Tourette Syndrome and Difficulty With Sensory Processing and Integration

Lesley Geyer  MA, OTR/L
Clinical Consultant
Pediatric Therapeutic Services, Inc
Conshohocken, PA
LGeyer@comcast.net

The Sensory Systems

- Visual
- Auditory
- Olfactory
- Oral-Gustatory
- Tactile
- Interoceptive
- Vestibular
- Proprioceptive

The Less Known Senses

- **Vestibular** – Receptors in inner ear. Provides movement sense and tells us where we are in relation to ground. Impacts balance and eye movements.
- **Proprioceptive** – Receptors in muscles and joints. Tells us about muscle contraction and stretch and joint movement and position. Helps us know where our body parts are and what they are doing in relation to Earth's gravity.
What is “Sensory Processing and Integration?”

The way the nervous system receives messages from the senses and then processes and integrates the information (via the brain) for appropriate motor and behavioral responses.

Sensory Integration (SI) Therapy

- A frame of reference used by therapists to treat individuals who have difficulty with sensory processing and sensory integration.
- Developed by Jean Ayres in 1950s and 60s and is still evolving.
- Focuses on using purposeful activity and promoting an adaptive response, a purposeful, goal directed response to a sensory experience.
- Classically occurs in a sensory rich environment and is provided in the context of play.

“Difficulty Processing And Integrating Sensory Information” vs. a Named Disorder

At this time, no mass of research supports the naming of this condition as a disorder, and leaders in the field recommend “describing the problem” instead.
What does “Difficulty Processing and Integrating Sensory Information” look like?

- **Modulation difficulties** - over or under responsiveness to sensory input
- **Difficulty with discrimination** of different types of sensory input
- **Motor problems:**
  - Affecting balance and posture
  - Affecting ability to create motor plans and carry these out

---

**Sensory Over-Responsive Children**

- Avoid sensory input
- Show very negative responses to sensory input
- Are very cautious and unwilling to take risks or try new things
- Melt down in loud or busy environments

---

**Sensory Under-Responsive Children**

- Tend to be passive, have low arousal level, appear lethargic
- Don’t have much response to activity around them
  
  or

- May show need for *more* sensory input than their peers
Sensory Seeking Children

- Appear hyperactive, high arousal level
- Often unaware of touch or pain, touching others too often or too hard
- Taking part in unsafe activities, such as climbing too high
- Enjoying sounds that are too loud

Children with Sensory Discrimination Disorder

- Show diminished ability to interpret and organize sensory input
- Have trouble distinguishing one sensory experience from another
- Have most difficulty when they are in environments with lots of different types of sensory input

Children with Sensory-Based Motor Problems

- Have trouble with balance and/or sequencing movements
- Have difficulty imitating movements
- Show preference for familiar or sedentary activities
- Have trouble using both sides of the body together (bilateral coordination) or crossing the body midline with hands
- Have poor gross and fine motor skills
How is Difficulty with Sensory Processing and Sensory Integration Detected?

• Typically by an occupational therapist
• By using standardized tests
• Through caregiver and teacher questionnaires and interviews
• Through observation of the child during play and other daily activities

What Do Occupational Therapists Do?

• Educate family and teachers on the child’s sensory differences and impact on function and behavior
• Recommend environmental modifications and accommodations
• Work directly with the child

Easy Things That Help

• Heavy work activities
• Deep pressure touch
• Lots of time for movement activities throughout the day
• Oral Input (chewing and sucking)
Sensory Over-Responsive Children

**Goal – to calm or decrease arousal level**
- Deep breathing
- Slow rhythmic movement (rocking)
- Deep pressure (vs light pressure) touch & no unexpected touch
- Slow rhythmic music
- Low/natural lighting, limit visual input
- Lots of opportunity to get proprioceptive input

Sensory Under-Responsive Children

**Goal – to awaken or increase arousal level**
- Fast, disjointed and rotational movement
- Music with irregular beat
- Light touch activities
- Bright light, lots of visual input
- Lots of opportunity for movement, change of position
- Foods with strong flavors
- Intense aromas

Sensory Seeking Children

- Allow for lots of active play time in safe environment
- Lots of movement opportunities
- Fidget toys, velcro strip under desk
- Lots of oral input - chewy toys, gum and chewy/crunchy foods
- Stretch band around chair legs
- Plenty of time for deep pressure and heavy work activities before need to sit quietly
Ball Chairs

Inflated Cushions

Children with Sensory Discrimination Disorder

- Games that require child to identify objects though touch without using sight
- Visual perceptual worksheets and games
- Use of feedback and games using different grades of force
- Body awareness games
- FM systems for school
**Children with Sensory-Based Motor Problems:**

**Activities for Challenging Balance**

- Play that requires hopping, standing on one leg
- Balance beams or curb walking
- Sitting on an exercise ball
- Play in squatting
- Scooter board activities

**Activities for Motor Planning**

- Guided use of playground equipment
- Ball play
- Obstacle courses
- Engage child in novel motor activities that encourage adaptive responses
- Talk through motor tasks

**Activities for Bilateral Coordination**

- Ball play
- Activities that require use of both hands and encourage midline crossing
- Tasks that require hands to do different things
- Clapping and tapping rhythm games
Suspension Equipment – The Classic Sensory Integration Clinic

Things to Use at Home and School

The Alert Program

“How Does Your Engine Run?”
Resources

- The Out of Sync Child by Carol Kranowitz
  http://www.out-of-sync-child.com

- The Sensory Processing Disorder Foundation
  http://www.spdfoundation.net/research.html