

Physician Fact Sheet

Sensory Processing Disorder

Signs and Symptoms



What is Sensory Processing Disorder?

Sensory Processing Disorder (SPD), first identified in the 1960's by Dr. A. Jean Ayres, is a developmental disorder in:

- processing and organizing sensory information
- assigning meaning to what is experienced
- acting or responding to situations in an adaptive, purposeful manner
- also known as Sensory Integrative Dysfunction (DSI) (Ayres, 1982)



Children with SPD may not enjoy common childhood experiences and may be at increased risk for injury.

Estimated Prevalence

- 73% are male
- 5-13% for children entering school. (Ahn, et al, 2004)
- 40-88% for children with autism (Talay-Ongan & Wood, 2000)

Associated Disorders

SPD is commonly associated with:

- Learning disabilities
- Pervasive developmental disorder/ autism spectrum
- Attention deficit disorder
- Language disorders
- Developmental coordination disorder
- Anxiety disorder/ depression
- Post-institutionalized children
- Post-traumatic stress disorder
- Some behavioral disorders

Functional Problems Associated with SPD

- Behavioral/ attentional/ affective organization, e.g. decreased social skills
- Delayed fine/gross/oral motor skill development
- Delayed daily life skills including participation in play
- Impaired self esteem
- Impairments in sleep/ eating/ elimination patterns

(Interdisciplinary Council on Developmental & Learning Disorders, 2005)

Features of Sensory Processing Disorder

Essential Features
SPD has distinct behavioral patterns characteristic of one or more **subtypes**:

- + Sensory modulation disorder
- + Sensory discrimination disorder
- + Postural-ocular disorders
- + Dyspraxia

Essential features are:

- Marked impairment in processing & integration of sensory inputs
- Impairment not due to general medical condition or overt damage to receptors, neural pathways or cortical areas
- Impairment interferes with functional skills, social-emotional health, & behavioral regulation.

- Usually identified in early childhood or adolescence
- Variable course as compensatory behaviors may be developed, however, underlying deficits persist.
- Empirical evidence of physiologic measures shows:
 - * Atypical sympathetic nervous system activity in abnormal electrodermal (EDA) response to sensory stimulation. (McIntosh, Miller, Shyu, & Hagerman, (1999)
 - * Lowered vagal tone and parasympathetic activity associated with stress, developmental/ cognitive delays, emotional/ behavioral over-reactivity. (Schaaf, Miller, Sewell, O'Keefe, 2003)

Associated Features

A study of 1000 children with *SPD* conservatively estimated prenatal and birth problems:

- 42% complications during labor or delivery
- 32% delivered by assisted delivery methods
- 25% mothers had infections or illnesses during pregnancy
- 13% were pre-term, ≤ 37 weeks
- 5% had cord wrap/ prolapse at birth

Estimated early childhood health problems:

- 62% chronic ear infections
- 40% allergies or asthma
- 27% experienced serious injuries or illnesses
- 25% jaundice at birth
- 20% colic as infants

Developmental Features

This study also estimated:

- 47% did not go through the "terrible two's" or did so late
- 37% reported by parents to have a brief / absent crawling phase
- 33% had strong positioning preferences as infants
- 32% had sleeping problems
- 31% had feeding problems
- 28% were hesitant/ delayed learning to go down stairs
- 24% reported by parents to be early walkers

(May-Benson, Koomar, & Teasdale, 2009)

For More Information
www.thespiralfoundation.org
617-923-4410

Subtypes of Sensory Processing Disorder (Interdisciplinary Council on Developmental & Learning Disorders , 2005)

Sensory Modulation Disorder	Sensory Discrimination Disorder	Postural-Ocular Disorder	Dyspraxia
Problems in regulating the intensity & nature of responses to sensory input.	Problems discerning & assigning meaning to qualities of specific sensory stimuli.	Problems with quality of control or stabilization of the body during movement or at rest.	Deficit in the ability to plan, sequence & execute novel or unfamiliar actions.
<p>Common Signs & Symptoms:</p> <ul style="list-style-type: none"> • Withdraw from light & unexpected touch such as stroking • Gagging, refusal to eat some textured foods leading to limited diet • Dislike of activities such as teeth brushing, hair washing, or hair/ nail cutting • Avoidance of messy or textured materials such as sand, grass or lotion • Strong references for clothing types, textures and fits • Oversensitivity to sounds or visual inputs 	<p>Common Signs & Symptoms:</p> <ul style="list-style-type: none"> • Difficulty manipulating or finding objects in a pocket or when out of sight • Difficulty distinguishing between similar sounds • Problems finding pictures in a cluttered background • Difficulty with directions • Problems with using too much or too little force, e.g. holds a pencil too tight or pushes too hard • Demonstrates poor balance • Poor sense of speed of movements 	<p>Common Signs & Symptoms:</p> <ul style="list-style-type: none"> • Poor postural control or strength, e.g. sitting tolerance • Poor righting or equilibrium • Avoids upper extremity weight bearing • Difficulty isolating head/eye movements or poor ocular control in tracking or visual shifting, e.g. when reading • Discomfort climbing/ fear of heights • Poor crossing midline or establishment of hand dominance • Fatigues quickly 	<p>Common Signs & Symptoms:</p> <ul style="list-style-type: none"> • Poor daily life tasks like dressing or using utensils • Problems playing sports • Tends to be accident-prone and clumsy • Resists trying new activities • Poor play skills, often prefers younger peers • Poor handwriting or pencil use • Poor articulation • Poor body schema or awareness of body in space • Poor automatic adaptation when performing actions • Poor ball skills
<p>Diagnostic Features:</p> <ul style="list-style-type: none"> • Strong negative responses to sensory stimuli that is not usually aversive to others • Responses may be emotional or behavioral • May involve over-responsivity to all senses but most commonly tactile and auditory stimuli. • Problems exacerbated by stress, may fluctuate over time and may be situationally dependent. 	<p>Diagnostic Features:</p> <ul style="list-style-type: none"> • Poor recognition & interpretation of essential characteristics of sensory stimuli • Poor detection of differences or similarities in qualities of stimuli, e.g. temporal / spatial qualities • May involve all senses but most commonly tactile, vestibular, or proprioceptive • Often co-occurs with dyspraxia & poor skill performance 	<p>Diagnostic Features:</p> <ul style="list-style-type: none"> • Hypo- or hypertonic muscle tension/ tone or joint instability • Poor muscle co-contraction for resistance or movement against gravity or postural control • Difficulties in oculo-motor control or functional use of vision • Often co-occurs with vestibular, proprioceptive, and/ or visual-motor problems. 	<p>Diagnostic Features:</p> <ul style="list-style-type: none"> • Awkward, poorly coordinated motor skills which must co-occur with a deficit of sensory processing • Often co-occurs with perceptual, visual-motor, or language problems • Poor ability to generalize learned skills to other similar motor tasks • Poor sequencing, timing, or rhythm of motor action

References and Resources

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- Websites:**
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 www.kidfoundation.org
 www.spdnetwork.org
- Books:**
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