

Sensory Processing: Implications for Behavior and Learning

An OCALI Parent Package



 educational service center
of Central Ohio
 Ohio Department of Education
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Welcome to the presentation on sensory processing: implications for learning and behavior. This presentation is part of the Ohio Center for Autism and Low Incidence's (OCALI) Parent Packaged materials series; materials designed to be used by parents and parent groups to increase knowledge about topics important to families of those with disabilities. These materials were developed by the expert staff at OCALI with funding from the Ohio Department of Education, Office for Exceptional Children. For further information on all the parent packaged materials please contact Donna Owens, family and adult services administrator at OCALI, 614-410-0381 or donna_owens@ocali.org

Objectives

Participants will:

1. Gain an understanding of the impact of sensory processing challenges on the individual and his/her ability to learn, work, and participate in family and community life.
2. Become familiar with behaviors that may indicate sensory processing difficulties.
3. Understand how to make environmental modifications to accommodate for an individual's sensory challenges.

The logo for OCALI (Ohio Center for Autism and Low Incidence Disabilities) is centered at the bottom of the box. It consists of the word "OCALI" in a blue, sans-serif font, with a stylized blue and white graphic element below it that resembles a bridge or a series of connected arches.

The learning objectives for this session are as follows:

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Everyday we are exposed to thousands of sensory experiences that come to us through our senses of vision, hearing, touch, movement, smell, taste and proprioception. There are birds chirping, horns honking, and air conditioning and lights humming. Our clothes have different textures. We get in cars and move forward, stopping, starting and turning. We smell foods, perfumes, deodorants, etc. All of these things are happening around us. Most of us are able to tune out the things that are irrelevant to whatever we are currently engaged in and tune into the things that are needed for us to navigate and respond appropriately to our environment.

What is sensory processing?

A process by which the brain:

1. Takes in information
2. Interprets information
3. Develops a response or action



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If we have good sensory processing, we are able to take in the various sensory experiences we have throughout the day. Our bodies then send that information to our brains through neural pathways that are much like roads and once the information gets to the brain, it is interpreted and we can then act on the information. The brain helps to decide if it is something that we should be afraid of and move away from, if it is information we need to function in the environment, or if it is something we should disregard as not important.

Effective sensory processing provides us with...



Protection from
Danger



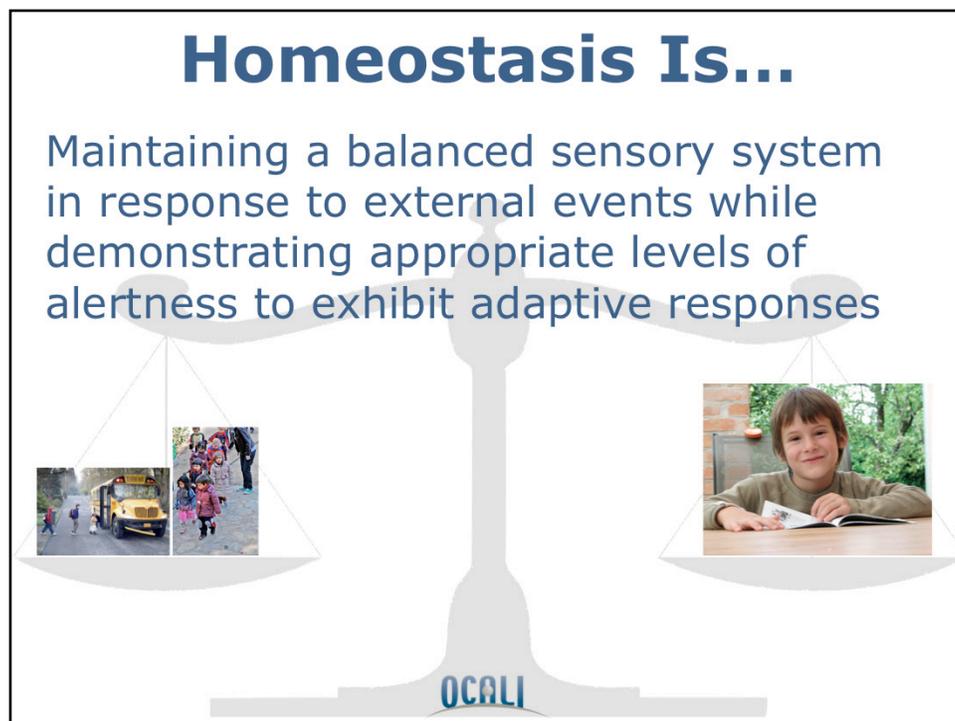
Alertness and
Attending



Meaningful
Engagement

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Effective sensory processing provides us with protection from danger, helps us to attend and be appropriately alert, and it helps us to engage in meaningful activities.



Homeostasis is that state of balance that is necessary to respond appropriately to the world around us. We all require a certain amount of sensory input to maintain life and life functions. Extreme amounts of sensory input can have detrimental effects, making us feel overwhelmed and frightened leading to shut down or causing us to behave in a way that is frenzied and unproductive. Too little sensory input can make us dull, lifeless, and disengaged with the world.



We have 7 senses. You are probably familiar with 5 of these. There are 2 that are likely new to you. Here are the five senses you are probably already familiar with, along with their technical names: hearing (auditory), seeing (visual), touch (tactile), taste (gustatory) and smell (olfactory).

The two that you may not be familiar with are your sense of movement (vestibular) and your sense of joint position or proprioception. We will talk more about these senses in the coming slides.

Before babies are born, we have evidence they have already developed some senses. Babies in utero respond to touch first at 5 1/2 weeks by moving away from light touch stimulus to the oral area. Vestibular or movement awareness is also observable before birth in the form of primitive postural reflex development at around 9 weeks. This is the foundation of our ability to move in a coordinated upright fashion.

Tactile - Touch

Location: The skin—areas of greatest concentration are the mouth, hands, and soles of feet

Activated by: Contact with the skin. There are different types of skin receptors including those for pressure, temperature, pain, as well as different types of touch sensations

Functions: Two separate systems: the protective and discriminative. One lets us know if we are in danger and the other where, what, and how we are touched

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Usually, there are specific locations in the body that have the receptors for a particular sense, like our eyes and ears. Receptors are nerve endings in the body that receive the sensory messages. Skin is one of the largest sensory receptors in the human body. We typically have over 20 square feet of skin, and the skin is filled with touch receptors. They are activated by making contact with the skin. There are different types of touch receptors including those for pressure, temperature, pain as well as different types of touch sensations. A large concentration of receptors for the sense of touch are located in our mouth, hands and soles of the feet. Behaviors such as mouthing objects and chewing of the hands are probably related to the large number of receptors in these areas.

The tactile system is comprised of two distinct systems. The **protective system** tells us when we are in contact with something dangerous and it causes a flight, fright or fight response that involves the whole mind and body. It makes us want to run away from what we perceive as dangerous. It is necessary for our basic survival and is the most primitive of the two systems.

The **discriminative system** allows us to determine where we are being touched and what is touching us. Accurate discrimination requires that we register sensory input without sensory defensiveness. In other words, so that we are not feeling like we are in danger, and we want to run away.

When a child's tactile system does not work properly, it can create difficulties for children and parents in bonding with one another. In this case, children may not find being held or cuddled to be pleasurable, which can interfere with attachments to their caregivers.

Vestibular - Movement

Location: The inner ear

Activated by: Movement of the head in space relative to gravity

Function: Vestibular input gives us information about where we are in space, how fast we are moving, and what direction we are moving. It contributes to our posture and tone

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The vestibular receptors are located in the inner ear and they are activated by movement of the head. We have probably all had the sensation of lifting our head too quickly and finding the room briefly spinning. That is the work of the vestibular receptors. The vestibular system gives us information about where we are in space, as well as how fast and in what direction we are moving. It also contributes to our posture and overall muscle tone.

The vestibular (movement) system is fully functional at birth. It is closely linked with vision and proprioception. Rocking and carrying infants is often soothing, which is the result of good vestibular integration. If you are a child who does not have good vestibular integration, you may find that you don't like movement, you might avoid climbing, and you may just prefer to keep your feet on the ground at all times.

Proprioception - Space

Location: In the joints, tendons and muscles

Activated by: Bending, straightening, compressing, pulling, contracting, and stretching the receptors

Function: To provide information about our position in space and general body awareness

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Proprioception is another one of the senses that is unfamiliar. Proprioception provides information to us about our position in space and general body awareness. The receptors for this system are located in the joints, tendons, and muscles. They are activated by bending, straightening, compressing, pulling, contracting, and stretching the receptors. This is the sense that allows an infant to mold to a caregiver's body to cuddle. It is critical for the development of motor skills and motor planning.

Visual - Seeing

Location: Structures of the eye (retina)

Activated by: Light

Function: To detect light and give us information about objects and people such as multi-dimensional awareness, patterns, colors, etc. To provide an awareness of surroundings beyond arms' reach such as distance, proximity, and depth perception

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The receptors for vision are located in the eye, specifically the retina, and they are activated by light. The function of the eye is to give us information about objects and people such as multi-dimensional awareness, patterns, colors, etc. It also provides us with an awareness of our surroundings beyond arms' reach such as distance, proximity, and depth perception.

Visual systems are immature in infants. Infants do not really see well at birth. They typically respond to high contrast stimuli such as hair and face lines. Patterns are distinguished early at around 6 days old with the face being the first pattern recognized (from top to bottom, 2 eyes; 1 nose; 1 mouth). We know this because if babies are approached from upside down (changing the facial pattern from top to bottom as to 1 mouth; 1 nose; and 2 eyes) girl babies look away and boy babies cry. It is important for us to be able to put things into patterns because patterns make things memorable. Vision also contributes to the development of later math concepts.

Auditory - Hearing

Location: Structures of the ear

Activated by: Vibrations produced by sound

Function: To process sound so that speech, music, or noise can be distinguished

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The hearing receptors are located in the structures of the ear. They are activated by vibrations produced by sound. They process sound so that speech, music, or noise can be distinguished. Hearing provides the basis for oral language skills and often contributes to later development of written language as well.

Olfactory - Smell

Location: Nasal cavity

Activated by: Chemicals called odors

Function: To assist in the discrimination of people and things. Alerts against volatile/dangerous substances

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The smell receptors are located in the nasal cavity and are activated by chemicals, called odors. The function of your sense of smell is to assist in the discrimination of people and things. They also provide alerts against volatile and dangerous substances. The sense of smell is so strong that humans can reportedly detect individuals that are blood-related kin (mothers and children, but not husbands and wives) from the sense of smell. Smell also has a strong connection to long-term memory.

Touch, smell, and movement are used by babies to maintain contact and identify with caregivers.

Gustatory - Taste

Location: On the surface of the tongue, along the soft palate, and in the epithelium of the pharynx and epiglottis

Activated by: Chemicals in foods/ items interacting with the receptors

Function: Partners with the sense of smell to perceive flavors

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The receptors for our sense of taste are located on our tongue, of course. What may be surprising is that the human tongue is said to detect only four or five basic taste components: sweet, sour, salty, bitter, and the taste of savory recently added to the list by some. So you might wonder how it is that you can taste and identify so many different foods. While the human tongue can distinguish only among four or five distinct qualities of taste, the nose can distinguish among hundreds of substances, even in minute quantities. It is the work of the tongue and the nose together that allow you to enjoy and identify flavors.

What are your sensory preferences?

What is Your Response to.....

- Cold shower
- Wool clothing
- Panty hose
- Sweatpants
- The feel of Jell-O in your mouth
- The sound of birds
- Bright colored walls in the bedroom
- The smell of perfume
- Elevators
- Roller coasters



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DIRECTIONS FOR THE SENSORY PREFERENCES ACTIVITY: Ask the audience how they feel about each of the items on the list. Ask for a show of hands for those who like the activity/item and those that do not. There will likely be some who like and dislike each activity/item. Draw people into a discussion about why they like or dislike the activity/item by asking them to describe the way they feel about the activity. Discuss that even within the general population, some people can be sensitive to sensory input; others may be much more tolerant of the sensory input of the same activity/item. Hopefully, this will lead to insight by audience participants that not everyone responds or feels the same way about the same sensory experiences. For those that respond at extremes to the discussion, try to draw them into further conversation about how they respond behaviorally when they are confronted with the activity/item. Do they avoid those situations, feel annoyed, angry, etc.?

What happens if the sensory system is not working effectively?



We have just finished discussing all the various sensory systems that we possess and how those systems are necessary to our development and our general well-being. We also talked about our own sensory preferences. You should now be aware that not everyone has the same response to various types of sensory input and that as a result, those responses may impact how we behave. Some individuals have more extreme sensory processing challenges. They often times do not filter routine experiences in the same way that we might filter experiences. As a result, these individuals may interpret sensory experiences as painful and/or overwhelming. Others may seem relatively unresponsive to these things, such as those who don't appear to notice when they are injured. Still, others may have difficulty modulating their responses to input so that their behavioral responses are unpredictable from hour-to-hour and day-to-day.

Low-Sensory Threshold



...shut down

A small amount of sensory input can create feelings of being overwhelmed and elicit responses such as...



...extreme sensitivities

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Let's talk a little more about different types of sensory processing difficulties. There are many different theories and frameworks for identifying sensory processing disorders. We are going to take a look at the basic core issues. Most of us can filter out the sensory experiences we receive during the course of our days using what we need and disregarding the rest. However, some children with disabilities are not able to filter out the stimuli and the impact of this perceived intense input can be frightening, tiring, and anxiety producing. As a result, we say these children have a low threshold for sensory input. In other words, they are very sensitive to either certain types of sensory experiences or all types of sensory experiences. They can exhibit behaviors such as distractibility, or hyperactivity, or they may instead demonstrate limited and constrained actions. They can also be irritable, impulsive, defensive, defiant, have negative attitudes, be overly reactive, anxious, demanding of routine and/or rituals, resistant to change, or demonstrate emotional outbursts.

High-Sensory Threshold



A large amount of sensory input is needed by the child and without that input the child may...



...appear unmotivated with low energy

...be very active

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Some children may be under-responsive to sensory input. In other words, they have a high threshold for sensory input and may need an atypically large amount of sensory input to attend and respond. They may not respond when their name is called out in class due to poor auditory processing. They may have difficulty sitting appropriately in their classroom seat or holding on to their pencil because they are not getting the appropriate feedback to their muscles from their sense of movement and position in space. They also might not notice if they are injured due to poor tactile or touch sensations. These children may try to meet their need for additional input by demonstrating a tireless pursuit for sensory input with associated behaviors of lacking caution in play, fidgeting, and/or become easily overly stimulated. We call these kids sensory-seeking. Conversely, other children may appear as very low energy, sedentary, withdrawn, uninterested, and difficult to motivate.

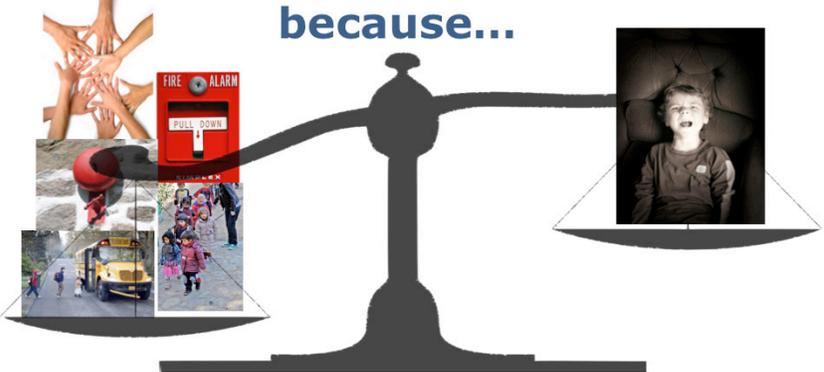
In Sensory Processing Disorder (SDP), we may see behaviors that seem unusual and difficult to explain...and the behaviors may not respond to conventional behavior management techniques



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As we mentioned, often times we can get clues about a person's struggles with sensory processing issues by observing their behavior. We, often times, see behaviors that seem unusual and difficult to explain, and the behaviors may not respond to conventional behavior management techniques. It is important to understand that these feelings and the resultant behaviors are often not under your child's control. They can be just as confused and frustrated as you are with their behavior.

Looking at the behavior from a traditional behavior management approach may not be successful because...



...the behavior is often the sum of many sensory events over a period of time, not just the event prior to the behavior!

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One of the key reasons why it may be difficult to address the behavior resulting from sensory processing disorder with the traditional behavior management approach is that with this approach we often look at antecedents to behavior. Antecedents are the events that occur prior to the behavior. We typically assume these antecedent events to be contributing factors for the behavior. It is important to understand that a person's sensory processing system can be impacted by many things. It is not typically a singular event or even a few events that create the behaviors. It is instead often times a cumulative effect of many different sensory inputs or lack of enough consistent organized sensory input that results in the behavior. Unfortunately this makes it difficult to identify causative factors or antecedents for behaviors. Behaviors can therefore seem very inconsistent and random from day-to-day.

Here is a student example demonstrating this concept..... Sally awakens in the morning to get dressed and finds a new shirt purchased by her mother. The shirt feels scratchy to her and there is a tag in the back. The tag in the back is all she can think about throughout breakfast. She then boards the noisy bus. She really hates all the talking, laughing, and shouting on the bus. Another student sits down beside her bumping her as he sits and then he sits so close that they are touching. It hurts when the other kids bump into her and it makes her feel angry that the other student is sitting so close. The bus arrives at school, she gets off the bus and the bell rings. It is loud...really loud. The students line up and while lining up are bumping into each other. Sally tries to get to the end of the line so she can keep an eye on the other students so she won't get bumped. She really doesn't like being bumped by the other students. She begins to feel increasingly anxious because more students have filed in behind her at the last minute and she can't tell how close they are to her. One of them bumps her. It hurts and she is feeling angrier. She gets to class and discovers that her teacher is wearing a new perfume. It smells really strong. The other kids are complementing the teacher on the perfume....not Sally. It is giving her a headache. The bell rings....it is loud. The teacher begins the lesson. Sally suddenly blurts out "as she covers her ears with her hands "that bell is just too loud"! The teacher tells Sally that she needs to raise her hand to comment in class. Sally becomes really angry and becomes argumentative with the teacher.

The actual "melt-down" as described above did not occur because of the loud bell, but rather because Sally reached her limit or threshold for random sensory input during the day or even the combination of events that occurred at school. In the example, Sally had endured continued random challenges to her sensory system since the moment that she awoke and the cumulative effect was too much for her to manage. This story illustrates that it is important to make observations over a period of time considering many things that may be hidden in the environment and perhaps not obvious to most of us.

Other factors that can influence sensory processing

- Illness
- Fatigue
- Novel vs. Familiar
- Stress
- Hunger



Many other factors can contribute to a child's effective sensory processing from day to day and their general threshold for sensory input. Some things that can impact sensory processing might include illness, fatigue, novel vs. familiar tasks, stress, and hunger just to name a few.



As the slides suggest hopefully you are beginning to understand that things are not always as they seem. We need to be good detectives to fully understanding the possible contribution of sensory processing difficulties to a child's behavior. Keep in mind that we are NOT suggesting that all behaviors are the result of sensory processing difficulties, but we would like for you to at least consider the possibility before you respond to behaviors or plan for behavior interventions.

Let's think back to the various senses we talked about earlier. We know that children can be under responsive, over responsive or have difficulty modulating sensory input. Let's now practice what we have learned so far and try to guess which sense is contributing and if it is under or overly responsive in each of the examples on the following slides.

Behaviors in the Home



refusal to brush teeth



doesn't understand the difference between indoor and outdoor play



may play too rough with siblings



messy eater
...plays in food



afraid of toilet flushing



hates baths



sits too close or turns TV up too loud

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These are behaviors that we might see in the home.

PRESENTER NOTE: refer to each of the pictures and the behavior noted as the participants. Guess the sensory system involved and if the system is being under or overly responsive to the input.

Refusal to brush teeth: touch

Overly Responsive. The feel of toothpaste and toothbrush in the child's mouth may feel bad. The temperature of the water may also be an issue and be bothersome for the child.

Messy Eater:

touch

Under Responsive. The child may have difficulty with touch sensation and may not be aware of food on their face, they may also play in the food to get more touch input into their system

Afraid of the toilet:

hearing

Overly Responsive. The flushing of the toilet may be frightening to the child because of the loud noise

Hates bath:

touch/vestibular

Overly Responsive. The feel of the water on the child's skin and their naked skin on the tub surface may be bothersome. They may also be overly responsive to movement and balance challenges so that stepping into the tub and standing on the slippery tub surface may be scary

Plays too rough:

vestibular/proprioception/touch

Under Responsive. The child may have difficulty feeling the impact when they run into or bump others and objects. They may also be under responsive to movement and be unaware of body position in space.

Sits too close to TV/too loud:

visual/auditory

Under Responsive. The child may be under responsive to the sights and sounds on the TV so they turn it up too loud and sit close to get more input.

Doesn't understand the difference between indoor and outdoor play:

vestibular/proprioception

Under Responsive. The child may possibly be trying to get more input into these systems so they play hard with lots of movement and they are fearless in all environments

Behaviors in the Community



doesn't sit to eat meals



doesn't understand safety/
takes risks in play



makes noises and as
a result has difficulty
being in quiet places



fearful of climbing
activities



sights and smells at
grocery are overwhelming

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Here are some behaviors we might see in the community

PRESENTER NOTE: refer to each of the pictures and the behavior noted as the participants guess the sensory system involved and if the system is being under or overly responsive to the input.

Doesn't sit to eat meals: vestibular
Under Responsive. The child may need to keep moving to meet movement needs

Doesn't understand safety and takes risks: vestibular/tactile/proprioception
Under Responsive. The child may have limited pain recognition, limited awareness of movement and limited body awareness. These kids can often be reckless in how they move and explore their environment

Makes noises in public auditory
Overly Responsive. Children will sometime make their own noises when they are bothered by external noise. It is thought they create their own tolerable noises to drown out the noise that is bothersome.

Fearful of climbing vestibular/proprioception
Overly Responsive. We often consider children who are fearful of movement and climbing as having gravitational insecurity. These children are often sensitive to movement and often do not have well developed body awareness.

Sights and smells at grocery are overwhelming smell/visual
Overly Responsive. Grocery stores can have a wide range of sights and smells. If your child is expected to ride in the cart this can also impact the vestibular system.

Behaviors in School

 <p>does not appear to notice alarm for fire drills</p>	 <p>involved in disagreements/fights when in line</p>	 <p>may try to lick or eat non-edible materials</p>
 <p>dislikes going to the cafeteria for lunch</p>	 <p>involved in disagreements/fights while on the bus</p>	 <p>personal possessions are often in others' space</p>

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Here are some behaviors we might see in school

PRESENTER NOTE: refer to each of the pictures and the behavior noted as the participants guess the sensory system involved and if the system is being under or overly responsive to the input.

Doesn't notice fire alarm: vestibular
Under Responsive. While children with sensory processing disorders may have adequate hearing they may not process what they hear in the same way as most of us. They may appear to be unresponsive to sounds.

Dislikes cafeteria: sights/smells/hearing/touch
Overly Responsive. School cafeterias offer a big challenge to children who are hyper sensitive to sensory input. There are many sights, sounds and smells. Additionally they are typically crowded so if children don't like being touched, it is difficult to avoid in the cafeteria.

Eats or licks non edibles: taste/touch
Under Responsive. As we mentioned in the earlier part of the presentation sometime if the tactile system is not working well children will use those areas of their bodies that are most sensitive to explore things in their environment. The mouth is one of the most sensitive so often times children will explore with their mouths. If they also have a reduced sense of taste they may not be responsive to the natural alerts that most of us would experience, such as a bad taste, that would stop us from further exploration with our mouths. We need to make sure we are vigilant with kids who explore with their mouths as the can be at risk for poisoning and choking.

Disagreements on the bus: most all systems
Overly Responsive. Along with cafeterias, bus rides are also one of the most challenging for students with sensory sensitivities. There is the vestibular input of the bus moving with frequent stops and starts, touch sensitivities by sitting in close proximity with others, the smells of perfume/deodorants and gasoline, the various sights, and let's not forget the deafening noise on the school bus.

Disagreements in line: tactile
Overly Responsive. Children with tactile sensitivities often have difficulty standing in line. Lines create close proximity with others and often do not allow for visual monitoring of the whereabouts of those other people because they are in line behind us. Allowing students with tactile sensitivities to choose their location in line may help. Many of those students will choose to be at the end of the line so they can visually monitor the location of the other students to make sure they are not touched or bumped.

In others space: proprioception/vestibular
Under Responsive. Many children with a poor sense of body position, as well as those who have difficulty with their overall body tone and posture, may find themselves in others space without realizing it. They may need visual cues to mark the boundaries of their own space.

Concerned About Your Child's Sensory Processing?

Ask for an Occupational Therapy (OT) assessment specifically related to sensory processing – the OT can recommend specific interventions to meet your child's specific needs

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We have now looked at the senses, discussed sensory processing difficulties and reviewed some associated behaviors that might be present in a child with sensory processing challenges. Now you might be wondering what you can do to help a child who you suspect may be struggling with a sensory processing disorder. If you suspect that a child is having difficulty with sensory processing you should request an occupational therapy assessment that specifically looks at a child's sensory processing skills. Consultation with an occupational therapist can help to provide you with appropriate strategies based on your child's individual needs and strengths. The occupational therapist should be able to make recommendations for intervention strategies and environmental modifications. The You Tube link on the slide gives an overview of sensory processing disorders and the role of occupational therapy.

Sensory Processing Evaluations

Interviews and Questionnaires

- *The Sensory Profile* (Dunn 1999)
All age ranges (home and school versions)

Informal and Formal Observations

Norm-Referenced Tests

- *Sensory Integration and Praxis Test* (Ayers, 1989)
4yrs-8yrs 11mos
- *Sensory Processing Measure* (SPM) (Parham et al)
k-6th grade
- *Miller Assessment for Preschoolers* (Miller, 1988)
2.9-5.8 years



As a part of the assessment process, the occupational therapist may choose to look at your child's sensory processing with any of the tools and methods shown here. The selection of the assessment tool is dependent upon your child's age and/or performance abilities.

Some of the tests require your child to engage in specific activities in a specific way. These tests are typically called norm-referenced tests. They essentially compare your child's skills on a specific task to other children of the same age. To participate in these types of assessments and for the therapist to get accurate results your child will need to be able to complete certain activities in a particular required way as directed by the evaluator. It is not always possible for all children to follow specific directions and perform in a required manner.

For those children who are not able to participate in the norm-referenced testing the therapist can utilize caregiver and educator checklists to gain insight into your child's sensory processing skills. With both of these assessment techniques the therapist will also want to do informal and formal observations of your child during typical play. All of these things will help the therapist gain a greater understanding of your child's sensory processing skills and will also help the therapist to begin to plan for appropriate interventions.

Intervention Approaches for SPD

Traditional Individual Sensory Intervention

typically provided by an occupational therapist in a clinic.
in a special sensory intervention treatment room

Environmental Adaptions/Supports

The logo for OCALI (Ohio Center for Autism and Low Incidence Disabilities) is located at the bottom center of the box. It consists of the word "OCALI" in a blue, sans-serif font, with a stylized blue wave or underline beneath the letters.

Should your child be found to have a sensory processing disorder the occupational therapist may suggest direct individual intervention, a sensory diet that can be implemented by family and school personnel within the daily activities, and/or home and classroom environmental modifications. With accurate assessment and careful consideration any of these approaches can be helpful for improving a child's behavior and participation at home and in the classroom.

Direct individual intervention is typically provided by an occupational therapist specifically trained in sensory processing treatment interventions. Treatment is most often provided in a special sensory intervention treatment room with special equipment to provide that "just right" challenge to the child's various senses while also encouraging and engaging the child in purposeful activities.

One approach is to help the child within their multiple environments by making simple adaptations and building in sensory supports as needed within these environment. For example if we know that a child has difficulty during seat work because they need to move to stay alert we might provide a wiggle cushion on their chair so they can move while sitting to maintain their attention. We might also make sure that a student who has touch sensitivities is not required to stand in the middle when required to line up for lunch. Instead they might be offered the choice of standing at the end of the line so they can monitor their distance from the other students while not worrying about someone touching them unexpectedly from behind.

Intervention Approaches for SPD

Sensory Diet

- May be provided in the child's natural environment (i.e. home, school, etc.)
- Diet is designed by an occupational therapist specifically for the child's individual sensory needs based on assessment.
- Caregivers are trained by the OT to provide the interventions at regular intervals throughout the day and often times integrated into routine activities.
- Interventions are carefully monitored and adjusted based on the child's responses

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Sensory diets are used to provide appropriate sensory input at regular intervals throughout the child's day. A regular schedule of sensory diet activities is developed by the occupational therapist and then a schedule and the techniques and activities are demonstrated to those that interact with the child throughout the day. The occupational therapist periodically monitors the child's response to the interventions and makes adjustments to the schedule, activities and retrains staff and family as needed.

The Sensory Diet Is determined by the OT and is based on your child's individual assessment

Sensory Interventions Proprioception

These interventions are used to assist with organizing, calming, attending, body awareness for individuals with both low and high sensory thresholds

Activated by: Heavy Work and Resistive Activities



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Proprioceptive activities are one of the most effective ways to address sensory challenges because they tend to work well for students who have either a low or high threshold to sensory challenges. These types of activities can be organizing, calming, and help with overall attending and body awareness. Proprioception is activated by heavy work and resistive activities.

Sensory Interventions Heavy Work and Resistive Activities School-Age



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Here are some examples of age appropriate activities that offer resistance and/or heavy work. If a child has adequate oral motor skills chewing bubble gum or chewy foods can be helpful. Other resistive activities include pulling and pushing riding toys, climbing activities or weight bearing activities where the child is pulling or supporting at least a portion of their body weight, clipping spring loaded toys, pushing, pulling and pounding modeling clay, writing and drawing on vertical surfaces so the child has to maintain their arm against gravity. Coloring on rough surfaces such as paper taped to a concrete wall (the bumpy surface of the wall behind the paper creates a great deal of input and resistance). Blowing and sucking activities such as blowing whistles, blowing cotton balls with straws, sucking a thick milk shake through a straw are also great.



As children get older and if resistive activities have proved to be helpful in the past it is important to find ways to include these types of activities into routine tasks that are age-appropriate. Older children might enjoy resistive activities such as weight lifting, swimming, sporting events, yard work and construction activities.

Sensory Interventions Calming Area



- Used to provide an area of reduced sensory input
- Generally used for those with low sensory thresholds

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Some children are so sensitive to sensory input that the normal hustle and bustle of the day is more than they are able to manage. These children may need an opportunity to find a safe location to get away from things for a few minutes so they can reset their sensory systems. Making a calming area available can be helpful for these brief getaways. A calming area can be as simple as a tent created with a blanket over a card table or couch cushions, providing an area with cozy pillows in the corner of a room, or it can be more sophisticated like a real tent pitched with various sensory objects in the tent to reduce input such as headphones with calming music and sunglasses to reduce light. For teenagers it may be enough for them to just get away from others for a brief time.

Be a Good Environmental Detective for Your Child



Be aware of random sensory input from your child's environment and make adjustments if possible

OCALI

For those children who are overly sensitive (low threshold for sensory input) it may also be necessary for parents, caregivers and educators to be aware of those things in the environment that may create difficulties for them and make appropriate accommodations. For example if you know your child is sensitive to odors you may want to limit your personal use of colognes. Other children may find that noise is overwhelming. For those children the use of headphones with favorite music may help when you need to be out in loud places. Some children are sensitive to the feel of tags in their clothing and the feel of new clothing. Removing the tags and being sure to wash clothes before asking kids to wear the clothes might help along with looking for soft clothing materials. If you are going to events into the community, you may want to visit during times when you know there will be fewer people at the event to limit the amount of bumping and physical contact your child may have with others in the crowd. One company has helped to provide parents with accommodations for their children with sensory processing challenges. AMC Entertainment and the Autism Society of America have teamed up to bring families affected by autism and other disabilities an opportunity to view films in a safe and accepting environment on a monthly basis with the "Sensory Friendly Films" program. Features of this program include moderate lighting rather than dark room viewing, lowered sound, no previews or advertisements shown before the movie and no enforcement of the "Silence is Golden[®]" policy so children are free to take movement breaks as needed.

These are just a few examples of how to adjust environmental factors that may challenge your child's sensory processing. Again using your good detective skills and making the appropriate accommodations can help your child to interact more easily in a variety of environments.

Sensory Interventions Sensory Exploration Area



areas for free exploration of
sensory experiences

OCALI

While some kids may find the environment to be challenging because of their sensory sensitivities other children may find they need more sensory input (high sensory threshold) to stay alert, appropriately attentive, and engaged than the environment naturally provides. Having a sensory exploration area that offers a variety of enhanced sensory experiences can help those children meet their need to reset their system with more input. That area may have a sensory table that would provide an ever changing variety of sensory materials such as sand, water, beans, packing peanuts etc. There might also be a mini tramp for jumping and exercise resistance bands to stretch and pull. For older kids teachers may need to offer frequent movement breaks imbedded in typical classroom activities such as asking students to deliver things to the office or to clean white boards both of which would offer a movement break in a natural way. There are many other examples but these are just a few.

Sensory Visual Support Strategies



sensory choices on VOCA

sensory alert signs



OCALI

Some students with sensory challenges also have difficulty communicating their sensory challenges and needs to others. Additionally many people report that once they begin to feel overwhelmed by sensory input even if they have adequate communication skills they often find it difficult to pull themselves together to use those skills to get their needs met. Providing visual supports for sensory choices can be a way to help students who are not able to communicate effectively what they need. The visual supports can provide words and pictures or just words depending upon the students reading skills. In this slide we see an example of a voice output device with some sensory choices a student might have. The voice output device speaks aloud the student's selection when the student touches/pushes the picture. The sensory alerts signs are used for students who want to communicate to others that the environment is too loud.



Carol Gray of The Gray Center for Social Learning and Understanding developed Social Stories™. A Social Story™ describes a situation, skill, or concept in terms of relevant social cues, perspectives, and common responses in a specifically defined style and format. Social stories can be used to help students with behaviors related to their sensory needs. You can find the Carol Gray books in our lending library to learn how to create your own sensory-themed social stories. If you would like more information about the Gray Center it can be found at <http://www.thegraycenter.org/>

The Therapro company has developed a web-based product called Sensory Stories. Although similar to social stories in some ways these stories are all specific to situations that may be impacted by being overly responsive in other words having a low threshold to sensory input. These Sensory Stories instruct the child to use calming sensory strategies in order to deal with the unpleasant sensory aspects of that particular situation. When read on a regular basis, Sensory Stories reportedly assist the child in developing effective routines to manage the sensory experiences surrounding typical daily activities. You can find more information about sensory stories at <http://www.sensorystories.com/>

Sensory Visual Support Strategies



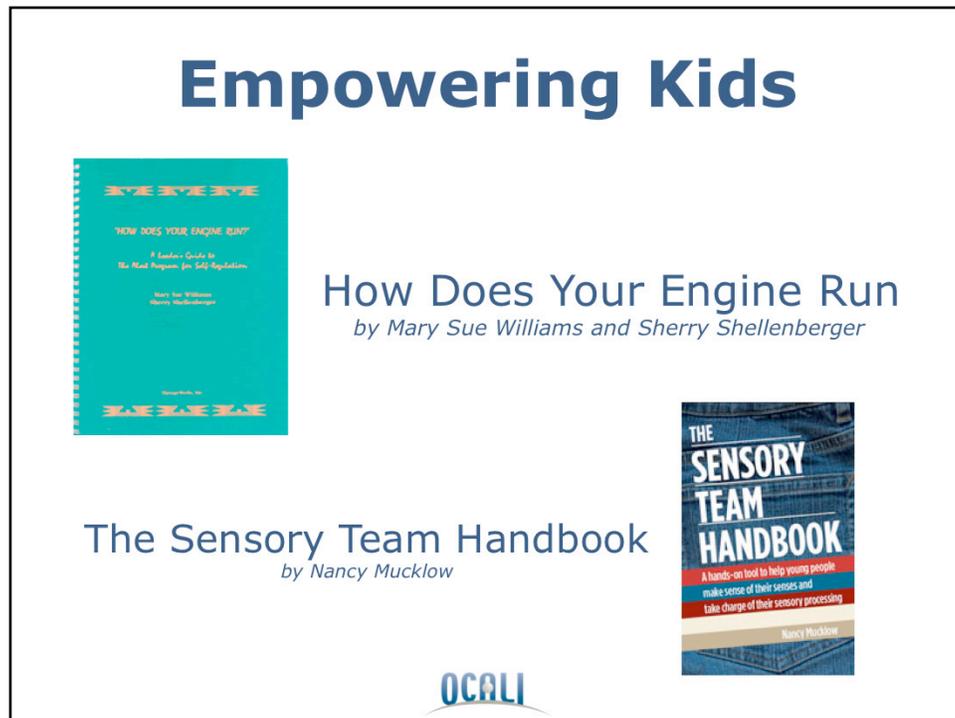
sensory
behavior
escalation
scales

behavior/
sensory
choice
boards



OCALE

The pictures on this slide show examples of student self assessment scales. These may help students to begin to identify the level of the distress they are feeling based on the sensory input that is occurring in their environment. The example on the right also provides suggestions for the student for sensory activities that may help them to feel better. The behavior/sensory choice board is loosely based on the *How Does Your Engine Run Program* (Williams & Shellenberger, 1996). The child is asked to identify if they are “just right” or if their engine is running too low or too high. It then provides some sensory activities under each area to help adjust their engine to “just right” again.



Empowering kids to understand and adapt for their sensory processing issues can be very effective. For many people the issues of sensory regulation will persist throughout life. There are two programs that are available that can help kids to understand how the sensory systems may impact their lives. These programs also provide strategies to help with self-regulation.

We briefly mentioned the *How Does Your Engine Run* program in the last slide. This program teaches children self-regulation awareness. The program can also be used to help design sensory diets in children who are unable to learn to provide their own needed input. Originally developed for children 8-12, It has been successfully adapted for preschoolers through adults. They also have a number of companion products such as board games, song CDs, and activity guides to make the learning fun. If you are looking for more information on this program it can be found at <http://www.alertprogram.com>

The Sensory Team Handbook is a book targeted for pre-teens and teens with sensory processing difficulties. It provides teens with a simple and easy to understand message about sensory processing problems. It also provides age-appropriate preteen and teen activity ideas for self regulation. For more information about this book go to <http://sensoryteamhandbook.com>

...Other Key Concepts

- When engaged in sensory activities observe behaviors and adjust activities as needed.
- Ask for feedback from the individual.
- Sensory activities that work one day may not work another day.
- Be proactive rather than reactive when using sensory strategies to manage undesirable behaviors.
- Never force participation in sensory activities. Integration occurs during active, relaxed participation.

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**Sensory Processing
Resources
OCALI Lending Library**



Search Key Word: Sensory

OCALI

If you would like additional resources on sensory processing disorders you can search the OCALI lending library using the key word “sensory”. You will find many resources including books, DVDs and other items related to sensory topics.



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Ohio

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Thank you for your participation today. We hope you have enjoyed this presentation on the sensory processing.