

## Individualizing in Early Childhood: The What, Why, and How of Differentiated Approaches

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Preschool and Primary Grades

# Meeting the Sensory Needs of Young Children

As a first grade teacher, Jill, the second author, went in search of decorations for her classroom prior to the start of the school year. She purchased multicolored Slinky toys, which she thought would add a nice touch to the white ceiling. She spaced them evenly above the children's desks. As the students entered the classroom she turned on the ceiling fans, which made all the Slinkys start to bounce. Some children seemed to enjoy the sensory output from the bouncing Slinkys, yet were able to stay focused on classroom tasks. Other children became distracted, more interested in the movement of the Slinkys than in what Jill was asking them to do. During recess, Jill sat at one of the children's desks to view the classroom from their perspective. The bouncing Slinkys were overwhelming, and along with the posters, charts, and other items in the room it overloaded her senses. She could understand why some of the children had been unable to pay attention to her. Jill spent the remainder of her break removing the Slinkys.

**S**ENSORY PROCESSING REFERS TO TAKING in information through the senses. All children have neurological processes that help them organize the information coming in from their environment along with sensations from

their bodies (Ayres 2005). A child's ability to use this information to respond appropriately to the environment—including sounds, lights, textures, motion, and gravity—is known as *sensory integration* (Lynch & Simpson 2004). "Sensory integration is the part of [sensory processing] in

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which sensory input from our bodies and the environment are put together and sorted out, and then used so that one can make an adaptive or appropriate response in any situation” (Wakeford 2006, 1). This article addresses sensory processing patterns in children from preschool through the primary grades.

Children differ in their ability to process and respond to information from the environment while engaging in activities. For example, one child may have difficulty sitting still during group time; another may move little during free play outside. They react in different ways because they integrate the information obtained through their senses from the environment differently. Most children process their daily experiences and regulate their responses with ease. But when a child is consistently having difficulty maintaining a level emotional state or engaging appropriately in activities, the child may be overstimulated (environment provides more stimulation than the child can handle through sensory integration) or understimulated (environment does not provide enough stimulation for the child). Teachers can use an understanding of sensory processing to meet the child’s unique needs.

### Sensory processing dimensions

Winnie Dunn (2007) hypothesizes that sensory processing occurs through the interaction of two dimensions: a child’s *neurological threshold* and her *behavioral responses* to the environment.

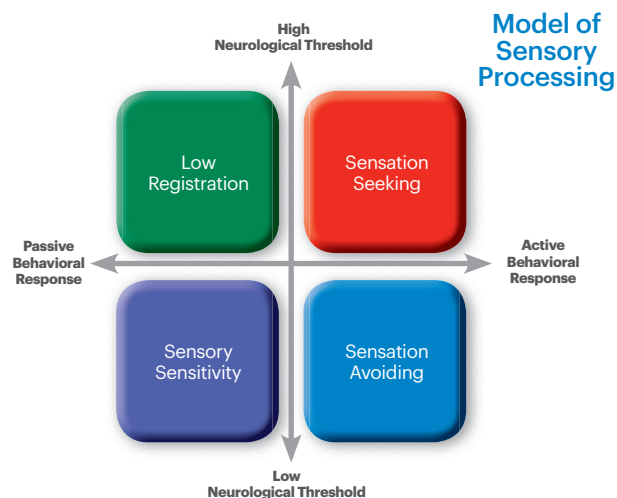
**Neurological threshold.** Information coming to a child from the environment triggers activation of the child’s nervous system at a particular threshold. This threshold indicates how intense the stimulation has to be for the child to notice it, and falls on a continuum from low to high. For example, children with low thresholds notice even low levels of input to the nervous system, while children with high thresholds require a greater level of input to notice the stimuli. Children with high thresholds may miss information that others receive because they need more input to notice something. For a child with a high neurological threshold, a teacher may have to say the child’s name several times as well as touch him on the shoulder to get his attention. However, one type of sensory input may be enough for a child with a low threshold.

**Behavioral response strategies.** A second important dimension of a child’s processing of environmental stimuli is his behavioral strategy in response to the stimuli. A

child’s behavior can range from passive to active. Children with passive strategies might not react at the moment things are happening, such as escaping a situation in which they are uncomfortable, but will react later. For example, in a loud setting the child might be quiet and appear to be coping with the noise, but later she might have an outburst. Children with passive strategies might also shut down or complain about stimuli because the amount of stimulation is overwhelming. On the opposite end of the continuum, children with active strategies react immediately to either avoid or seek more of a stimulus. For example, a child may leave the room if he does not like the scents coming from the kitchen during meal preparation, or move away from a table because of the smell of playdough. He may show similar strategies when noises disturb him, moving away so the noises are not as loud. If a child with an active response likes a certain texture, he will seek it out, such as holding chalk or pebbles in his hands in order to feel more stimulation.

### Patterns of sensory processing

The two dimensions of neurological threshold and behavioral response combine to form the four patterns of sensory processing seen in Dunn’s (1997) model: low registration (high threshold with a passive response), sensory sensitivity (low threshold with a passive response), sensation seeking (high threshold with an active response), and sensation avoiding (low threshold with an active response). (See “Model of Sensory Processing,” below, and “Children’s Sensory Processing Responses,” page 40.)



Adapted from Dunn (1997).

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### **Low registration.**

Children with low registration have a high neurological threshold and are passive in their behavioral responses. A child with this sensory profile might have difficulty paying attention in class and often seems uninterested in lessons and activities. She might not notice what is going on around her and seem overly tired. She might not notice if someone new walked into the classroom, or be able to recall what happened during her day or how she got a bruise. A child with low registration needs a lot of stimulation but does not seek it out. This child might miss something that others notice because it takes a great deal of stimulation to meet her neurological threshold. She requires louder noises, more visually stimulating pictures, and stronger flavors in foods in order to respond.

**Sensory sensitivity.** Children who are sensory sensitive are also passive in their behavioral responses, but have a low neurological threshold. A child who has sensory sensitivity has difficulty staying on task and is easily distracted

### **A child who is visual might want to look at everything in the environment, while a child who is tactile might want to touch everything.**

by his surroundings. The child might become irritable and insistent on certain responses or routines. Changes in his environment will arouse him rather quickly, but because a child with sensory sensitivity has passive behavioral responses, he might not demonstrate an immediate response to the situation. For example, he may have an outburst after rather than while he is being overstimulated. If a child with sensory sensitivity had been in the classroom with the Slinkys, it might have initially appeared that the Slinkys did not cause him much distraction. He might not have reacted until later, when he might have had an outburst that was seemingly unrelated to the Slinkys.

**Sensation seeking.** Children who are sensation seeking have a high neurological threshold and are active in their



behavioral responses to their environment. A child with a sensation-seeking pattern always seems to be in motion, searching for experiences to stimulate a particular sense. For example, a child who is visual might want to look at everything in the environment, while a child who is tactile might want to touch everything. Sometimes the child's efforts to meet her sensory needs are disturbing to other children, such as when she wants to touch other children and intrudes on their personal space in her attempts to do so.

**Sensation avoiding.** Children who are sensation avoiding have an active behavioral response, but a low neurological threshold. They are easily overaroused, which causes them to be distracted. Such a child often has difficulty concentrating in class because he is focusing on everything else around him. The combination of reaching the stimulus threshold rather quickly and actively responding to the stimulus causes the child to avoid or leave a situation that makes him uncomfortable to keep from becoming overstimulated. For instance, he might want to wear gloves during a messy activity because getting the substance on his hands makes him uneasy. Or he might place his hands over his ears to tune out the surrounding sound. In the classroom, he might prefer to work alone or in smaller, quieter groups.

### **Identify a sensory processing profile**

If a child presents behaviors that are of concern, a teacher can make observations about her behaviors in response

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to the classroom environment and determine the child's processing profile (Dunn 1997). Observe her as she participates in a variety of groups, including large peer groups, small peer groups, and mixed-aged groups, and also as she engages in individual activities. Observe her in both indoor and outdoor settings, particularly during sensory-rich activities such as water, sand, mud, dirt, and other sensory play; when exploring an enclosed slide; and while walking on different textures or surfaces, such as rocks and grass.

It is important to observe a child several times and in multiple situations to appropriately determine her processing profile. Observe and document her reactions consistently over time to determine if there are patterns of sensory processing suggesting the child's sensory profile. Share this information with the child's family, who can likely provide further insight into her individual preferences and needs.

### **Structure the classroom to meet children's sensory needs**

As noted in the discussion of the different sensory processing patterns, children's need to either seek or avoid stimulation can lead to behavioral issues. Some sensory integration issues can be addressed by helping children develop self-regulation. Also, specific strategies can help address a child's particular processing needs.

### **Encourage self-regulation**

*Self-regulation* is "the capacity to control one's impulses both to stop doing something (even if one wants to continue doing it) and to start doing something (even if one doesn't want to do it)" (Bodrova & Leong 2005, 32). In *Tools of the Mind: The Vygotskian Approach to Early Childhood Education*, Bodrova and Leong (2007) assert that self-regulation, which includes controlling one's impulses and delaying gratification, is a foundation for learning. Therefore, it is important that children learn self-regulation at an early age. In the following vignette, we see a child who has been taught self-regulatory skills and is now able to implement them independently, with a reminder from his teacher.

**The children are busy working in small groups. The classroom is getting louder and 6-year-old Jaquone is starting to shake his hands back and forth. He begins to jump up and down, covers his ears, and yells, "Too loud! Too loud!" The teacher quietly goes to him and says, "Would you like to get your headphones?" Jaquone immediately gets his headphones, puts them on, and goes back to his work. He has learned that wearing headphones can help him focus on his task.**



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The next vignette describes a situation in which the teacher is in the process of helping a child gain self-regulation.

**With dirt in the sensory table, the children add water to create mud. Five-year-old Samantha does not like the feeling of mud on her hands, so she begins to cry and scream. The teacher helps Samantha wipe off her hands and then discusses the situation with her, acknowledging her feelings. The teacher works with her to create a plan for how Samantha can respond differently if the situation happens again.**

Bodrova and Leong (2005) suggest the following strategies for encouraging self-regulation in young children:

- Practice deliberate and purposeful behaviors with all children. For example, model actions you wish children to do, and use self-talk to explain your own thoughts as you are doing a task. Hearing you verbalize your thought process gives children a model for their own thinking.
- Help children internalize rules by following class guidelines, learning to set rules for peers (during play), and following the rules they created themselves. For example, at the beginning of the school year have the children propose and discuss what the classroom guidelines should be. This encourages the children to take ownership of the rules and of the classroom.
- Use visual or tangible reminders (such as pictures) to encourage children to use positive behaviors. For example, photograph the children following the guidelines and post the photos as a visual reference.
- Anticipate conflicts and work with children on resolutions before issues arise. For example, the next time the other children in Samantha's group want to add water to the dirt table, the teacher might remind Samantha of the strategies for handling this situation that they discussed earlier. One might be for Samantha to remove some of the dirt and put it in a separate tub to play in.



- Encourage imaginative play in which children can assume other roles and practice regulation and perspective-taking skills, such as putting on a puppet show with several different characters.

### **Address each sensory processing pattern**

In addition to helping children develop self-regulation skills, teachers may need to use specific strategies to address each child's pattern of sensory processing to help the child adapt to the classroom environment. The following are general ideas to consider. It is important to consider each child's unique needs when implementing any strategies. "Classroom Strategies to Address Children's Sensory Processing Differences," on p. 42, offers more specific strategies.

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routine is imperative to help a child with sensory sensitivity handle situations. Routinely observing the child and knowing how she is likely to react in particular situations will enable the teacher to help the child successfully respond. For example, if the monthly tornado drill upsets the child, the teacher might practice the routine with her individually or tell her about the drill in advance so she is prepared. The teacher can also take steps to reduce the amount of stimulation in a situation, such as providing the child with earplugs or headphones so noise does not overwhelm her. The teacher can model coping strategies for the

**Low registration.** The more input into the sensory system children with low registration receive, the better they can register the sensation and respond appropriately. Children might need physical contact in order to be stimulated. For math instruction, manipulatives are a must. Using strategies that incorporate multiple senses can help him maintain concentration. Have him sit on a ball or stand during instruction; offer him a stress ball to squeeze. Also, try to incorporate movement activities in the classroom.

### Teachers may need to use specific strategies to address each child's pattern of sensory processing to help the child adapt to the classroom environment.

For example, start the day by doing aerobic exercise with the whole class, such as jumping jacks or silly dance moves. Music and movement will also help the child with low registration complete tasks. Try using brighter lighting to help him stay focused. Highlight important information in notes, handouts, and assignments to help him accomplish tasks. Provide breaks that require movement, such as taking attendance or delivering a note to the office.

**Sensory sensitivity.** Consistency in the day-to-day

child, such as talking through situations or using various calming techniques. Dimming the lighting, talking softly, and providing a place for the child to go (a quiet, softly lit place) when she is overwhelmed will calm the child and help her recover when she is overstimulated. Provide predictable routines and tasks that will accommodate the child's sensory preferences, such as letting her always be first or last in line and making sure that self-care routines (e.g., bathroom breaks) are always the same. During group times, an individual carpet piece for the child to sit on or a separate space where she always sits can provide boundaries and predictability.

**Sensation seeking.** To help meet the sensation-seeking child's need for additional sensory input, create a varying schedule of activities, such as "heavy work [large movements such as jumping, pushing/pulling, swinging], aerobic exercises, use of hand fidgets, keeping a water bottle with a straw on desk" (Saunders 2006, 5). Since some children need input that might not be available during various times of the day, these provide ways for them to get extra stimulation. Teachers can introduce numerous hands-on manipulatives—such as clothespins, stones, or small pom-poms—to support the child's learning. Allow him special considerations, such as moving freely about the classroom. Instead of having him raise his hand to get a fidget object like a foam or squishy ball and interrupt the class, let him

## Children's Sensory Processing Responses

Sensory processing pattern	Common characteristics
<p><b>Low registration</b> Does not actively seek out experiences to meet sensory needs</p>	<ul style="list-style-type: none"> <li>■ Shows little interest in surroundings</li> <li>■ Rarely participates, especially when there is a lot of activity</li> <li>■ Requires extra motivation</li> </ul>
<p><b>Sensory sensitivity</b> Does not actively change environment; reaction to overstimulation might not be immediate</p>	<ul style="list-style-type: none"> <li>■ Is easily startled by noises, visual stimulation, touch, movement</li> <li>■ Protests about things like a tag on a shirt, trying new foods, loud noises</li> <li>■ Is easily distracted by the environment, even minor changes</li> </ul>
<p><b>Sensation seeking</b> Engages in behaviors to meet high neurological threshold</p>	<ul style="list-style-type: none"> <li>■ Fidgets a great deal</li> <li>■ Is active and excitable</li> <li>■ Seeks out sensory experiences: visual, auditory, tactile, and vestibular stimulation</li> </ul>
<p><b>Sensation avoiding</b> Engages in behaviors to avoid overstimulation due to low neurological threshold</p>	<ul style="list-style-type: none"> <li>■ Is very sensitive to stimuli</li> <li>■ Clings to routines; has difficulty with transitions and changes</li> <li>■ Has difficulty engaging in novel experiences</li> </ul>

know that he can help himself to one when he needs it. This allows the child to receive the stimulation he needs without interrupting the class. Create additional sensory experiences by assigning him classroom tasks such as collecting art supplies, helping clean the tables, and being in charge of the pencils or the lunch count, so he can receive the needed stimulation.

**Sensation avoiding.** A child who is sensation avoiding will quickly reach her capacity to handle stimuli and might shut down shortly afterward. For example, changes in the routine disturb her, and when there is change she might seem uncooperative. To be successful in the classroom she requires surety and stability, or she might avoid the situation. It is important for teachers to respect the child's feelings and yet encourage her to be involved in classroom activities. This can be done by carefully constructing events and introducing changes, such as new activities, slowly, one at a time, and allowing the child time to adjust

to each change. Watch for signs of overstimulation, such as covering her ears or starting to retreat from participation, and intervene before she reaches a point where she cannot control her behavior. If she becomes overstimulated, offer a quiet place to calm down while keeping her under adult supervision. Provide opportunities for calming movement activities—such as playing with damp, heavy sand, walking uphill, or squeezing fidget toys—that balance the child's sensory input while regulating her individual needs throughout the day. These activities may help her concentrate and lower her stress levels.

### **Conclusion**

All children have neurological processes that help them organize information and respond to their environment. The way in which each child responds to this sensory information is related to sensory integration (Lynch & Simpson 2004).

## Classroom Strategies to Address Children’s Sensory Processing Differences

Low registration	Sensory sensitivity	Sensation seeking	Sensation avoiding
<ul style="list-style-type: none"> <li>Keep children alert by letting them know that adults are nearby.</li> <li>Make eye contact when talking to children, and wait for their responses after asking questions.</li> <li>Vary your voice level and facial expressions to help these children stay alert.</li> <li>Encourage children to work in groups. They may need extra encouragement to socialize.</li> <li>Use a variety of activities to keep children active in the classroom.</li> <li>Have these children sit in the middle of the classroom, which offers more stimulation to help them focus.</li> <li>Provide many activities and experiences that require movement. For example, have children leapfrog to the door and skip to the bathroom.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor your volume and speed of talking and your activity level.</li> <li>Avoid strong scents, such as perfumes, lotions, and room sprays.</li> <li>Maintain predictable routines.</li> <li>Provide short breaks, such as using the bathroom, stretching, or going to the library, to help prevent sensory overload.</li> <li>Provide a quiet area for children to go to when they start to feel overwhelmed. Make sure an adult can supervise this area.</li> <li>Place these children at the beginning or end of the line to maintain a predictable routine.</li> <li>Discuss ways for children to communicate their needs and distress.</li> <li>Avoid touching these children. For example, use verbal reinforcement for positive behavior rather than a pat on the back.</li> <li>Help prepare children for transitions, such as cleanup time.</li> </ul>	<ul style="list-style-type: none"> <li>Give children active jobs, such as taking notes to the office, erasing the board, and helping arrange the desks.</li> <li>Encourage friendships with peers who are physically active and can help direct these children’s energy into purposeful activities.</li> <li>Let children stand, move, and pace around in the classroom. Have them sit on an exercise ball while doing work at their desks.</li> <li>Let children use a fiddle toy during activities that do not provide a lot of sensory input.</li> <li>Use lots of kinesthetic and hands-on activities.</li> <li>Have children sit in the back of the classroom to provide them with lots of visual stimulation and decrease the likelihood that they will distract their peers.</li> <li>Use positive behavioral interventions. For example, redirect children by having them go around the room and help organize materials.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor your voice and your activity level to avoid overwhelming them.</li> <li>Maintain predictable routines.</li> <li>Post an overview of the day’s schedule to let children know what to expect.</li> <li>Give children time and space to recover when they feel overwhelmed.</li> <li>If children work in groups, place these children with a small number of peers.</li> <li>When moving toward these children, approach them from the front instead of from behind to avoid startling them.</li> <li>Keep the classroom as calm and organized as possible. Bright colors or lots of objects on the walls are distracting to these children.</li> <li>Provide many opportunities for children to make simple choices. This helps them feel in control.</li> </ul>

Each child is an individual with unique needs. Whether applying Bodrova and Leong’s concepts or Dunn’s strategies to the classroom, keep in mind that the ideas presented here are not exhaustive. Having an understanding of sensory integration, being knowledgeable of the four patterns of

sensory processing, and encouraging self-regulation, allows adults to better meet children’s individual needs as well as maintain a classroom that accommodates the sensory needs of all children.


Adapted from Dunn (1999; 2008) and Miller (2006).



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