tension related to being over-sensitive to touch, taste, smell, noise, and/or movement.

**Can SI intervention help children learn to talk or to read?**

If the basis for the lack of speaking clearly or reading well is rooted in sensory processing problems, then, yes, it can help develop those abilities. Many children with speech and language problems have difficulty with cerebellar functioning. The cerebellum is the center in the brain where vestibular (movement), ocular (visual), and proprioceptive (body position) input is organized. Occupational and physical therapy with a sensory integration focus can address these issues, resulting in improved language skills and reading abilities. In addition, skills addressed through this therapy, such as regulation of arousal level, postural control, and motor planning, are foundation abilities that are needed to support learning of any kind.

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## **Sensory Integration Intervention**

**What happens during an occupational or physical therapy session where sensory integration techniques are used?**

The therapist typically structures the session using ideas and leads from the child to make the activities as meaningful as possible. Frequently the use of an imaginative play theme can enhance the child's willingness to engage in desired activities for longer periods of time. The rapport that the therapist and child develop is central to the therapy. The therapist is always working to provide the "just right challenge," while giving the child ample opportunities for enhanced sensory input to build a stronger foundation for skill.

**What is the difference between OT and PT?**

Occupational and physical therapists have very similar training, however, the OT receives more training in oral and hand skill interventions and the PT receives more training in postural and gross motor development.

**What is the training for a sensory integration specialist? Is SI certification necessary?**

Occupational and physical therapists who specialize in sensory integration assessment and intervention must already have a bachelor's or master's degree in their field. In order to become certified in SI, the therapist must take four, five-day courses covering sensory integration theory, assessment techniques, interpretation of test results, and intervention/treatment. Some qualified therapists are not SI certified, but have had a direct mentoring relationship with an SI certified therapist. It is ideal to be both assessed and treated by a therapist who has this type of background and who has experience in both evaluation and treatment of sensory integration difficulties.

**What do the letters after the therapists' names mean?**

The letters stand for the degree the therapist has earned and whether he or she is registered and licensed. All therapists have to pass an examination in order to become

registered. For example, *MS, OTR/L* means "master of science in occupational therapy, a registered and licensed therapist." Some therapists have *FAOTA* after their credentials. This means that they have been asked to be a Fellow of the American Occupational Therapy Association. This distinction is awarded to therapists in recognition of their skill and knowledge, which has resulted in the growth and improvement of occupational therapy.

**How often should my child have therapy and for how long?**

The length of therapy varies depending on what set of difficulties the child experiences, but it is common for children to need 50 to 80 sessions of therapy. In some cases therapy is given two to three times per week, which may shorten the number of months of therapy.

**What is a sensory diet? How is it different from treatment?**

A sensory diet is a daily or weekly list of activities that the child can engage in during regular routines to help maintain an optimal state of arousal. Sensory diet activities can also provide greater body awareness prior to performing skilled tasks. Although a sensory diet is developed by a therapist trained in sensory integration and can be an adjunct to treatment, it can also be implemented by parents, teachers, or clients themselves.

**How is clinic therapy different from school-based therapy?**

In a clinic, the goal is to provide therapy to address all aspects of a child's life (e.g., sleeping, eating, playing), including functioning in the home and community, as well as at school. In the school setting, the intervention must be related to specific difficulties in school functioning only.

**Does insurance cover SI intervention? Do schools provide SI intervention?**

Many insurance plans do provide coverage for occupational and physical therapy using a sensory integration approach. Each plan is different, however, making it necessary to talk with an insurance representative for your particular plan prior to initiating services. Some schools will provide OT or PT with a sensory integration emphasis within in the school setting, and occasionally a school will pay for outside services involving sensory integration. It is most likely for a school to fund outside services if the addition of sensory integration based intervention can help keep a child in a regular classroom or regular education setting.

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## Educating Others

**How do I begin talking to the school about my child's sensory issues?**

If you have an evaluation report that outlines your child's sensory issues, it is important to share it with the school. It can also be helpful to have your child's teacher fill out a sensory integration teacher checklist highlighting issues related to school performance. When the teacher has made his or her own observations, it is often easier to begin a dialogue. Clinics specializing in sensory integration often give informational talks and lectures that school personnel can attend.

**My special education department says SI intervention doesn't work for kids over eight. Is this true?**

No, this is absolutely not true. This myth seems to have arisen from an early study by pioneer A. Jean Ayres, in which she compared two groups of children receiving sensory integration based therapy. In one group the children were six to eight years of age; in the other they were eight or older. In this study, the younger group made better gains over a sixth month period. However, both groups made gains.

**How do I educate my child's doctor and get a referral?**

It can be helpful to provide your doctor with short written explanations of sensory integration dysfunction.

**My child's grandparents think my child has a behavioral or disciplinary problem.**

**What resources can I use to help them understand?**

This is a common problem. It can be helpful to have them read books written for laypersons, such as *The Out of Sync Child* by Carol Kranowitz or *Sensory Integration and the Child* by A. Jean Ayres. Clinics often hold evening overviews, which can also be informative and allow the grandparents to ask questions.

**How do I explain my child's behavior to other people? For example, how do I explain why I appear to let my child get away with so much?**

It is important to tell people that your child processes sensation differently than others do and that this difference causes your child to be constantly stressed. It can be helpful to compare your child's reactions to the reactions we all have when undergoing a great deal of stress. People also tend to respond well to the fact that your child has a physiological problem and is not always in control of his or her behavior. It is also important to recognize changes in your child's behavior during the course of therapy and to modify your responses accordingly.

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## Sensory Processing Disorder vs. Attention Deficit Disorder

Carol Stock Kranowitz, M.A.

### A Brief Comparison of Two "Look-Alike" Disabilities

In my book, *The Out-of-Sync Child*, I define Sensory Processing Disorder (SPD) as the "inefficient neurological processing of information received through the senses, causing problems with learning, development, and behavior." Picture a child who has trouble processing and interpreting sensory messages about how things feel and what it feels like to be touched. Touch stimulation overwhelms this oversensitive child.

How does his problem play out? He is bothered by the label in his tee-shirt, the approach of a classmate, the lumps in his mashed potatoes, the stickiness of the play dough. Fidgeting and squirming, he pays a lot of attention to avoiding these ordinary sensations. Meanwhile, he is unable to pay much attention at all to the teacher's words or to playground rules.

Say a child with another form of SPD dysfunction has trouble processing movement and balance sensations. Say this under-responsive child needs to move around — much more than her peers — in order to rev up and get going. What is the fallout of her problem? This impulsive "bumper and crasher" craves intense, vigorous movement. She often rocks, sways, twirls, jumps, climbs, leaps, gyrates and gets into upside-down positions. She pays a lot of attention to satisfying her need for movement, and not much attention to her mother's instructions or to where she left her shoes.

Inattention . . . impulsivity . . . fidgety movement . . . these can be symptoms of SPD.

Now consider my definition for Attention Deficit Disorder (ADD): "a neurological syndrome characterized by serious and persistent inattention and impulsivity. When constant, fidgety movement (hyperactivity) is an additional characteristic, the syndrome is called Attention Deficit Disorder with Hyperactivity (ADHD)."

Inattention . . . impulsivity . . . fidgety movement . . . these are definitely symptoms of ADD/ADHD — and of many other difficulties, as well.

In my book, I discuss other "look-alike" conditions which share symptoms with SPD (pp. 17-20). SPD may look like ADHD, and some symptoms may overlap. However, optimum treatment for the two problems is different. Before jumping to conclusions and leaping to drug therapy, parents and professionals need to look at the whole child. Then, they can thoughtfully determine what will help the most.

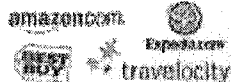
If the child is frequently — but not always — inattentive, it is useful to ask some questions: Where, when, and how often does this inattention occur? What is the stimulus? What does the child do as self-therapy? What is happening — or not happening — when the child concentrates well? What does the child need, and what helps?

An overloaded child needs less stimulation. So, dim the lights and turn down the radio. Comfort him with "deep pressure" bear hugs. Help him fix up a retreat, with pillows and blankets, under the dining room table.

An under-responsive child needs more sensory stimulation. So, take her to the playground each day, jog together around the block, engage her in gentle roughhousing, and provide her with a chinning bar, a punching bag, and a trampoline.

SPD is a neurological problem which affects behavior and learning. Medicine doesn't fix it, but, often, occupational therapy helps. This therapy addresses the child's underlying difficulties processing sensations

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rather than just the symptoms of inattention.



Not psychostimulants, but a good sensory diet may be a major component in treating the child with an attention problem. (A sensory diet is prescribed by an occupational therapist and is rich in safe, appropriate, and enjoyable touch, pressure and movement experiences.) Taking a conservative approach can't hurt and often helps the inattentive child whose problem is not ADD, but developmentally delayed sensory processing.

### Why A "Hands-On" Sensory Diet?

Birds gotta sing, fish gotta swim, and kids gotta MOVE and TOUCH. Moving and touching are how children first learn about the environment around them. Feeling a blanket with their skin, touching a flower petal, stretching their arms up toward the ceiling, climbing a jungle gym, and running in great circles are ways that children gain the important information they require to function well.

Preschoolers need a variety of active, hands-on experiences, because kids are sensorimotor learners. *Sensorimotor* means that sensory information comes in, and motor responses go out. For example, the feel of a bunny's soft fur is a pleasant sensation, and stroking the bunny is the appropriate motor response. Children need many concrete lessons, such as bunny-stroking, before they are developmentally ready to gather abstract information, such as ABCs and math facts.

Using many senses leads to healthy sensory integration. *Sensory integration* is the neurological process of taking in sensory information, organizing this information in the central nervous system, and using the information to function smoothly in daily life. Sensory integration is a never-ending building process: as children gain competence, their sensory integration improves. Thus, the more kids do, the more they can do.

Nature's educational plan is for young children to "do," by touching and being touched, and by moving and being moved. Sensations of touch and movement come through seven sensory systems, but we think of three basic systems when we talk about Sensory Processing Disorder:

- **The tactile system** provides two kinds of information: 1) The protective sense warns us to defend ourselves from potentially dangerous touch sensations. 2) The discriminative sense tells us where we are being touched, and about the shape, size, and texture of objects that we touch or that touch us. We receive tactile sensations through receptors in our skin.
- **The vestibular system** gives us information about where our heads are in relation to solid ground; tells us about movement, balance, and our ability to resist gravity; and organizes our bodies and brains for effective, everyday functioning. We receive vestibular sensations in the inner ear.
- **The proprioceptive system** tells us, without the use of vision, the position of our body parts and how our bodies are moving through space. This system is very important for motor planning — the ability to conceive of and carry out a sequence of complex movements. We receive proprioceptive sensations through our muscles, joints, and ligaments.

At home and at preschool, children should be actively participating in hands-on, sensorimotor experiences all through the day. Passive participation — e.g., watching others play or sitting in front of an electronic screen — will not encourage our children to become competent and confident learners.

### Some Ingredients For A Hands-On, Body-On Sensory Diet

Here are some typical sensorimotor experiences which could be selected for a "sensory diet" to help a young child stay organized and alert for interaction and learning. Occupational therapists will recommend a sensory diet after carefully observing your child to see what mix of calming and energizing experiences each child needs to remain attentive and on task throughout the day.

#### Tactile Experiences

- Making mud pies and sand cakes
- Drawing with wet or dry chalk
- Painting sidewalks and fences with water
- Handling and pedaling tricycles

- Walking barefoot
- Puttering in the garden
- Playing in the sink or bathtub
- Building with blocks
- Manipulating small objects such as Legos, dominoes and jigsaw puzzles
- Using classroom tools, such as crayons, scissors, and brushes
- Examining natural objects, such as pine-cones, feathers, sticks, and rocks
- Lying on pillows or beanbag cushions
- Curling up in "secret hideaways"
- Petting and feeding animals
- Finger-painting with paint, shaving cream, or chocolate pudding
- Gluing art projects
- Manipulating play dough
- Washing hands with soap and drying hands with towels
- Stirring cookie dough
- Eating snacks with different textures, such as cheese, pretzels, and fruit
- Handling rhythm instruments
- Dressing up
- Hugging and roughhousing gently with friends

### **Vestibular Experiences**

- Swinging in circles on a tire swing
- Riding on a playground merry-go-round
- Swinging back and forth
- Riding up and down, walking, and balancing on a seesaw
- Jumping on a trampoline or mattress
- Jumping from a step or from the playground equipment
- Climbing a jungle gym
- Sliding down a slide
- Ascending and descending stairs
- Rolling and sledding down the hill
- Somersaulting
- Running
- Walking on uneven surfaces, such as grass or sand
- Walking on a balance beam, railroad tie, or low wall
- Crawling through tunnels or large cartons
- Swimming

### **Proprioceptive Experiences**

- Pushing and pulling wagons
- Moving through an obstacle course
- Playing "bumpety-bump" on the tire swing
- Hanging from monkey bars
- Stretching up to the sky, like growing pussy willows
- Playing horsy
- Wheelbarrow walking
- Pouring sand, beans, water, or juice from one container to another
- Ripping paper
- Hammering nails into tree stumps or golf tees into Styrofoam
- Pressing pegs into pegboards
- Getting in and out of seat belts, jackets and boots, shoes and socks
- Opening doors without help
- Tumbling on the ground
- Having a pillow fight
- Hosing the car
- Walking in shoeboxes

- Walking with bag of rice or bean bag balanced on head
- Holding up the wall
- Playing catch with a ball
- Throwing snowballs at trees
- Kneading dough or meatloaf
- Pushing palms together

#### Visual Experiences

- Playing flashlight tag
- Playing balloon volleyball
- Dancing with scarves
- Tossing beanbags
- Tracing letters/numbers on a person's back
- Taking photos with a camera
- Blowing bubbles
- Blowing whistles
- Sucking through straws
- Making angels-in-the-snow
- Drawing chalkboard circles, using both hands
- Playing board games

#### Auditory Experiences

- Dancing/moving to music
- Drawing to music
- Beating rhythm instruments
- Moving hands, feet, or whole body up and down to sound of a slide whistle
- Making up rhymes
- Singing "drop-in" songs (ex- Old MacDonald had a \_\_\_\_)
- Humming
- Playing a kazoo
- Jumping rope and chanting
- Singing vowels while moving (for example: eeeeeeee, ooooooooo)
- Playing non-competitive musical chairs

#### For More Information

Kranowitz, Carol Stock, M.A. (1998). *The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction.*

Kranowitz, Carol Stock, M.A. (2003). *The Out-of-Sync Child Has Fun: Activities for Kids with Sensory Integration Dysfunction.*

Wilbarger, P. (1984). Planning an adequate sensory diet: Application of sensory processing theory during the first year of life. *Zero to Three*, 5(1), 7-12.

Wilbarger, P. (1995). The sensory diet: Activity programs based on sensory processing theory. *American Occupational Therapy Association Sensory Integration Special Interest Section Newsletter*, 18(2), 1-3.

Williams, M. and Shellenberger, S. (1994). *How does your engine run?* Albuquerque, NM: TherapyWorks. (4901 Butte Place, NW, Albuquerque, NM, 87120)

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#### About the author:

*Carol Stock Kranowitz, M.A., is a master educator who formerly taught movement and music classes in a preschool in Washington, DC. She is the author of the best-selling book The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction. Many of the activities noted above are more fully described in The Out-of-Sync Child.*



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## How Does Sensory Processing Disorder Affect Learning?

*Carol Stock Kranowitz, M.A.*

Sensory Processing Disorder (SPD) is not classified as a learning disability, but it can certainly hamper a child's ability to learn. To illustrate, here are stories about two preschoolers who I taught in my music and movement room at St. Columba's Nursery School in Washington, DC.

Robin, 4, is hypersensitive to touch sensations (she avoids them). Larry, 3-1/2, is hyposensitive to movement (he craves it). Let's look at these intelligent, healthy kids with an eye on how sensory issues are not only getting in their way now but may also interfere with learning and behavior in the future.

### Robin

Robin has Sensory Over-Responsiveness. She avoids being close to other children and shies away from adults, too. The possibility of being accidentally touched by them makes her extremely anxious. She also avoids messy play. Touching fingerpaints, mudpies, sand, play dough, glue and bubbles makes her very uncomfortable — even threatened.

Therefore, she scoots away from her preschool classmates when it's time to sit on the rug for a story. She refuses to participate in art projects. She resists sitting at the science table. "I hate science," she says, turning her back. "It's yucky." She avoids cooking and "gooking" activities in the classroom. At snack time, she becomes upset when a drop of juice spills on her skin or even on the table.

Robin likes to dance, but not if the game is "Ring Around the Rosy," because she doesn't want to hold hands in the circle. And not if the song is about whirling leaves, and the musical game is to hold a real leaf and twirl around the room with it. She likes to sing, knows all the words, has a good sense of rhythm, and enjoys chanting rhymes. But when offered rhythm instruments to accompany the song, she shoves them away. She crosses her arms and tightens her lips.

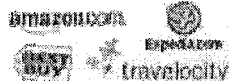
Now, rhythm instruments aren't messy, are they? They're not slimy or sticky or smelly. But Robin refrains from touching them, anyway. Unlike her curious classmates who are eager to explore objects in their environment, she "just says no" to picking things up and examining them. She disdains putting on dress-ups, playing with hand puppets, and drawing with crayons. Churning ice cream? Making snowballs? Picking up worms on the sidewalk? Washing doll babies? Pouring sand from one container to another? Finger painting in shaving cream? No way.

Robin is missing many concrete, hands-on experiences that are necessary for abstract learning later on. She is also missing making connections to other children. Tactile defensiveness gets in Robin's way, physically, socially, emotionally, and yes, cognitively, too. As she gets older, learning may become increasingly tough.

If she hasn't handled many different objects and toyed with many different textures, she may not understand concepts such as hard and soft, wet and dry, heavy and light, prickly and smooth, sticky and slippery, fragile and enduring. She may be mystified by challenges to estimate an object's size and shape, weight and density. She may struggle to make sense of math, science, and art. Expressing herself in words may be limited, because of her limited experiences and participation in the world around her.

For the moment, her teacher is aware of Robin's tactile dysfunction and has found some ways to entice her into the play. For example, she invites Robin to come to the art table when only one or two children are working there, so Robin doesn't feel crowded and anxious. She offers Robin individual "finger mittens" (snipped from

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latex gloves) to slip on her fingertips. She keeps a bucket of water nearby for Robin to rinse her hands immediately after she touches something objectionable. She lets Robin sit at the head of the snack table, so other children have less chance of grazing against her.

The teacher's accommodations do help Robin — for now. But what do you guess may happen when Robin goes to kindergarten and the great beyond? Will she be able to work in groups with other children, as expected? Will she be competent manipulating scissors, rulers, compasses and pencils? Will she function smoothly in the big, busy classroom?

### Larry

Larry is an impetuous daredevil. He does not appear to have much sense of how to protect himself. You might see him scrambling up to the top rung of the jungle gym (where other kids know instinctively not to go) and leaping to the mulch below. Bam! He lands in a heap and scrambles to his feet, covered with mulch, grinning. More, more, more. Larry always needs more movement experiences and needs them to be more intense than other children's.

For instance, he craves rotary movement on the tire swing. Whereas twirling for a few minutes satisfies most children, Larry spins hard and fast for 20 or 30 minutes. Should his teacher invite him to play Duck-Duck-Goose or to go on a treasure hunt, he says, "No, thank you. I just want to spin." Spinning is his favorite activity. The teacher respects his needs and lets him spin, although she worries that he's missing most of the activities that his classmates enjoy.

Off the tire swing, Larry runs everywhere, but stopping is hard. He trips and falls often. His teacher says, "Larry's like the Titanic. Throttles wide open, full steam ahead." He frequently bumps and crashes into his schoolmates, pawing them to the ground for a bit of wrestling.

One day, "The Gingerbread Man" is the program du jour in my music and movement room. First, I tell the story on the felt board. During the story, the children shake jingle bells and sing, "Run, run, as fast as you can. You can't catch me! I'm the Gingerbread Man."

Larry is impatient: "Let's go! Let's go! Finish the story!" He doesn't want to sit; he wants to run, run, as fast as he can. His classroom teacher gently restrains him, applying the OT technique of deep pressure. She sits behind him, straddles her legs around him, squeezes his knees to his chest, and rocks him. The pressure and rhythmic motion are soothing. He closes his eyes and begins to tune in. Now he sings the Gingerbread Man's theme song along with the other kids.

Meanwhile, I conclude the felt board story and show the children how the room is set up for the "playlet." On the bare floor, all around the rug, a large circle of masking tape indicates the "road." At one point on the road is a red paper stop sign. The idea is for the Gingerbread Man to run once around the rug and then halt on the stop sign. The other characters in the story will chase him, but never actually catch him.

As I point out the other props, the children watch attentively. They are so invested in the activity that they ignore Larry, who has wriggled away from his teacher's embrace. While his classmates are learning how to enact the story, Larry places his forehead on the rug and pivots his body around his head.

Now each child gets to choose a part to enact — the Old Woman, the Cow, the Pig, the Fox, etc. Larry jumps up and clamors to be the Gingerbread Man. "I know this story," he says eagerly. "My Mommy reads it to me all the time." Larry is a good listener, that I know. Even when he's twirling or rocking, he can still pay attention to what is said or sung. But is he a good visual observer? Can he use his eyes to focus and attend? We'll see.

The playlet begins. Larry knows the story and song . . . but not the significance of the red stop sign on the floor. He wants to participate . . . but can't plan and carry out how he is supposed to act and what he is supposed to do. I repeat the information, and he says he understands . . . but he still has trouble stopping. I hold his hand and run beside him . . . but he still has trouble stopping.

"Larry's doing it all wrong!" the Horse complains. "He's messing us up!"

Larry is confused and unhappy. He falls in a heap on the rug. His classroom teacher sits nearby and rubs his back while the other children enact the story several times, until they're satisfied. Will Larry succeed in

elementary school?

## SPD Resources by Carol Stock Kranowitz, M.A.

[The Out-of-Sync Child Has Fun: Activities for Kids with Sensory Integration Dysfunction.](#) (2003)

[The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction.](#) (1998)

[Teachers Ask About Sensory Integration](#)

Carol interviews Stacey Szklut, OTR, on audiotape  
(Belle Curve Records, 1999)

[101 Activities for Kids in Tight Spaces](#)

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*About the author:*

*Carol Stock Kranowitz, M.A., is a master educator who formerly taught movement and music classes in a preschool in Washington, DC. She is the author of the best-selling book [The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction.](#)*

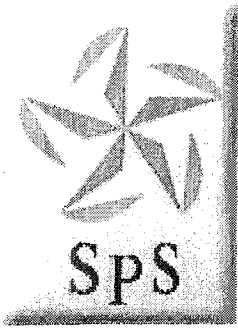


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The Sensory Processing Disorder Network  
[www.SPDDNetwork.org](http://www.SPDDNetwork.org)

[The KID Foundation](#)  
5655 S. Yosemite Suite 305  
Greenwood Village, CO 80111



# Understanding Sensory Integration

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*Sensory Integration* refers to the way your child's nervous system receives and interprets sensory information from his body and the world around him. We are all familiar with the five traditional senses: *sight, hearing, touch, taste, and smell*. In addition to these important senses, there are two other senses, the *vestibular sense* and the *proprioceptive sense*, which are essential in helping us register and understand incoming information.

The *vestibular system* provides information about balance and movement. When your child goes down a slide, rides a swing, twirls around, and/or performs a forward roll, the vestibular system gives *continuous feedback* to your child's brain. The *proprioceptive system* provides the brain with information as to where the muscles and joints are positioned in relation to the rest of the body. When your child brings a spoon to his mouth, puts his arms through his coat sleeve, and swings a baseball bat, the proprioceptive system constantly *monitors* the situation and provides feedback when "correction" is needed.

It is important to remember that each child's body interprets sensory information in a different way. One child may love wild rides, enjoy spicy foods, but hates touching goopy textures. The next child may love the deep pressure of a massage, but can't handle the noise in a restaurant, or the smell of gasoline at the pump. Children, as do adults, interpret sound, sight, movement, deep pressure, taste, and smells differently.

In any given moment, your child's central nervous system is *focusing, screening, and interpreting* information with many senses all at once. For example, when your child is eating lunch at school, he must use his sense of *sight* (as well as attention) to focus on getting the food into his mouth. Simultaneously, he must also use his sense of *hearing* to filter out the background noise to facilitate communication with a peer sitting next to him. Your child must incorporate his sense of *proprioception* to gauge where his mouth is in relation to the position of his food and sense that his body is sitting on his chair. His sense of *touch* will process the texture of his food while it is chewed. Your child's senses of *smell* and *taste* also play an important role in this process as your child smells the aroma of the food he is eating and connects that information with the task he receives while eating. If any of these senses gets *over-stimulated* or *under-stimulated* in the process of the meal, the food could end up on the floor!

If your child's central nervous system is constantly being *over-stimulated* or *under-stimulated*, your child may be experiencing *Sensory Integration Dysfunction (SID)*. When a child is not processing sensory information appropriately, there may be difficulties functioning at home, at school, or in a variety of social settings. A child with Sensory Integrative Dysfunction may have troubles in the following areas: gross motor development, fine motor development, speech-language development, social skills, and attention. Consequently, when a child is focused on meeting his sensory needs, it may be difficult for him to achieve his academic, motor, and social potential.

*Sensory Integrative Treatment* is needed when *sensory avoidant* behaviors and *sensory seeking* behaviors interfere with your child's functioning at home or school.

The child who is predominantly *sensory avoidant* is labeled as a "shy child" or as the



"cautious one". When a child is bombarded with too much sensory input, he may "shut down" and may watch his peer play instead of being an active participant. This type of child feels the safest in his home environment, where there is greater predictability and typically decreased sensory input. Group settings and noisy places are usually the most overwhelming for these types of children. The noise, the lights, and the bumping against other people can overload the child. The sensory avoidant child will typically cling to an adult to get the security that he needs.

A child who is predominantly *sensory seeking* is labeled as "wild" and "inattentive". At home and at school, he has trouble sitting still and constantly needs to seek out all types of input. He will often go from one activity to the next, trying to experience as much stimulation as possible. This child may intentionally bump into his peers or often seek a tight hug. On the playground, he is "on the go" and will often compromise his own safety. In a noisy setting, the sensory seeking child may become even more "rowdy" and distracted.

At times, is it helpful to look at each sense separately to determine whether a child is having difficulties processing sensory information. Often a child will display sensory avoidant behaviors in some senses while showing sensory seeking behaviors in others. The following chart shows descriptions of behaviors often noted when children are either *sensory avoidant* or *sensory seeking*.

	<b>Sensory Avoidant</b>	<b>Sensory Seeking</b>
<b>Vestibular (movement)</b>	<ul style="list-style-type: none"> <li>· Spends a lot of time with sedentary activities</li> <li>· Avoids playground equipment</li> <li>· Movement is slower than peers'</li> </ul>	<ul style="list-style-type: none"> <li>· "On the go"</li> <li>· Twirls and spins self</li> <li>· Has trouble sitting still and attending</li> </ul>
<b>Proprioception (muscle and joint sense)</b>	<ul style="list-style-type: none"> <li>· Overreacts to getting bumped, pushed, or to falling down</li> <li>· Avoids getting hugged</li> </ul>	<ul style="list-style-type: none"> <li>· Crashes into people and things</li> <li>· Shows decreased safety awareness</li> <li>· Enjoys being in tight spaces</li> </ul>
<b>Auditory (hearing)</b>	<ul style="list-style-type: none"> <li>· Reacts negatively to loud sounds</li> <li>· "Shuts down" in crowded spaces</li> <li>· Distracted by even small sounds</li> </ul>	<ul style="list-style-type: none"> <li>· Appears not to hear what you say</li> <li>· Makes strange noises or sounds</li> <li>· Becomes overly energized in loud social settings</li> </ul>
<b>Tactile</b>	<ul style="list-style-type: none"> <li>· Irritated by getting self dirty in sand, paint, play dough, etc.</li> </ul>	<ul style="list-style-type: none"> <li>· Craves sensory material such as sand, water,</li> </ul>

(touch)	<ul style="list-style-type: none"> <li>· Overwhelmed by face and hair washing</li> <li>· Walks on toes to avoid textures on the feet</li> </ul>	<ul style="list-style-type: none"> <li>· foam, and paint</li> <li>· Touches people and things excessively</li> <li>· Shows decreased awareness of pain and temperature</li> </ul>
Oral (taste)	<ul style="list-style-type: none"> <li>· Limits self to specific food textures and bland tastes</li> <li>· Gags from food in mouth</li> <li>· Eats very small pieces at a time</li> </ul>	<ul style="list-style-type: none"> <li>· Mouths non-food objects</li> <li>· Craves specific tastes in food (i.e., spicy or sour)</li> <li>· Over-stuffs mouth when eating</li> </ul>
Olfactory (smell)	<ul style="list-style-type: none"> <li>· Overly sensitive to smells in the room</li> </ul>	<ul style="list-style-type: none"> <li>· Seeks out strange smells</li> </ul>
Visual (sight)	<ul style="list-style-type: none"> <li>· Enjoys being in the dark</li> <li>· Irritated by bright lights</li> </ul>	<ul style="list-style-type: none"> <li>· Looks intently at objects and people</li> </ul>

At SPS, Inc., our Occupational Therapists are trained in sensory integration and work with children who are experiencing difficulty with sensory processing. By providing suspended equipment and an array of therapeutic tools and toys, your child can seek out intensive sensory information. The role of our Occupational Therapists is to facilitate exploration of the various therapeutic equipment in a safe, productive, non-threatening manner. It is through this exploration that the child's nervous system becomes more organized. Thus, your child can become more ready to receive sensory stimulation and to process it efficiently and accurately in his day-to-day world. Once your child is able to process his sensory environment appropriately, he should be able to focus on and master speech-language development, motor movement, attention issues, and social skills.

### Now... What's the next step?

Your child's unique sensory needs can be determined through an evaluation process. Individualized goals will be set for intervention based on your child's sensory profile and on the needs specified in the family consultation. The Occupational Therapists at SPS, Inc. are trained to target specific sensory needs and goals to help your child progress towards the final goal of processing information more accurately and being able to plan appropriate

responses. At SPS, we strive to empower children with the tools they need for a happy, healthy life.

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### HOME

## Home Activities for Children with Sensory Processing Disorder

Heather Miller-Kuhaneck, MS OTR/L BCP

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[Other General Guidelines for the Home](#)

### Introduction

All children can benefit from appropriate sensory experiences. There is much research available demonstrating the benefits of sensory rich environments for animals and the same appears to be true for humans. For children who have atypical reactions to the sensory environment, the world can be a scary and challenging place.

Many aspects of home and family life may be affected when living with a child with Sensory Processing Disorder (SPD). As a parent of a child with SPD, you know how hectic and chaotic it can be at home. Any activity suggestions must fit easily into typical home routines or they will not be utilized. Therefore, the following suggestions are organized around typical daily household tasks wherever possible.

Before attempting any of these activities, it is important that you understand some basic principles.

- Any activity list available on the Internet cannot possibly be individualized for a child and therefore some activities may not be appropriate for *your* child.
- Some children may be over sensitive to sensations and will be fearful or withdraw from certain activities or sensations. Other children may be sensory seeking and find many of these activities enjoyable. You must carefully observe your child's reactions and respect them.
- A child who is indicating fear or distress should not be forced to participate. The child's fear and discomfort is based on his or her nervous system's reaction to sensation and is real, and not under his or her control.
- Many children fluctuate between sensory sensitivity and sensory seeking behaviors, and others may be sensitive to certain sensations but seek other ones. Each child's patterns may be highly unique and individual, and it is not uncommon for those patterns to change depending upon the context the child is in (where, when, what is going on, etc.).
- Sensory seekers tend to be very active children, who are on the go. They often respond positively to very intense forms of sensory stimulation and look for ways to move, jump, fall, crash, kick, push, etc. Creating ways to incorporate these needs into safe and fun activities that provide the desired intensity may allow your child to come to a calm and focused place. Think about ways your child can safely push, pull, kick, hang, jump, and lift. (For example, bowling, playground monkey bars, trampolines, pushing a "heavy bag" back and forth with you, pulling a heavy wagon.)
- Children who are sensitive to certain sensations (sounds, lights, smells) may like activities that provide intense deep pressure to the skin, resistance to the muscles, and input to the joints. In general, these inputs are calming for the system.
- Lastly, watch for signs that your child is becoming overly silly, unsafe, extremely over-active, or

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inattentive. Also watch for sudden yawning, hiccoughing, burping, or changes in skin color. If you note these things, stop the activity immediately and if necessary find something calming for your child (wrapping up in a blanket, very slow rocking, big bear hug, snuggling in a big comfy chair, warm bath or shower).

The best way to approach these activities is to present some ideas to your child and allow their preferences to guide you. You may also find other similar ideas to add to your child's list of personal favorites.

### Incorporating Sensory Input into Daily Activities

- **Bath time:** Scrub with washcloth or bath brush, try a variety of soaps and lotions for bathing, play on the wall with shaving cream or bathing foam, rub body with lotion after bath time (deep massage), sprinkle powder onto body and brush or rub into skin.
- **Meal preparation or baking:** Let your child mix ingredients, especially the thick ones that will really work those muscles. Let child mix and roll dough and push flat. Allow child to help you carry pots and pans, bowls of water or ingredients (with supervision, of course). Let your child tenderize meat with the meat mallet.
- **Grocery shopping:** Have your child push the heavy cart (as long as the weight is within their capability). Let your child help carry heavy groceries and help put them away.
- **Mealtime:** Encourage eating of chewy foods and drinking out of a straw. Try having your child sit on an air cushion to allow some movement. A weighted lap blanket may be helpful as well.
- **Household chores:** Allow the child to help with the vacuuming or moving the furniture. Let the child help carry the laundry basket or the detergent. Let the child help with digging for gardening or landscaping.
- **Play time:** Reading books in a rocking chair or bean-bag chair may be beneficial. You can help your child make up obstacle courses in the house or yard using crawling, jumping, hopping, skipping, rolling, etc. Listen to soft music. Play the sandwich game (child lies in between two pillows and pretends to be the sandwich, while you provide pressure to the top pillow to the child's desired amount). Ask them "harder or softer?" as you push on the pillow. Some children will like much more pressure than you would expect. You can also go for a neighborhood walk with a wagon and have your child pull it (make it semi-heavy by loading it with something the child would like to pull around). You can do the same with a baby-doll carriage. Swimming in a pool is a wonderful activity if you have that available, as are horseback riding and bowling. Mini or full-size trampolines are excellent for providing sensory input as well. Make sure the child is using them safely. Sandboxes, or big containers of beans or popcorn kernels can be fun play-boxes, too, if you add small cars, shovels, cups, etc.
- **Errands and appointments:** Before visiting the dentist or hairdresser try deep massage to the head or scalp (if tolerated), or try having your child wear a weighted hat. Try chewy foods or vibration to the mouth with an electric toothbrush. Let your child wear a heavy backpack (weighted to their liking with books and with the straps padded as needed). Be sure to give the child ample warning before any changes in routine or any unscheduled trips or errands. Many children with SPD need predictability.

### Other General Guidelines for the Home

- Keep routines and possessions organized.
- Be consistent with rules and consequences.
- Keep an activity schedule or calendar posted.
- Create specific routines for troublesome times of day (bedtime or getting ready for school).
- Discuss upcoming anticipated changes in routine at a point in time that is beneficial for your child. You will have to experiment with how early the child "needs to know."

- Try to indirectly use your child's sensory preferences for fun rewards to help you handle behavior. For example, having your child work towards an *extra* trip to go bowling or horseback riding may be helpful. However, try not to restrict movement activities when your child is being disciplined. For example, taking away recess time or playground time for not sitting at the table appropriately during dinner may not be the most effective way to deal with these issues. Your child may need that movement time, and by removing it, his or her behavior may actually become more difficult later.

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*About the author:*

*Heather Miller-Kuhaneck currently teaches in the graduate occupational therapy program at Sacred Heart University in Fairfield, Connecticut. She has practiced in pediatrics for years, and has specialized in school-based practice and outpatient occupational therapy using Ayres' sensory integrative approach. She has edited a book on occupational therapy for children with autism, and has been the quarterly editor for AOTA's School System Special Interest Section. She is currently developing an assessment tool to examine behaviors indicative of sensory integration dysfunction in the school setting. She can be reached at [Hmilleret@yahoo.com](mailto:Hmilleret@yahoo.com) or [kuhaneckh@sacredheart.edu](mailto:kuhaneckh@sacredheart.edu).*



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# Working With the Child Who Has Sensory Integration Disorder

By Stanley I. Greenspan MD  
Source: Early Childhood Today

*A child who is coming into my kindergarten next year has been diagnosed with a mild form of sensory integration disorder. What is this disorder and how can I help?*

Sensory integration refers to the way people, with their individual differences, respond to and process sensations. It also includes their ability to plan their actions (motor planning). When there is a problem in sensory processing and motor planning, we use the term sensory integration disorder. Sensory-processing differences and motor-planning differences have important influences on children's social and cognitive functioning.

## Reacting to Sensations

In broad terms, it's very useful to think of the various ways in which infants and young children take in different sensations and plan their actions. Consider the way a particular child responds to sensations such as sound or touch. For example, some children are oversensitive to certain types of touch or particular sounds, while other children are undersensitive or underreactive to such sensations. A child who is oversensitive might react with panic or fear if someone bumps into her in pre-school. The loud hum of a busy classroom might overwhelm an oversensitive child.

The child who is undersensitive may have a hard time responding to the teacher's voice because it hardly registers. He may bang into things and fall down, hardly even noticing it, because he is so underreactive to pain or touch. Children who crave sensation tend to operate in a more daredevil fashion, banging into people, disrupting other children. They seem to be impervious to physical sensation.

As can be well imagined, these contrasting types of children will respond very differently to a school environment and will provide different challenges for the teacher.

## Motor Planning

The ability to plan actions, which we call motor planning, is seen in the fine-motor area when a child is copying shapes, numbers, or letters. Some children can easily master a ten-step pattern, while others can only follow a one- or two-step pattern and then get distracted and need help.

Motor planning is apparent in the gross-motor area when a child is doing a complicated dance step, standing in line, following certain rules, learning new games, or engaging in athletics. We see wide variations in how children plan these actions. Some children are very comfortable climbing and swinging, while others are uncomfortable, almost fearful, about moving in space. There are others still who may want to jump from high places and seem to want to take too much risk. This has to do with different sensitivities to movement in space. In addition to the possibility of problems with sensation or action, these areas may not be well integrated. In other words, they may not work together as a smoothly functioning team.

## Causes and Concerns

Sometimes teachers and parents attribute these differences to emotional problems in a child. While it can become or create an emotional problem, initially there may just be a physical difference, originating in the central nervous system.

The way children cope with these differences depends on how well they've mastered what

we call their functional-emotional developmental capacities (outlined in previous articles). These include the ability to:

- attend
- engage
- exchange emotional gestures
- join in problem solving with others
- create ideas and use ideas logically
- reason things out

How well a child masters these levels will in part determine how he copes. A child who has the skills to read and is aware that she gets overwhelmed when there is too much noise can tell the teacher, "I need some quiet time." Whereas a child who is not yet able to do that, and expresses his feelings in actions rather than words, is more likely to hide, withdraw, or attack when he gets overwhelmed.

At the same time, differences in sensory processing and motor planning contribute to how well a child masters the six abilities we've described. So, for example, a child who craves sensation may be so busy acting impulsively that she doesn't learn to reason well. These factors interrelate.

The better the environment we create—with nurturing interactions that facilitate basic capacities for attending, engaging, communicating, and thinking—the better a child with sensory differences will do. And the better we'll do in promoting higher levels of thinking.

### **Preparing the Environment:**

#### **The Overreactive Child**

What educators and parents need to know is that each type of child requires a different kind of environment. For example, the child who's overreactive to sensation and panics easily needs a lot more soothing and regulating, slower transitions, and a great deal more patience. We can't hurry this child. We can't put him in noisy, busy environments where he'll get overloaded and anxious. He may develop nightmares or become aggressive, withdraw, or become overly cautious.

Having soothing and regulating environments that very gradually increase sensation is the key to success both at school and at home. You might guide that child into a corner of the room with one other child and, with an aide there, encourage participation in an activity.

#### **The Underreactive Child**

An underreactive child tends to be self-absorbed. If he's a creative underreactive child, he may be engaging in pretend play on his own. That child needs to be drawn in. He needs very energized interactions, both at school and at home.

#### **The Sensory-Craving Child**

The sensory-craving child, who is in everyone's business and is banging into everything, needs a lot of structure and containment. The environment should be respectful, regulated, and soothing. This child will need assistance in translating actions into words. It's helpful to focus on imaginative play and building strong relationships. These children will not do well in a school or family where relationships are fleeting, or where parents or teachers are too busy to give them a lot of time.

When we provide appropriate environments, children with any of these differences do wonderfully. Also, where there are a lot of these differences in children, additional staff is helpful so that care can be individualized. Remember, our goal is to get all children to the



point where we can turn such challenges into opportunities for developing good reasoning abilities and high levels of empathy and warmth.

**RESOURCES:**

**The Child With Special Needs**, by Stanley I. Greenspan, M.D., and Serena Wieder, Ph.D. (Perseus Books, 1998; \$32)

*Stanley I. Greenspan, M.D., is coauthor, with T. Berry Brazleton, M.D., of **The Irreducible Needs of Children** (Perseus Books, 2000; \$24). Dr. Greenspan is a clinical professor of psychiatry, behavioral science, and pediatrics at George Washington University Medical School.*

**About the Author**

Stanley I. Greenspan, M.D., is co-author, with T. Berry Brazleton, M.D., of *The Irreducible Needs of Children* (Perseus Press, 2000; \$24). Dr. Greenspan is a clinical professor of psychiatry, behavioral science, and pediatrics at the George Washington University Medical School.

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## Tips for Teachers

*Kari Shanks Hall, M.A., OTR*

Sensory integration is an innate neurobiological process that refers to the interpretation of sensory stimulation from the environment (Ayres, 1979). When a child has a Sensory Processing Disorder, information from the environment and one's own senses are not organized well in the brain. This results in problems in processing information and behaving appropriately for the task at hand.

The following tips can help children who are oversensitive to light touch and who need movement to stay organized in the classroom. What's wonderful about these ideas is that they work well for all children and help them attend to and process academic information.

### General Classroom Organizational Strategies

- Use graph paper to help organize math problems.
- Provide lined paper for writing assignments.
- Provide pencil grippers for children who have trouble using a mature pencil grasp.
- Remind children to use their non-dominant hand to hold the paper.
- Adjust chairs and tables to the proper height for each child. (Feet should touch the floor. Table height should be just below the child's elbow when the fist rests under the chin.)
- Keep visual and auditory distractions to a minimum.
- If a child presses too hard on the pencil, give him a mechanical pencil.
- Always present information in the child's best modality. Visual, auditory, or multi-sensory learning activities can facilitate understanding and memory.

### Children Who are Oversensitive to Light Touch

Children who are sensitive to light, unexpected touch often prefer firm touch/pressure, which helps organize their behavior. Keep the following tips in mind:

- Approach the child from the front to give a visual cue that light touch is coming.
- Use firm pressure to the shoulder or back, rather than a gentle hand placement or a brush to the sleeve, arm, or face.
- Place the child's desk out of traffic, towards the periphery of the room, so that the child has a good view of who is moving and where they are going.
- Seat a small child in an adult's lap or next to a quiet child during a group gathering. Place older children to the side or in back of the group. Crowded places and situations can cause discomfort because of the possibility for unexpected bumps and brushes.
- Put children "in charge" of the back of the line. The back of the line should not be viewed as a

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## Children Who Need Sensory Input to Stay on Task

Some children are "sensory seekers" and become more organized and attend better to a task if they receive periodic movement input. Some ideas:

- Allow a child to sit on a baffled camping pillow filled with a small amount of air. This allows for movement without leaving the desk.
- Suggest five minutes of swinging or climbing during recess, prior to coming back to class.
- Suggest some rhythmical, sustained movement (e.g., marching, washing desks, or bouncing), which can be organizing to the central nervous system.
- Ask the child to erase the blackboard or run notes to other teachers, to allow him to get some extra movement.
- Use a rocking chair in the classroom for periodic "pick-me-ups."
- Never discipline a "sensory seeker" by taking away recess privileges or physical education — you will intensify the random movements, fidgeting, and outbursts.

Some children also need extra sensory input to their mouths and hands in order to organize their behavior, such as:

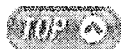
- Drinking from water bottles kept at desk (send them home weekly to be washed).
- Chewing on a straw, a coffee stir stick, or rubber tubing placed on the end of a pencil.
- Fiddling with something in their hands (keep a bucket or fanny pack of "squeezies" handy; a "squeezie" is a small object that is soft and can fit in the hand, such as a balloon filled with flour, a soft ball, a dog toy, or a koosh ball).
- Hanging by the arms on the monkey bars for 20-30 seconds at a time.
- Pushing/carrying heavy objects (e.g., carrying books, moving desks, or "pushing" against walls).
- Carrying a backpack weighted with books or bags of dried beans (this should be worn for only 15-20 minutes at a time, with an hour or two between wearings).

A reading corner with a bean bag chair makes a wonderful place to escape from too much stimulation and get ready for more focused desk work. Children might enjoy reading or sitting under the bean bag chair more than sitting on it.

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### *About the author:*

*Kari Shanks Hall has been in private practice in Denver, Colorado, for more than a dozen years. She specializes in working with children with Sensory Processing Disorder. She can be reached at 5290 E. Yale Circle, Suite 207, Denver, CO, 80222, or at [k.hall@pediatricot.net](mailto:k.hall@pediatricot.net).*



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**Resource List for Sensory  
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Special School District of St. Louis County  
12110 Clayton Road  
St. Louis, MO 63131  
314-989-8438/989-8108/989-8194**

**Answers to Questions Teachers Ask About Sensory Integration. Carol Kranowitz (2001)**

An introduction to sensory challenges. Includes diagnostic checklists, progress forms, and practical tools for working with children of all ages.

**Arnie and His School Tools: Simple Sensory Solutions That Build Success. Jennifer Veenendall (2008)**

Grades K-5. Introduces elementary students to basic sensory tools used to help children focus in classroom settings, such as fidgets, chewy pencil toppers and weighted vests. (45 pages)

**Asperger Syndrome and Sensory Issues: Practical Solutions for Making Sense of the World. Brenda Smith Myles, PhD (2005)**

Uncovers the puzzling behaviors by children and youth with Asperger syndrome (AS) that have a sensory base and, therefore, are often difficult to pinpoint and interpret.

**Behavior Solutions for the Inclusive Classroom: A Handy Reference Guide that Explains Behaviors Associated with Autism, Asperger's ADHD, Sensory Processing, and other Special Needs. Beth Aune, Beth Burt & Peter Gennaro**  
Illuminates possible causes of those mysterious behaviors, and more importantly, provides solutions! Teachers can quickly look up an in-the-moment solution and learn about what the child is communicating, and why.

**A Buffet of Sensory Interventions: Solutions for Middle and High School Students with Autism Spectrum Disorders. Susan Culp (2011)**

Teens. Teaches teens with autism spectrum disorders to take ownership of their sensory needs by self-advocating and self-regulating as they transition into adulthood. (150 pages)

**Building Bridges through Sensory Integration. Ellen Yack, et al (1998)**

Resource book that clearly explains sensory systems and sensory integration and how to identify problems.

**Dr. Temple Grandin Speaks on Sensory Challenges & Answers (video) (1999)**

Dr. Grandin speaks to her own experiences with Sensory Challenges as a person with autism.

**The Goodenoughs Get In Sync. Carol Stock Kranowitz (2004)**

Ages 8-12. Tale of five family members and their naughty dog (each with a different sensory processing challenge) and how they get in sync after a tough day (89 pages)

**How Does Your Engine Run? A Leader's Guide to The Alert Program for Self-Regulation. Mary Sue Williams & Sherry Shellenberger (1996)**

Describes an innovative program that supports children, teachers, parents, and therapists to choose appropriate strategies to change or maintain states of alertness. Students learn what they can do before a spelling test or homework time to attain an optimal state of alertness for their tasks.

**It's Haircut Time: How One Little Boy Overcomes his Fear of Haircuts. Michele Griffin. (2012)**

Ages 4-8. Go along with one nervous little boy, as he faces a day he DREAMS – Haircut Day! This story fosters communication, tolerance and understanding between parent and child. (36 pages)

**Making It Easy: Sensor motor Activities at Home and School. Mary Haldy, et al (1999)**

Resource guide deals with children preschool through elementary age who have sensor motor disorders.

**Making Sense of Sensory Integration. Jane Koomar, Stacy Szklut & Sharon Cermak. (audio) (2005)**

Understand the differences between sensory processing disorder and "look-alike" diagnoses. Learn what to look for at different ages and developmental stages from infancy through adulthood.

**Making Sense of Art: Sensory-Based Art Activities for Children with Autism, Asperger Syndrome and Other Pervasive Developmental Disorders. Sandra R Davalos. (1999)**

Activities designed to stimulate the child's senses through manipulation and exploration, arouse curiosity and creativity, and develop a sense of mastery.

**My Sensory Book: Working Together to Explore Sensory Issues and the Big Feelings They Can Cause. Lauren H Kerstein (2008)**

A workbook for parents, professionals and children to be used as a tool to assist children in understanding their sensory systems better.

**My Service Dog: One Way a Boy Got Help with His Sensory Processing Disorder. Cindy M Jusino. (2013)**

Grades K and up. This book is based on a true story of a boy that received a service dog to help with his Sensory Processing Disorder. (26 pages)

**The Out-of-Sync Child Has Fun. Carol Kranowitz (2003)**

Presents activities that parents of kids with Sensory Integration Dysfunction can do at home with their child to strengthen their child's abilities-and have some fun together along the way.

**The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction. Carol Kranowitz (2006)**

Identifies Sensory Processing Disorder, a common but frequently misdiagnosed problem in which the central nervous system misinterprets messages from the senses.

**The Out-of-Sync Child: Recognizing and Coping with Sensory Integration Dysfunction. Carol Kranowitz (2-part video/85 minutes total/2001) (DVD/85 minutes/2009)**

This guide explains how SI Dysfunction can be confused with ADD, learning disabilities, and other problems, tells how parents can recognize the problem-and offers a drug-free treatment approach for children who need help.

**A Parent's Guide to Understanding Sensory Integration. A Jean Ayres (1991)**

Describes the concept of sensory integration, signs of dysfunction, the evaluation, how therapies can help and what parents can do.

**Picky, Picky Pete: A boy and His Sensory Challenges. Michelle Griffin. (2010)**

Grades Pre-K and up. Children's book about a boy with sensory processing disorder. (48 pages)

**Raising Kids with Sensory Processing Disorders: A Week-by-Week Guide to Solving Everyday Sensory Issues. Rondalyn V Whitney & Varleisha D Gibbs. (2014)**

Offers a compilation of unique, proven strategies parents can implement to help their children move beyond their sensory needs and increase their performance on tasks like homework, field trips, transitions between activities, bedtime, holidays, and interactions with friends.

**Raising a Sensory Smart Child: The Definitive Handbook for Helping Your Child with Sensory Integration Issues. Lindsey Biel & Nancy Perske (2005)**

For children with sensory integration issues-those who have difficulty processing everyday sensations and exhibit unusual behaviors such as avoiding or seeking out touch, movement, sounds, and sights-this groundbreaking book is an invaluable resource.

**Sensational Kids: Hope and Help For Children with Sensory Processing Disorder (SPD). Lucy Jane Miller (2006)**

Portraits of five children illustrate the different ways in which SPD may manifest itself as well as how families cope, while offering hope and advice to parents on how to be the best possible advocates for their children.

**SenseAble Strategies: Including Diverse Learners Through Multisensory Strategies. Anne Beninghof (1998)**

Grab your students' attention with noisemakers. Draw three-dimensional number lines. Apply puffy paint to workbook pages. These and hundreds of other unique, innovative, classroom-tested strategies target diverse learning styles through the often-underused tactile and kinesthetic modalities.

**Sensory Integration and the Child. A. Jean Ayres, PhD (Thirteenth Printing - 1998)**

This classic handbook, from the originator of sensory integration theory.

**Sensory Issues in Learning & Behavior. Carol Kranowitz (video) (2009) (3 hours)**

Discusses recent research in Sensory Processing Disorder (SPD), the six types of SPD and how they affect the daily lives of children, and available treatment and therapy options. (DVD)

**The Sensory Processing Disorder Answer Book: Practical Answers to the Top 250 Questions Parents Ask. Tara Delaney (2008)**

Reference book that gives answers to most pressing questions about SPD.

**Sensory Processing Disorder: Simulations and Solutions for Parents, Teachers and Therapists. (video) (2006) (25 minutes)**

Kit includes DVD, small mirror, overhead magnifier, reproducible handouts, and directions on how to carry out the simulation exercises. (DVD Kit)

**The Sensory-Sensitive Child: Practical Solutions for Out-Of-Bounds Behavior. Karen A. Smith, PhD et al (2004)**

Explains that the central and frequently unrecognized role that sensory processing problems play in a child's emotional and behavioral difficulties.

**Sensory Smarts: A Book for Kids with ADHD or Autism Spectrum Disorders Struggling with Sensory Integration Problems. Kathleen A. Chara, Paul J Chara & Christian P. Chara (2004)**

Ages 8 and up. We wrote "Sensory Smarts" to help people dealing with a broad range of Sensory Integration Problems. (80 pages)

**Sensory Strategies to Improve Communication, Social Skills, and Behavior. (video)**

Strategies on how to handle anxiety, behavior, and sensory overload. Provides techniques for better communication. (DVD)

**This Is Gabriel Making Sense of School: A Book About Sensory Processing Disorder. Hartley Steiner (2010)**

Elementary. This picture book gives teachers, parents and students a better understanding of all the seven senses, how they are each affected at school and what kinds of accommodations are necessary to help children with SPD become learning sensations. (28 pages)

**Too Loud, Too Bright, Too Fast, Too Tight. Sharon Heller, PhD (2003)**

Provides tools and therapies for alleviating and, in some cases, even eliminating sensory defensiveness.

**Totally Chill, My Complete Guide to Staying Cool: A Stress Management Workbook for Kids with Social, Emotional, or Sensory Sensitivities. Christopher Lynch, PhD. (2012)**

Stress management workbook that is meant to be read, completed, and used as much as possible by children themselves. Its fun graphics and interactive style make it ideal for children grades 3 through middle school.

**Understanding Sensory Dysfunction: Learning, Development and Sensory Dysfunction in Autism Spectrum Disorders, ADHD, LD and Bipolar Disorder. Polly Godwin Emmons et al (2005)**

Understanding Sensory Dysfunction is a clear and comprehensive resource to identifying and addressing sensory dysfunction in children, using a range of practical strategies to help them reach their full potential at home, at school and in the community.

**Unlocking the Mysteries of Sensory Dysfunction. Elizabeth Anderson & Pauline Emmons (2004)**

Tells parents and teachers what they need to know and what to do about babies who can't be comforted or toddlers who can't communicate.

**Why Does Izzy Cover Her Ears? Dealing with Sensory Overload. Jennifer Veenendall (2009)**

Elementary. Offers helpful insights about sensory modulation disorders to students, parents, and educators. (39 pages)