SENSORY INTEGRATION

A Guide for Preschool Teachers

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CHAPTER 1

What Are Sensory Integration and Sensory Processing Disorder?

Sensory Integration

Some children in your classroom may respond to their environment in ways that seem confusing or worrisome, and you may not be sure how to handle their behavior. Some unusual behaviors may be similar to these:

- Thomas covers his ears when the children are singing.
- Temple rolls all over the floor while others are sitting in circle time.
- Brianna refuses to touch playdough, sand, or paint.
- Miguel climbs on top of tables and jumps off.
- Cassandra often falls down and skins her knees.
- William refuses to play on outdoor playground equipment.

All of these children are demonstrating signs of problems with sensory integration (SI). So, how can you design or change your environment so that these children can learn and function effectively in the classroom?

Sensory integration is the neurological process of organizing sensory inputs for function in daily life.

This book explains why children with sensory integration problems behave differently in the preschool environment. "Red flags" in each chapter help identify children who have difficulties with sensory processing, also known as Sensory Processing Disorder (SPD), and simple, easy-to-use solutions are provided to address the sensory needs of young children in preschool. Many of the ideas offered will improve the environment for all children, not just those who have sensory processing problems.

Sensory integration is the neurological process of organizing sensory inputs for function in daily life. Our brains take in information from the body and interpret that information so that we can survive and make sense of our world. We use our senses to learn and develop. We also use our senses to help us interact appropriately within the environment.

We learn early about the five senses of touch, sight, hearing, taste, and smell. However, most of us are not aware of two additional senses that are just as important. Our sense of movement and balance (vestibular sense) interprets information through our inner ears to determine if our bodies are moving or standing still. Our vestibular sense tells our brains that our bodies are moving through space even while we are riding a rollercoaster through a completely dark indoor area where our vision cannot provide information. Our sense of body position (proprioceptive

sense) provides our brains with information about our body parts and where they are in space. Proprioceptive awareness helps us determine where our heads, arms, and legs are located at any time, allowing us to walk up stairs without looking down at our feet.

Sensory integration occurs in the central nervous system (brain, spinal cord, and nerves). The process occurs automatically as the body gathers information through the skin, muscles, joints, inner ear, eyes, nose, and mouth. As you read this book, your brain works to integrate the many sensory inputs from your body. For example, you are reading the words on this page while you process other sensory information simultaneously: you might see the background view of the surrounding room; hear the sounds of an air conditioner, the television in the next room, and children talking; feel a blanket wrapped over your legs; taste the lemonade you are drinking; and smell a candle burning. You might also feel that you are sitting on the couch (vestibular) with your head up and your legs crossed (proprioceptive). The brain constantly focuses on sensory information—screening, organizing, and responding to input—so that the body can function. This is sensory integration (SI).

Development of Senses

Sensory processing begins in the womb and continues to develop throughout childhood. As a child's central nervous system matures, so does the child's sensory system. Infants can use their senses at a very young age, although the senses are not refined. Most people have fully functioning sensory systems by the time they reach adolescence.

A newborn infant's sensory skills are quite different from those of a preschooler. A newborn reacts to most types of touch with

protective responses. For instance, a newborn will withdraw his leg in response to a touch on the sole of his foot. By three years of age, he will learn to differentiate types of touch and will laugh when his foot is tickled or will pull his foot away from a toy that he steps on. A young infant can identify his mother by smell, but appears unaware of most other smells in the environment. Most preschoolers can identify common smells, such as muffins baking in the kitchen, and they can also tell you that muffins taste sweet.

Each of the seven senses develops at its own rate. Vision, hearing, movement, and body position sensations typically take more time to mature. A newborn infant lacks the ability to identify colors or shapes. By three years of age, many children can see objects at far distances and can tell the difference between shapes and colors. And although a newborn can hear, he is not capable of identifying a sound or its location. Most preschoolers can identify and localize distant sounds, such as their teacher's voice from across the playground.

Each child will develop sensory skills at his own pace. However, there is a wide range of "typical" sensory development and skills. Genetics and environmental influences play a role in sensory development. For instance, some children are more prone to ear infections because of the way their inner ears are formed (genetics). Other children are more likely to have ear infections because they live in environments where they are exposed to second-hand smoke. It is common for both of these influences to cause young children to have problems with the sense of hearing. All the senses need to work together so that preschoolers can reach their fullest potential. Preschoolers must be able to coordinate all seven senses to learn about their world and function effectively.

Background on Sensory Integration

A. Jean Ayres, Ph.D., was an occupational therapist and educational psychologist who researched sensory integration in the mid 1900s. Ayres identified the diagnosis of sensory integration dysfunction, developed Sensory Integration Theory, and, in 1973, published her groundbreaking book, *Sensory Integration and Learning Disorders.* Ayres designed assessment tools for sensory integration dysfunction and taught many occupational therapists how to assess and treat children with sensory integration dysfunction. Sensory Integration Theory remains the basis of assessment and intervention of children with sensory integration (SI) problems.

Sensory Processing Disorder (SPD) occurs when a person's brain does not organize sensory signals and he or she is unable to respond appropriately.

Many occupational therapists have continued the work that Ayres began, as health professionals, parents, and educators have become aware of the diagnosis and its treatment. Carol Kranowitz's (2006) book, *The Out-of-Sync Child: Recognizing and Coping with Sensory Processing Disorder, Revised Edition,* helped many people, including early childhood educators, to become more aware of how deficits in SI can impact young children's daily lives.

What Is Sensory Processing Disorder?

Sensory Processing Disorder (SPD) is difficulty in using the information that is collected through the senses (vision, hearing, touch, taste, smell, movement, and body awareness) in daily life. Most people are born with the ability to take in sensory information, organize the information, and respond appropriately. For example, when you smell cookies burning in the oven, see smoke, and hear the oven timer buzzing, you go to the kitchen and remove the cookies from the oven. This is an appropriate response to the sensory information that the brain receives through your nose, eyes, and ears. SPD occurs when a person's brain does not organize those sensory signals and he is unable to respond effectively. Using the same example, if a person responded to the cookies burning by placing his hands over his ears and yelling, this would be a disorganized and ineffective response and would make it difficult for him to function effectively in his environment.

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Do you have a child in your early childhood classroom who:

- Climbs on top of furniture and jumps off?
- Covers his ears when children are singing?
- Refuses to touch clay, paint, or sand?
- Often falls down and skins her knees?
- Refuses to play on outdoor playground equipment?

If so, it is possible the child is having trouble with sensory integration. How can you help these children so they can enjoy learning and grow in positive ways? *Sensory Integration* helps identify children who have difficulties with sensory processing and offers teachers practical suggestions to support the sensory needs of young children in the preschool classroom. Easy-to-implement solutions include adaptations and activities for children with different types of sensory processing disorder. This book also has a bonus chapter with instructions for creating low-cost items to help children with sensory issues.

Chapters cover topics such as:

- Explaining sensory integration and sensory processing disorder
- Defining sensory avoiders, sensory seekers, and sensory underresponders
- Designing the environment to support the sensory development of all children
- Helping preschoolers with sensory processing problems
- Providing practical solutions to meet the needs of individual children during daily routines
- Making low-cost items, such as a tire swing, sand pillow, and incline board, to give children opportunities to get the sensory input they need

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