

Summary

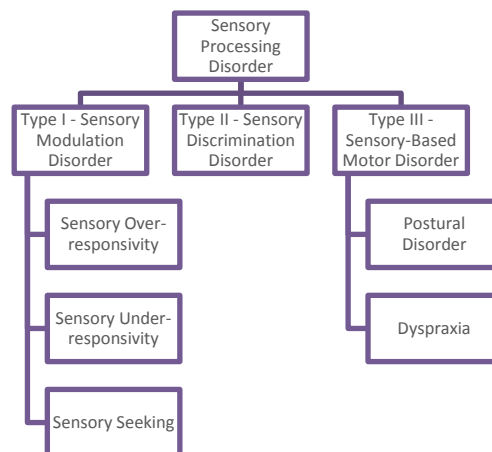
Sensory Processing Disorder (SPD) is the inability to use information received through the senses in order to function smoothly in daily life. SPD is not one specific disorder but an umbrella term to cover a variety of neurological disabilities.ⁱ SPD is also called Sensory Integration Dysfunction (SID). A characteristic that is common in children with high learning potential (HLP) is a heightened sensory perceptiveness.ⁱⁱ This fact sheet, aimed at teachers, professionals and parents/carers of children with high learning potential, will help to explain sensory processing disorder and to discern whether a child's sensory issues need intervention. The fact sheet will cover what SPD is, how it relates to high learning potential, what treatments are available, where to find help, and how to support a HLP child with SPD at home and at school.

What is Sensory Processing Disorder (SPD)?

All children have a unique sensory processing profile in terms of how they regulate sensory experiences. All children vary in how they respond to different sensations, understand sensations, and plan actions.ⁱⁱⁱ Some children have sensory processing differences that are extreme enough to interfere with daily functioning.³

There are seven senses: as well as the external senses of touch, sight, sound, taste and smell, there are internal sense of vestibular (movement and balance) and proprioception (body positioning and muscle control). Sensory Processing Disorder can affect any or all of these senses.^{iv}

Categories and Subtypes of Sensory Processing Disorder^v



The taxonomy of Sensory Processing Disorder identifies three main categories of the disorder^{vi}:

1. Sensory Modulation Disorder (Type I) – difficulty in grading or regulating responses to sensory stimulus. There are three main sub-types: sensory over-responsiveness, sensory under-responsiveness, and sensory seeking.
2. Sensory Discrimination Disorder (Type II) – difficulty interpreting the specific characteristics of sensory stimuli (e.g. speed, intensity, duration, and timing).
3. Sensory Based Motor Disorder (Type III) – two main sub-types: Postural Disorder (distorted balance, and core stability), and Dyspraxia (sequencing, motor-planning, and organisation).

SENSORY PROCESSING DISORDER AND HIGH LEARNING POTENTIAL

When a child cannot respond to sensory information in a meaningful and consistent way, the child may have difficulty using sensory information to plan and carry out actions, and thus may not be able to learn easily. Sensory Processing Disorder can inhibit adaptive behaviour learning, motor learning, and academic learning.

Common Symptoms of Sensory Processing Disorder (SPD)^{vii}

A child with SPD shows a variety of symptoms that can be in one or more areas, as can be seen in the tables below:

Sensory Modulation Problems			
Sensations	Overresponsive Child	Underresponsive Child	Sensory-Seeking Child
Touch	<ul style="list-style-type: none"> • Avoids touching or being touched by objects and people • Reacts with a fight-or-flight response to getting dirty, to certain textures of clothing and food, and to light, unexpected, touch 	<ul style="list-style-type: none"> • Is unaware of messy face, hands, or clothes, and may not know whether she has been touched • Does not notice how things feel and often drops items • Lacks 'inner drive' to handle toys 	<ul style="list-style-type: none"> • Wallows in mud • Empties out boxes of toys and rummages through them purposelessly • Chews on inedible objects such as shirt cuffs • Rubs against walls and furniture • Bumps into people
Movement and Balance	<ul style="list-style-type: none"> • Avoids moving or being unexpectedly moved • Is insecure and anxious about falling or being off balance. • Keeps feet on the ground • Has motion/travel sickness 	<ul style="list-style-type: none"> • Does not notice or object to being moved • Is unaware of falling and protects self poorly • Usually is not a self-starter, but once started, swings for a long time without getting dizzy 	<ul style="list-style-type: none"> • Craves fast and spinning movement, and may not get dizzy • Moves constantly, fidgets • Gets into upside-down positions, • Is a dare-devil and takes bold risks
Body Position and Muscle Control	<ul style="list-style-type: none"> • May be rigid and uncoordinated • Avoids playground activities that bring strong sensory input to muscles 	<ul style="list-style-type: none"> • Lacks inner drive to move for play • Becomes more alert after actively pushing, pulling, lifting, and carrying heavy loads 	<ul style="list-style-type: none"> • Craves bear hugs and being squeezed and pressed • Seeks 'heavy work' and more vigorous playground activities than others
Sight	<ul style="list-style-type: none"> • Gets overexcited with too much to look at (words, toys, or people) • Covers eyes, has poor eye contact • Is inattentive to desk work • Overreacts to bright light • Is ever alert and watchful 	<ul style="list-style-type: none"> • Responds slowly to approaching objects • May not turn away from bright light • Stares at and looks right through faces and objects 	<ul style="list-style-type: none"> • Is attracted to shiny, spinning objects and bright, flickering light, such as strobe lights or sunlight streaming through blinds.
Sound	<ul style="list-style-type: none"> • Covers ears to close out sounds or voices • Complains about noises, such as vacuum cleaners, that don't bother others 	<ul style="list-style-type: none"> • Ignores ordinary sounds and voices, but may 'turn on' to exaggerated musical beats or extremely loud, close or sudden sounds 	<ul style="list-style-type: none"> • Welcomes loud noises and TV volume • Loves crowds and places with noisy action • May speak in a booming voice
Smell	<ul style="list-style-type: none"> • Objects to odours, such as a ripe banana, that others do not notice 	<ul style="list-style-type: none"> • May be unaware of unpleasant odours and unable to smell food 	<ul style="list-style-type: none"> • Seeks strong odours, even objectionable ones • Sniffs food, people, and objects
Taste	<ul style="list-style-type: none"> • Strongly objects to certain textures and temperature of foods • May frequently gag while eating 	<ul style="list-style-type: none"> • May be able to eat very spicy food without reaction 	<ul style="list-style-type: none"> • May lick or taste inedible objects, like playdough and toys • May prefer very spicy or very hot foods

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Sensory Discrimination Problems		
Touch	<ul style="list-style-type: none"> • Cannot tell where on his or her body he/she has been touched. • Has poor body awareness and is 'out of touch' with his/her hands and feet. • Cannot distinguish objects by feel alone (without seeing). • Is a sloppy dresser and unusually awkward with buttons. 	<ul style="list-style-type: none"> • Handles eating utensils and classroom tools inefficiently. • May also have difficulty processing sensations of pain and temperature, e.g. whether a pain is better or worse, or whether he/she is hot or cold.
Movement and Balance	<ul style="list-style-type: none"> • Cannot feel himself/herself falling, especially when eyes are closed. • May be unable to tell when he or she has had enough movement. 	<ul style="list-style-type: none"> • Becomes easily confused when turning, changing directions, or getting into an unusual stance.
Body Position and Muscle Control	<ul style="list-style-type: none"> • May be unfamiliar with own body, lacking 'internal eyes'. • Is clumsy and has difficulty positioning limbs for getting dressed or pedalling a bike. • May bump, crash, and 'dive bomb' into others in interactions. 	<ul style="list-style-type: none"> • Cannot grade movements smoothly, using too much or not enough force for handling pencils and toys or for pushing open doors and kicking balls.
Sight	<ul style="list-style-type: none"> • If problem is caused by SPD (and not shortsightedness, for example) may confuse likenesses and differences in pictures, written words, objects, and faces. • In social interactions, may miss people's expressions and gestures. 	<ul style="list-style-type: none"> • Has difficulty with visual tasks, such as lining up columns of numbers or judging where things are in space and how to move to avoid bumping into objects.
Sound	<ul style="list-style-type: none"> • If problem cause by SPD (and not ear infections or dyslexia, for example), may have difficulty recognising the differences between sounds, especially consonants at ends of words. • Cannot repeat or make up rhymes. 	<ul style="list-style-type: none"> • Sings out of tune. • Looks to others for cues, as verbal instructions may be confusing. • Has poor auditory skills, such as picking out a teacher's voice from a noisy background, or paying attention to one sound without being distracted by other sounds.
Smell and Taste	<ul style="list-style-type: none"> • Cannot distinguish distinct smells such as lemons, vinegar, or soap. • May choose or reject food based on the way it looks. 	<ul style="list-style-type: none"> • Cannot distinguish tastes or tell when food is too spicy, salty or sweet.
Sensory-Based Motor Problems		
Postural Disorder		
Components of Movement	<ul style="list-style-type: none"> • May be tense or have 'loose and floppy' muscle tone, a weak grasp on objects, and difficulty getting into and maintaining a stable position. • Has a problem fully flexing and extending her limbs. 	<ul style="list-style-type: none"> • Slouches and sprawls. • Has difficulty shifting weight to crawl and rotating body to throw a ball.
Balance	<ul style="list-style-type: none"> • Loses balance easily when walking or changing positions. 	<ul style="list-style-type: none"> • Trips on air.
Bilateral Coordination	<ul style="list-style-type: none"> • Has difficulty using both sides of the body together for jumping symmetrically, catching balls, clapping, holding swing chains. 	<ul style="list-style-type: none"> • Has difficulty using one hand to assist the other, such as holding a paper while cutting or a cup while pouring.
Unilateral Coordination	<ul style="list-style-type: none"> • May not have a definite hand preference. • May use either hand to reach for an object or to use tools such as pens and forks. 	<ul style="list-style-type: none"> • May switch object from right to left hand when handling it, eat with one hand but draw with the other, or manipulate scissors using both hands.
Crossing the Midline	<ul style="list-style-type: none"> • May have difficulty using a hand, foot, or eye on the opposite side of the body, such as using one hand to paint or reading a line across a paper. 	
Dyspraxia		
Components of Praxis	<ul style="list-style-type: none"> • May have difficulty: 1) conceiving of a new, complex action to do, 2) sequencing the steps and organising body movements to do it, and 3) 	<ul style="list-style-type: none"> • May be awkward, clumsy, apparently careless (even when trying to be careful) and accident prone.

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	carrying out the multiple-step motor plan.	
Gross-Motor Planning	<ul style="list-style-type: none"> • May have poor motor coordination and be clumsy when moving around furniture, in a crowded room or on a busy playground. • Ability to learn new motor skills, such as skipping, may develop noticeably later than others. 	<ul style="list-style-type: none"> • Has problems with stairs, obstacles courses, playground equipment, and large-muscle activities such as walking, marching, crawling, and rolling.
Fine-Motor Planning: Hands	<ul style="list-style-type: none"> • May have difficulty with manual tasks, including drawing, writing, buttoning, opening snack packages, using eating utensils, doing jigsaw puzzles, playing with and cleaning up lego. 	
Fine-Motor Planning: Eyes	<ul style="list-style-type: none"> • May have difficulty using both eyes together, tracking moving objects, focusing, and shifting gaze from far to near point. • May have a problem copying from the blackboard, keeping his place in a book, and organising desk space. 	<ul style="list-style-type: none"> • May have sloppy handwriting and poor hand-eye coordination when drawing, creating art projects, building with blocks, or tying shoes.
Fine-Motor Planning: Mouth	<ul style="list-style-type: none"> • May have difficulty sucking through a straw; eating, chewing and swallowing; blowing bubbles and breathing; holding mouth closed. • May drool excessively. 	<ul style="list-style-type: none"> • May have problem articulating speech sounds and speaking clearly enough to be understood (by age of three).

Commonality of Sensory Processing Disorder (SPD)

Studies have shown that between 5% and 15% of all children have some form of Sensory Processing Disorder, and between 40% - 85% of children who have other disabilities (e.g. ADHD, autism) have sensory-processing problems as well.^{viii} SPD affects people of all ages^x and sometimes is noticeable within the first weeks or months of life.

The causes of sensory processing disorder have not yet been established, although research suggests some possible causes including heredity, prenatal conditions, birth trauma, and environmental factors.⁸

How Sensory Processing Disorder Relates to High Learning Potential

Extreme sensitivity to various kinds of sensory stimuli is common among HLP children.^x As many as one-third of HLP children may exhibit sensory processing disorder features, significantly affecting quality of life.^{xi} Sensory Modulation Disorder is the most common subtype of SPD in HLP children; many HLP children also have dyspraxia.^{xii}

The common manifestation of sensory issues in high learning potential children is a heightened awareness of and response to sensory stimulation.^{xiii} Persistent inexplicable or apparently careless errors or skill deficits in HLP children should be carefully evaluated for sensory processing deficits, learning disabilities, or other neurological problems.^{xiv}

If a child's sensory issues are significantly affecting daily functioning or impairing learning and development, it is wise to investigate the possibility that the child has SPD. Whether or not a child has diagnosable SPD, the advice below may be of use to help deal with difficult sensory moments when they arise in HLP children.

In her book, *The Out-of-Sync Child*, Kranowitz recommends^{xv} considering the following three questions to determine whether to seek help for a child with sensory processing issues:

1. Does the problem get in the child's way?
2. Does the child's problem get in other people's way?
3. Has a friend or teacher suggested you seek help?

Treatments and Sources of Help for Sensory Processing Disorder

A checklist (like the one on page 52 of *Raising a Sensory Smart Child* by Biel and Peske) can be used to build a sensory portrait of a child. The sensory portrait can help parents and teachers understand the child's sensitivities, triggers, and patterns of behaviour.^{xvi} Documenting observations and incidents in relation to sensory issues helps to identify and address a child's needs.^{xvii} Early intervention allows the child to learn and develop optimally.^{xviii}

Occupational therapists, doctors, and psychologists diagnose Sensory Processing Disorder by using observation forms completed by those close to the child and by evaluating the child in person.^{xix} After a child is diagnosed with SPD, parents and teachers understand the necessity of educational accommodations and treatments for the child.^{xx}

Treatments for Sensory Processing Disorder depend on the particular needs of the individual, but the most beneficial treatment is occupational therapy using a sensory integration framework (OT/SI). Other types of therapy beneficial for SPD include²³:

- Physiotherapy
- Speech and Language Therapy
- Vision Therapy
- Auditory Training
- Chiropractic Therapy
- Hippotherapy
- Martial Arts
- Nutritional Therapy
- Perceptual Motor Therapy

Parenting High Learning Potential Children with Sensory Processing Disorder

Parenting high learning potential children with SPD can be frustrating, overwhelming and exhausting. Parents of HLP children with SPD need to plan ahead, organise time well, and have even more patience than other parents. Parents also need to be creative to cater to their children's sensory needs.^{xxi}

Parents and other significant adults can improve children's "sensory diets" by providing planned activities to meet the needs of the children's nervous system to help children become better regulated and more focussed, adaptable, and skilful.^{xxii} Occupational therapists can help parents draw up an activities plan for use at home.

When HLP children are overresponsive to sensory input, parents can^{xxiii}:

- **Calm the children** – allow them time to become calm rather rush them. The gift of time will enable children to rationalise and give a more appropriate response.

- **Be prepared** – have a collection of “sensory tools,” such as chewing gum, a stress ball or earplugs that can calm the nervous system’s response.
- **Anticipate environments and children’s reactions** – awareness of what might happen is half way to dealing with it.
- **Plan a graceful exit** – when children overreact, removing them from the immediate environment may provide enough of a break to calm and deal with it a little later.
- **Discipline only when you know negative behaviour a choice** – not all behavior is a matter of choice; some may be due to children’s neurological reaction to sensory stimuli.
- **Remain calm** – use a calming voice when talking to children and avoid discussing issues until everyone is calm.

HLP Children with Sensory Processing Disorder (SPD) in the Classroom

In school, depending on the particular sensory issues, HLP children with Sensory Processing Disorder need^{xxiv}:

- Good communication
- Controlled environment to reduce sensory overload
- Consistent routines
- Carefully planned transitions
- Scheduled movement breaks
- Multisensory lessons
- Encouragement to be active learners (rather than passive learners)
- Time for sensory processing
- Simplified instructions
- Alternative choices
- Choice of writing implements
- Low teacher voices
- Realistic expectations appropriate to the child’s ability
- Physical feedback (get up close, look in the eye, use touch to refocus)

In addition, these children need respect and understanding of their needs. Teachers should discipline the children for behavioural issues only in situations where they had a choice of how to behave, and not in situations where the children’s behaviour was a reaction to sensory input and the children were struggling to control their reaction to the sensory input.^{xxv}

Conclusion

With support and therapeutic intervention, HLP children with sensory processing disorder can learn strategies for reducing sensory input and strategies for responding appropriately in situations where excessive sensory input occurs. Parents who learn more about their children’s responses to sensory input can reduce their children’s sensory burden and can help them learn to respond appropriately to excessive sensory input. Parents who work in partnership with their children’s schools can ensure that the schools will employ strategies developed at home for the benefit of the children.

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To give feedback on this fact sheet, please go to: <https://www.surveymonkey.com/s/Factsheetfeedback>

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