Understanding Sensory Integration and Its Link to Behavior

Feeling Overwhelmed?

At times, many of us feel that our lives are absolute chaos. Sometimes the chaos is exciting. It keeps us moving. Other times, it seems impossible to deal with. We may feel overwhelmed and exhausted. Each of us has different “triggers”: crowds, clutter, noise, or certain smells, for example. As adults, we learn how to cope with most of our triggers and control our reactions to them in appropriate ways.

Like adults, children can get overwhelmed. Children can also have unique triggers. Being in a noisy room or wearing an itchy sweater may overwhelm a child. Some children react strongly; others seem to “go with the flow.” Most children need to learn how to cope with a feeling of being overwhelmed. They need opportunities to learn ways to deal with their reactions in socially acceptable ways.

For most children this will occur as a natural learning process. Children will acquire coping skills by observing those around them or through trial and error. However for some children this learning process is more difficult and takes more time. Children may demonstrate their difficulty by exhibiting behaviors that are challenging for both themselves and those around them. Remember, behavior is what we see. It’s the observable action of what’s going on inside the child. This issue of the ECDC Bulletin focuses on some of the things that can lie under the surface of challenging behaviors that are linked to sensory integration.

What Might Sensory Influenced Behavior Look Like?

Tommy is a fussy three-year-old boy. He is crying because his shoes are too tight, his socks are too lumpy. He yanks them off and hurl them away…

His mom shares, “Everything makes him miserable. He hates the playground, the beach, and the bathtub. He refuses to wear hats or mittens, even on the coldest days. Getting him to eat is hard.”

“Arranging play dates with other children is a nightmare. Going to the barber shop is a disaster. Wherever we go, people turn away—or stare.”

Tommy’s child care teacher sees a child who “avoids finger painting and other messy activities. He fidgets at story time and doesn’t pay attention. He lashes out at his classmates for no apparent reason. He is, however, the world’s best block builder—as long as he isn’t crowded.”

Tommy’s pediatrician tells his parents nothing is wrong with him, so they should stop worrying. His grandparents say he’s spoiled and needs stricter discipline. Friends suggest going on a vacation without him.

Tommy’s parents wonder if yielding to his whims is wise, but it’s the only method that works. They are exhausted, frustrated, and stressed. They can’t understand what makes him tick.

excerpt from The Out-of-Sync Child by Carol Stock Kranowitz.

Some Things to Consider

Parents and caregivers often want to know “what’s wrong” when a child’s behavior seems out of control or “quirky.” They want an explanation or a diagnosis, something that identifies the problem and tells them what to do next. But behavior is extremely complex. Think of it as the tip of an iceberg. It’s what we see kids doing, yet underneath the surface there are other contributing factors: temperament, sensory integration, the environment, the child’s development, and communication skills.

On the next few pages, we explain “under the surface” contributions that might help you make sense of your child’s behaviors as they are related to your child’s senses. We stress the need for a series of observations and an understanding of typical development and the sequence of development before adopting any strategy for addressing behaviors. All children are unique. Our responses to behavioral challenges must be sensitive to individual strengths and needs.
Sensory Integration is the ability of our brains to receive information through our senses (touch, movement, body awareness, smell, taste, vision and hearing) and use this information to respond to the environment so we can feel comfortable and safe.

Our senses give us the information we need in order to function in the world. Every move we make, every bite we eat, every object we touch produces sensations. When our brain processes information from our senses correctly we respond appropriately and/or automatically. From time to time we all experience some problems with sensory integration. Too much or too little sensory stimulation can confuse the brain. Taking a bumpy airplane ride or entering a noisy room can overload our brain. Walking from a well lit room into a dark room can affect our senses and cause confusion. Sometimes our senses inform us that all is well and we feel safe and satisfied. Sometimes we look for more stimulation in order to register and understand a sensory message.

Sensory integration is the way our brains process the information we take in from our senses. We are constantly integrating sensory information: unconsciously making decisions about what information to tune out, what information to act upon, and which actions to take. Healthy sensory integration is when we make sense of this information AND respond appropriately given the situation and environment.

How Sensory Integration Occurs: The 5 Steps

1. Sensory Registration
   “I feel something.”

2. Orientation
   “Should I pay attention to it?”

3. Interpretation
   “I am being touched lightly.”

4. Organization of Response
   “I will hit the mosquito.”

5. Execution of Response
   You hit the mosquito.

1. Sensory Registration.
   When we become aware of a sensory event (the smell of a flower, the rumbling of thunder, someone leaning on you, a ball coming toward you) we say that you have registered a sensory event. Different people (including children) will become aware of things at various intensities. Some people are aware of someone just brushing up against them, while others don’t even respond when someone is pushing them. Some people smell lilacs from the neighbor’s yard while others aren’t even aware of the lilacs in their own yard.

2. Orientation.
   Sensory orientation allows us to decide what we need to pay attention to and what we can ignore. If we paid attention to all of the sensory information that bombards us we would be constantly overwhelmed. When some people are watching a favorite television program they don’t hear the door bell ringing or smell dinner burning. “If all sensory input had equal importance, we would be unable to select the input we most want or need to respond to” (Building Bridges Through Sensory Integration, pg. 24). For example, can you imagine doing calculus during a rock concert?

3. Interpretation.
   Our brains learn to interpret sensory information and understand the meaning of the information. When we appropriately interpret sensory input we know whether to respond to it, ignore it or protect ourselves from potential harm. We learn about how to respond through experience. When we have a new sensory experience we try to compare it to old ones. If the experience is unfamiliar our bodies might respond in ways that will provide protection. A person might run, strike out at someone, grow sweaty or breathe faster.

4. Organization of Response.
   People’s brains usually learn to determine whether a response to sensory input is necessary. This occurs with experience and maturity as long as there are no problems with registration, orientation and interpretation. Our responses can be physical, emotional or cognitive.

   (cont. page 3)
How Sensory Integration Occurs (cont)

Example: You are the parent of a six-month-old baby. You have been up most of the night because the baby has a cold. Finally about 8 AM you get up with the baby who is soundly sleeping. Your next door neighbor decides to mow his lawn. Your sensory response can be:

• Physical: Slam the window shut.
• Emotional: Darn that guy. I need him to stop mowing the lawn so I can sleep. He makes me so mad!
• Cognitive: I have slept through louder noises and I am so tired that I will choose to ignore the mower.

5. Execution of Response.

The actual “doing” part or execution of response is the last part of making sense of sensory input. Deciding on what the response will be is based on the steps above and the person’s physical, emotional and cognitive development. (cognition is the process of acquiring knowledge).

Adapted from Building Bridges through Sensory Integration.

All Children Need Sensory Experiences—Here are Some Ideas

<table>
<thead>
<tr>
<th>Activity</th>
<th>Things To Do</th>
<th>Sensory Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listening and responding to music</td>
<td>Listening, Singing, Jumping, Finger play, Slow walk, fast walk to tempo of music</td>
<td>Hearing, Hearing, Proprioception, Seeing, touching, Seeing, hearing, proprioception</td>
</tr>
<tr>
<td>Finger painting</td>
<td>Painting with hands, Painting with sponges, Painting with vegetables</td>
<td>Touching, seeing, Touching, seeing, Touching, seeing, smelling</td>
</tr>
<tr>
<td>Going for a walk</td>
<td>Listening for specific sounds, Looking for specific colors, Collecting treasures (acorns, leaves, pine cones), Smelling flowers, Walking like different animals and making animal noises</td>
<td>Hearing, Seeing, Touching, smelling, seeing, Smelling, Proprioception, hearing, seeing</td>
</tr>
<tr>
<td>Snack</td>
<td>Provide various textures, Introduce different smells, Vary the color of foods</td>
<td>Touching, tasting, Smelling, Seeing</td>
</tr>
<tr>
<td>Reading with a child</td>
<td>Read books with things to feel, Hold a child in your lap</td>
<td>Seeing, touching, hearing Proprioception</td>
</tr>
</tbody>
</table>

Each person’s sensory profile gives them a unique and individualized perception of themselves and the world. It is important to understand that children mature at different rates and this includes the development of their sensory integration system.

A child’s developing nervous system is more easily overwhelmed than an adult’s and some children have a problem matching their responses to the situations they encounter.

The Senses: What You May Not Know

Most of us know about the five basic senses: sight, sound, taste, smell and touch. These are called the “far” senses because they provide information about the environment outside of our bodies.

Many of us are less familiar with the “near” senses that exist within our bodies. The near senses include the proprioceptive (pro-pee-o-tive) and vestibular (vest-IB-you-lar) senses, and they work in ways that we are not consciously aware of.

The proprioceptive sense processes information about body position that comes from the muscles, ligaments, and joints. Our ability to walk up stairs without looking at them or to clap hands over our heads depends on our proprioceptive sense.

The vestibular sense works through the inner ear to provide information about balance, movement and body position in relation to the surface of the earth. This sense is at work when we feel the sensation of moving back and forth on a swing.

The tactile system is our sense of touch which includes light touch, pain, texture and pressure. It allows us to identify an object in our pocket by just feeling it.
When To Take a Closer Look at Behavior Related to Sensory Challenges

If you observe a child having frequent and intense behaviors like the one’s in the chart to the right, it’s time to take a closer look. It is important to remember that ALL children demonstrate some of these behaviors at some time.

<table>
<thead>
<tr>
<th>Sensory Challenge</th>
<th>Observable Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulsive, easily distracted</td>
<td>Running, moving constantly, attending to everything around them</td>
</tr>
<tr>
<td>Poor self-image</td>
<td>Says negative things about themselves</td>
</tr>
<tr>
<td>Difficulty with transitions</td>
<td>Kicking, screaming, hitting when going from one activity to another or going from one place to another (i.e., home to day care)</td>
</tr>
<tr>
<td>Difficulty establishing appropriate sleeping and eating patterns</td>
<td>Sleeps very little or sleeps all the time</td>
</tr>
<tr>
<td>Unable to calm themselves</td>
<td>Aimless running</td>
</tr>
<tr>
<td>Overreaction to stimuli</td>
<td>Cries uncontrollably when the fire alarm goes off; gags on certain foods</td>
</tr>
<tr>
<td>Unusually high activity level</td>
<td>Always on the go</td>
</tr>
<tr>
<td>Unusually low activity level</td>
<td>Moves slowly; tires easily; little interest in the world</td>
</tr>
<tr>
<td>Social problems</td>
<td>Trouble getting along with others; doesn’t like people to get too close or is always touching or getting too close to others</td>
</tr>
<tr>
<td>Emotional responses</td>
<td>Overly sensitive, demanding, aggressive, irritable, isolated</td>
</tr>
<tr>
<td>Speech and language delays</td>
<td>Hitting, biting, pushing, pinching</td>
</tr>
<tr>
<td>Gross and fine motor coordination problems</td>
<td>The child’s body may be unusually tense or loose; the child may be clumsy or accident prone</td>
</tr>
</tbody>
</table>

Some things to think about when observing:

<table>
<thead>
<tr>
<th>Document behavior:</th>
<th>What does it look like?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How long does it last?</td>
</tr>
<tr>
<td></td>
<td>How often does it happen?</td>
</tr>
<tr>
<td>Record how a child responds to:</td>
<td>Being touched by others, touching others</td>
</tr>
<tr>
<td></td>
<td>Different types of clothing</td>
</tr>
<tr>
<td></td>
<td>Different textures</td>
</tr>
<tr>
<td></td>
<td>Activities that involve self-care</td>
</tr>
<tr>
<td></td>
<td>Different types of food (temperature, taste, texture)</td>
</tr>
<tr>
<td></td>
<td>Having his/her feet off the ground</td>
</tr>
<tr>
<td></td>
<td>Having his/her head upside down during play</td>
</tr>
<tr>
<td></td>
<td>Different types of movement activities</td>
</tr>
<tr>
<td></td>
<td>His/her environment (people, things, noise, smells)</td>
</tr>
<tr>
<td>Questions to answer:</td>
<td>What is the child's attention span?</td>
</tr>
<tr>
<td></td>
<td>Physically—does he/she tire easily, or never slow down?</td>
</tr>
<tr>
<td></td>
<td>What is his/her choice of physical activities?</td>
</tr>
<tr>
<td></td>
<td>How does he/she respond to changes in routine?</td>
</tr>
</tbody>
</table>

Next Steps

If, as a parent or teacher, you suspect that a child has sensory challenges, it can be time to start gathering and documenting information through the process of observation or securing an evaluation.

Once you have gathered observation findings, you can create a notebook of valuable information. This information can be used for:

- Modifications to the environment and your interactions with the child
- As a decision making tool for future observation
- As an indicator for an evaluation to occur

If you have observed a child and the child’s development is being affected by sensory issues, it is time for an evaluation.

A Physical Therapist and/or Occupational Therapist with training in Sensory Integration Dysfunction (also known as Sensory Processing Disorder) should be included on the evaluation team.

To find a qualified person for evaluations contact:

- Early Intervention at your County’s Department of Health (ages birth-2)
- Your school district’s Committee on Preschool Special Education (CPSE) (ages 3-5)
- The Early Childhood Direction Center (315-443-4444 or 1-800-962-5488)


In Conclusion

All children can or will exhibit some of the characteristics described in this newsletter at one time or another. The behaviors can be caused by things other than significant sensory challenges. Parents and caregivers need to look at the big picture and decide whether these behaviors are interfering with the child’s development. Any child suspected of significant sensory challenges should be evaluated by a professional who has training in sensory evaluation and treatment. A child with significant sensory challenges is a child who needs careful evaluation and individualized services. Young children most often respond well to intervention because their central nervous systems are still flexible and open to change. Identifying challenges early provides an opportunity for families (and others who care for the child) to learn about strategies/modifications to support their child with Sensory Integration Dysfunction as the child’s sensory system matures.

Resources

Books for Children

Books about having sensory issues and being different
- Willy’s Noisy Sister by Elizabeth Crary. A boy with sensitive hearing needs some quiet time after school, but his little sister wants to play. He comes up with five solutions, and the reader can turn to the appropriate page to see how each solution works out.
- We Eat Dinner in the Bathtub by Angela McEaris. A fun book about a family that does things a bit differently.

Books for sensory exploration
- Pat the Bunny by Dorothy Kunhardt. Introduces babies and toddlers to tactile sensations.
- Fix It With Bob: Scruffy Helps Out (Bob the Builder). Kids can work on motor skills using Bob’s nifty wrench.

Books that encourage safe, fun sensory seeking
- Pete’s a Pizza by William Steig. Pete’s parents pretend to make him into a pizza; try acting out making pizza with your child.
- From Head to Toe by Eric Carle. Children copy the movements of the animals in this book.

Books about food issues
- Bread and Jam for Frances by Russell Hoban. Frances finally learns to eat other foods.
- Don’t Let the Peas Touch! And Other Stories by Deborah Blumenthal.

Books about being anxious
- Wimberley Worried by Kevin Henkes. A little mouse worries about everything and then faces the first day of school.
- There’s Something in My Attic by Mercer Mayer. A girl captures a terrified creature who is calmed by holding the girl’s teddy bear and sleeping until morning.

Books about managing stress and relaxation
- A Boy and a Bear: The Children’s Relaxation Book by Lori Lite. A calming, sweet storybook created to promote relaxation.
- Cool Cats, Calm Kids: Relaxation and Stress Management for Young People by Mary L. Williams. Teaching kids the stress reduction secrets used by cats.

For more books, go to:
http://www.sensormarts.com/books.html#kids

Books for Parents

If you suspect that your child’s challenging behaviors may stem from sensory issues or other neurological irregularities, the next step is to get help. Contact your pediatrician or the Early Childhood Direction Center for more information. If you’d like to better understand your child’s behavior, try these resources:

Workshops of Interest

The ECDC can provide information and workshops on a variety of topics tailored to the interests and needs of parents and early childhood professionals. Resources are available on such topics as general child development, developmental issues for children with special needs, coping strategies, and specific disabilities.

Workshops include:

- Including Children with Special Needs in Child Care
- Creating Working Alliances with Families
- Early Childhood Development: The Meaning of Red Flags
- What Are Early Intervention and Preschool Special Education
- Moving On: Children and Families Facing Transition

Who We Are

The Early Childhood Direction Center (ECDC) is a regional clearinghouse providing information, referral and support to families, professionals, and community agencies concerned with young children birth to five. We are located at Syracuse University’s Center on Human Policy.

ECDC services to families are free and confidential.

ECDC Staff

Nan Songer, Director
Tracey Menapace, Community Outreach and Education
Patricia Brundage, Resource and Referral
Cyndy Colavita, Office Coordinator
Rachael Zubal-Ruggieri, Coordinator of Computer and Technical Applications