SENSORY PROCESSING DISORDER PRIMER: WHEN YOU’RE IN SYNC

Article By Carol Stock Kranowitz, MA

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Some kids respond to unremarkable experiences in notably unusual ways. They may resist going places and being with other people. They may reject hugs or crave them constantly. They may go, go, go or lack get-up-and-go. They may dress sloppily, eat only pasta, drop and break everything, whimper or rage over “nothing” for no apparent reason, insist on doing things their way, and act immaturity for their age, even as they grow. With their late and slow, or rapid and intense, or otherwise “off” responses, they seem out of sync with other people and the world.

Often, these children are beautiful, creative, kind, and so, so smart. Parents and teachers wonder why they just won’t get dressed, eat carrots, finger paint, ride a bike, or play with other children.

The reason that out-of-sync kids don’t do what others do easily is not that they won’t—it’s that they can’t. A likely cause of their bewildering behavior is Sensory Processing Disorder (SPD).

SPD occurs in the central nervous system when one’s brain can’t react typically to sensory messages coming from one’s body and environment in order to function smoothly in daily life.

Before learning facts about sensory processing disorder, you may want to review facts about ordinary sensory processing.

**SENSORY PROCESSING: WHEN SENSES ARE ‘IN SYNC’**

Most of us use sensations every second, all day, without a thought. Stairs to climb, apples to chew, friends to hug? Using our senses, we “just do it.”

For most of us, sensory processing occurs automatically and effortlessly in our central nervous system (CNS). The brain, at the top of the CNS, receives messages through sensory receptors in the eyes, skin, nose, etc., and quickly reacts to this sensory input, telling the body whether and how to respond with motor or behavioral output.

The result is an ever-flowing, in-and-out, sensory-motor dance, featuring sensory input coming in and corresponding actions playing out in a smooth, unconscious sequence. As we mature, we become able to engage in multistep activities — such as climbing stairs, finding our way to a new classroom, or following a long recipe. These complex life experiences require efficient sensory processing and much practice. A baby couldn’t do them.

Sensory processing, of course, is about senses, which help us understand and navigate the world around us. Contrary to popular belief, we have eight senses. Five are familiar: touch, sight, sound, smell, and taste. Three others, less familiar, are the senses of movement (vestibular), body position (proprioceptive), and internal organs (interoception).

**OUR EIGHT SENSES**

**The Tactile Sense (touch)** provides our nervous system with information about touching and being touched. We receive tactile messages through receptors in our skin, all over
the body. The tactile sense connects us to the world and enables us to:
- Touch people, food, objects, etc., and discriminate what we touch
- Be touched without discomfort, and discriminate what is touching us on the skin, on the hair, and in the mouth
- Feel heat, cold, and pain

The vestibular sense (movement) is about how our body moves through space. Gravity tries to pull us down, and our job is to defy it. This sense tells us where our head is in relation to the surface of the earth, and if we’re balancing. Vestibular messages, received in the inner ear, enable us to:
- Stand erect and sit up straight
- Discriminate, or discern, that we are upright, lying down, upside down, or falling
- Change our head position without getting dizzy or falling over
- Move through space from one place to another
- Be moved unexpectedly and quickly regain our equilibrium, such as being jostled in a crowded school hallway

The vestibular sense has another important job: getting all other senses to work together to keep us calm and alert. This is the “master sense,” helping us develop self-regulation of our arousal level so we can adapt to the ups and downs of daily life. Self-regulation enables us to:
- Wake up ready to go in the morning
- Cope with changing routines and transitions
- Stay alert while working, playing, and learning
- Develop conscious self-control to manage anger, excitement, cravings, etc.
- Self-soothe when hurt, stressed, or upset
- Fall asleep and stay asleep

The proprioceptive sense (body position) provides information about where our body parts are, how they bend and stretch, and how much force or pressure we use. Proprioceptive sensations come through our muscles and joints. With good proprioception, we can:
- Flex and extend our joints and orient our limbs
- Exert the “just-right” pressure on people and objects that we contact physically, as when we hold hands or pedal a bike
- Discriminate where our body is and how fast our body parts are moving

The visual sense (sight) provides information about what we see. The visual sense includes eyesight (visual acuity), telling us that we see something, and visual processing, telling us what that thing means. Eyesight tells us that we see black lines on the chart; visual processing discriminates what the black lines denote — the letter E. The visual sense makes it possible to:
- Use both eyes together (binocularity) for merging two separate images into one, e.g., to see one moon
- Detect:
  - Movement, such as a fluttering curtain or an approaching person
  - Line, such as the horizon or the edge of the sidewalk edge
  - Contrast, such as sunlight versus shadow
- Discriminate differences and likenesses, such as finding a book on the shelf or a friend in the lunchroom
- Perceive the world in 3-D, understanding our position in space relative to people and objects in the environment

The auditory sense (sound) provides information about what we hear in the environment, enabling us to:
- Hear sounds and identify what direction they are coming from
- Tolerate loud, unexpected sounds, such as shouts and thunder
- Follow moving sounds, such as footsteps or helicopters
- Discriminate sounds, such as voices, raindrops, drumbeats, or ringtones

The olfactory sense (smell) provides information about scents, making it possible to:
- Smell food, people, objects, and environments
- Discriminate which smells are benign, such as flowers and a beloved’s scent, and which smells are unpleasant, such as a baby’s diaper, a gas leak, or rancid food

The gustatory sense (taste) provides information about flavors, enabling us to:
- Taste sweet, sour, bitter, salty, and savory food
- Discriminate what is edible and what is not, such as sour milk
The interoceptive sense (internal organs) provides information about sensations coming from inside our bodies, making it possible to:
- Be aware of heart rate, breathing, hunger, thirst, and full bladder
- Digest food
- Sweat

As we grow and develop, so do our sensory processing capabilities—our “sense-abilities.” Sensory processing starts the progression from what an infant can do, to what a preschooler can do, to what an adult is expected to do. Hands-on, concrete, sensory-motor experiences — especially in an outdoor, natural environment — are the foundation of skills necessary for doing everyday tasks in a three-dimensional world.

Adapted from The Out-of-Sync Child Grows Up: Coping with Sensory Processing Disorders in the Adolescent and Young Adult Years, which includes personal stories and unique strategies by and for teens with SPD. (TarcherPerigee, 2016)

This is Part I of a two-part primer to help you, your child, the pediatrician, the dentist, the teacher, the soccer coach, and perhaps your mother-in-law to understand sensory processing disorder, a common condition experienced by people with ASD. In this issue of Autism Asperger’s Digest, you will find facts about typical sensory processing, when the senses are “in sync.” In the February/March/April 2019 issue, you will find facts about Sensory Processing Disorder (SPD), when the senses are “out of sync.” Learn more about these activities and many more in three of Carol’s books, The Out-of-Sync Child Has Fun, The Out-of-Sync Child Grows Up, and The Goodenoughs Get In Sync, and in two books she co-authored with Joye Newman, Growing an In-Sync Child and The In-Sync Activity Cards Book. Carol is available for workshops on how Sensory Processing Disorder ( SPD) affects children and on fun and functional sensory-motor activities to get kids in sync. www.CarolStockKranowitz.com.