

SENSORY PROCESSING TOOLKIT

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PURPOSE

To provide teachers and parents with information on evidence-based strategies to help their children better regulate their sensory processing needs.

WHAT IS IT?

Sensory processing refers to the way a person's brain receives messages from their senses and turns them into appropriate responses. A child can experience sensory processing differences when their brain is not detecting sensory signals or it is not responding appropriately to the signals. Dr. A. Jean Ayres described this as a "neurological traffic jam" that prevents the brain from interpreting sensory information correctly.

WHAT DOES IT LOOK LIKE?

Every child with a sensory processing difference looks different. One child may be *over-responsive* to certain types of sensory input, while another might be *under-responsive*. For example, a child who is over-responsive to noise may cover their ears, be scared of loud noises, or even throw a tantrum in a loud room. A child who is under-responsive to touch may crave deep pressure or other intense tactile input.

WHO DOES IT IMPACT?

Anyone can be affected by sensory processing differences! Sensory processing differences can occur within a broad spectrum of severity. While every individual has their own sensory preferences, for children with sensory processing differences these difficulties are chronic and significantly inhibit their participation in every day life.



WHAT CAN SENSORY PROCESSING DIFFERENCES IMPACT?

Sensory processing differences may influence a child's functional performance in daily activities, such as eating, sleeping, and daily routines. One of a child's most important occupations is school. A child with sensory processing difficulties may have difficulty participating in the classroom setting.

Ayres Sensory Integration

Ayres Sensory Integration® comes from the work of A. Jean Ayres, who first published her sensory frame of reference in 1972. Her sensory integration theory is based on observations, understanding of neurology at that time, and clinical experiences.

Ayres Sensory Integration® is implemented by a trained occupational therapist in accordance with principles described in a published fidelity measure.

Typically, Ayres Sensory Integration® utilizes multiple sensory domains during therapy

VS.

Sensory-Based Strategies

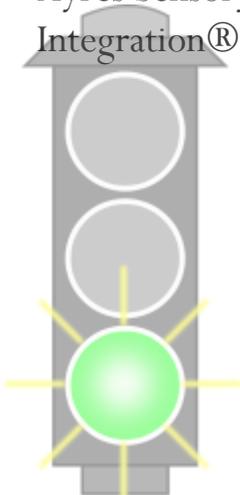
Sensory-based interventions focus on enhancing sensation to improve behavioral outcomes. These types of interventions are focused more specifically on how an individual responds to sensory input (modulation). Typically, occupational therapists are providing strategies to decrease sensitivities and single domains in a variety of settings.

Some examples of sensory-based interventions include: sound therapies, weighted vests, dynamic seating, and reducing sensory aspects of environments such as soundproof walls.



Green Light Interventions

- Ayres Sensory Integration®



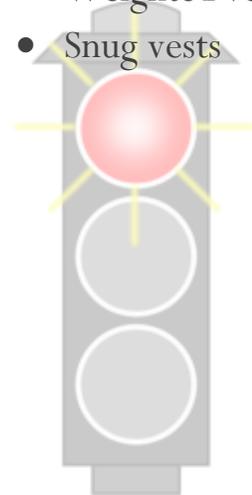
Yellow Light Interventions

- Single-Domain Sensory Based Interventions
- Multi-Domain Sensory Based Interventions
- Modifications to the sensory environment



Red Light Interventions

- Weighted vests
- Snug vests



GREEN LIGHT INTERVENTIONS

Ayres Sensory Intervention®

Ayres Sensory Intervention® (ASI®) is safe and feasible to implement, acceptable to parents and therapist, and therapists were able to implement protocol with adequate fidelity (Schaaf, Benevides, Kelly, & Mailloux-Maggio, 2012). Therapists who used ASI® saw significant improvements in individualized goals and decreased mannerisms commonly associated with ASD (Watling & Hauser, 2015). ASI® has demonstrated success working as a pull-out intervention as well as in an integrated classroom environment to improve overall play skills (Dunbar, Carr-Hertel, Lieberman, Perex, & Ricks, 2012). Research shows support for the implementation of ASI® and demonstrated that children have shown improvement on the GAS (Goal Attainment Scale; Case-Smith, Weaver, & Fristad, 2014; Schaaf, Benevides, Kelly, & Mailloux-Maggio, 2012; Schaaf et al., 2014). ASI® demonstrated significant improvements in (Benson & Koomar, 2010; Schaaf, Hunt, & Benevides, 2012; Schaaf et al., 2014; Watling & Hauser, 2015):

- Sensory regulation
- Motor control
- Social function
- Academic achievement
- Visual processing
- Reading
- Math
- Sleep
- Positive behavior changes
- Decreased caregiver burden (Case-Smith & Bryan, 1999; Case-Smith, Weaver, & Fristad, 2014; Schaaf et al., 2014)
 - Improvements in self-care with assistance
 - Possible improvements in self-care functional skills
 - Possible improvement in adult interaction.
- Possible decrease in non-engagement behaviors, improvement in mastery play, and an increase in sensory perceptual behaviors (Case-Smith & Bryan, 1999; Schaaf et al., 2014).



A group program called Interdisciplinary Sensory-Enriched Early Intervention (ISEEI) developed for children with developmental delays in addition to sensory processing difficulties is a form of ASI® that maintains fidelity. This intervention showed significant improvement in cognition and expressive and receptive language for those with developmental delays and additional gains in gross motor skills for those with sensory processing difficulties only (Blanche, Chang, Gutierrez, & Gunter, 2016).

YELLOW LIGHT INTERVENTIONS

These interventions show promising results, but do not have enough support for this toolkit to recommend them without discretion. It is encouraged that teachers, parents, or therapists collect data if they use these interventions to ensure that the intervention is working and their children are making significant gains. Otherwise, it would be recommended to allocate time, energy, and resources to other interventions that have more support.

Single-Domain Sensory Based Interventions

These interventions do not cause harm and may have potential benefits to children with sensory difficulties. Further research is needed to confirm these intervention's significant effects, but they are worth trying (Case-Smith, Weaver, & Fristad, 2014):

- Swinging
- Deep pressure using a beanbag
- Rocking
- Jumping
- Crawling
- Chew tube
- Joint Compression
- Brushing
 - Did not have any effect on self-injurious behaviors (Case-Smith, Weaver, Fristad, 2014; Watling & Hauser, 2015)



Multi-Domain Sensory Based Interventions

Multisensory Sensory Behavior Interventions (Multisensory SBI) demonstrated significant improvements (Watling & Hauser, 2015):

- Autistic behaviors
- Cognition
- Enhanced sensory experiences
- Sustained focus
- Communication
- Decreased repetitive behaviors
- Communication (Preis & Mckenna, 2014):
 - Spontaneity
 - Complexity of utterance
 - Engagement in 75% of participants



These specific



approaches had mixed results showing no significant differences but possible improvements in responsiveness (Case-Smith, Weaver, & Fristad, 2014; Watlin & Hauser, 2015). Examples of Multisensory Based Interventions include:

- Swinging or bouncing on a ball before an activity
- Dynamic seating
 - Therapy ball chairs had mixed results showing either no consistency with results, but a single study using individually fitted therapy ball seating indicated children using therapy balls displayed improvement in engagement and in-seat behaviors (Case-Smith, Weaver, & Fristad, 2014; Watlin & Hauser, 2015).

Modifications to the Sensory Environment

A study of ***[Define what this intervention is] Improved (Watling & Hauser, 2015):

- Attention
- Emotional Control
- Classroom Participation

RED LIGHT INTERVENTIONS

These interventions are not recommended because they did not show significant improvement or negative outcomes associated with the intervention did not outweigh the potential benefits.

Snug Vests/Weighted Vests (Watkins & Sparling, 2014)

A singular intervention showing possible improvements in attention stereotypic behaviors, but all other research demonstrated no improvements or negative outcomes associated with using weighted vests (Case Smith, Weaver, & Fristad, 2014; Watling & Hauser, 2015).



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