

The Effects of Sensory Integration for Children with Autism Spectrum Disorders

Purpose & Research Question

- The purpose of this paper is to review the evidence-base for Sensory Integration Therapy. This will be done by evaluating the studies testing the effectiveness of SIT for improving functional behaviors and social-communication skills in children with autism.

Abstract

- Autism Spectrum Disorder (ASD) is more widely understood, but identifying the most effective treatment method is still unknown.
- 42 – 88%** of this population have *Sensory Processing Disorder*, or a difficulty receiving information from senses and responding appropriately (Pfeiffer et al., 2011; Smith-Roley et al., 2015).
- Range of low to significant effects from SIT show there is a need for more research and critical analysis of findings

Understanding how individuals respond to sensory input and their specific needs will allow therapists to better support the child's development of social-communicative behaviors and functionality

Change in Terminology → Change in Treatment

Term	Definition
Ayres Sensory Integration™ (ASI)	<ul style="list-style-type: none"> ASI is a clinic and play-based method that uses active engagement in sensory-rich activities to elicit adaptive responses and improve the child's ability to successfully perform and meet environmental challenges (Watling et al., 2015) Technique that promotes neurophysiological processing of sensory information through a variety of sensation mediums (primarily vestibular, proprioceptive, and tactile) to foster sensory responsiveness and functional behavior 10 essential elements of the approach to distinguish it from others (see Table 1 from Parham et al., 2007), including aspects of: 'Just-Right' Challenge, Adaptive Response, Active Engagement, and Child-Directed (Schaaf & Miller, 2005)
Sensory Integration (Therapy) or SI/SIT	<ul style="list-style-type: none"> Clinic-based intervention utilizing play activities and sensory-enhanced interactions that elicit the child's adaptive responses (Case-Smith et al., 2015) and improve the central nervous system's ability to plan and organize behavior (Parham et al., 2007) Uses gross-motor activities that engages the child to participate, while also challenging their ability to process sensory information and use motor planning skills
Sensory – Based Intervention	<ul style="list-style-type: none"> Adult-directed sensory modalities that are applied to the child to improve their behaviors association with modulation disorder (Case-Smith et al., 2015) Involve less active engagement of the child but provide a single sensory input (deep pressure, rocking, etc.) within daily routines to assist with self-regulation
Sensorimotor Activities	<ul style="list-style-type: none"> Sensory-related activities implemented within typical classroom routine or school-day events to provide sensory rich-environment and promote increased participation or play skills Consisted of 3 sensory inputs: Vestibular (obstacle course, gym/playground equipment), Proprioceptive (body-sock, small trampoline), and Tactile (various textures and materials to manipulate – bubble wrap, putty/play dough, shaving cream, etc.) (Dunbar et al., 2012)
Sensory Stimulation	<ul style="list-style-type: none"> Use of one type of sensation applied directly to the individual (deep pressure, rocking, etc.) to elicit a behavioral change or enable the nervous system to better process and respond to sensory stimuli (Hodgetts & Hodgetts, 2007; Reed, 2016) Enable the nervous system to better process and modulate incoming sensory information, so the individual is able to focus on relevant stimuli and respond appropriately

Results

Total of 9 studies reviewed with common themes in how SIT was used to improve functioning ability include:

Persistent motor movements in an attempt to regulate low or high arousal: rocking, hand flaps etc.	Social interactions with peers or ability to remain involved in an activity can limit performance	Ability to express wants and needs verbally or with gestures and initiate communicative acts
Repetitive Behaviors	Social Participation & Engagement	Communication

- Found decreased amount of atypical mannerisms, and some improvements in response to stimuli and greater independence
- Increased attention in play or with peers and 'just right' challenge in SIT fosters active participation
- One study found increased spontaneous verbalizations and utterance complexity

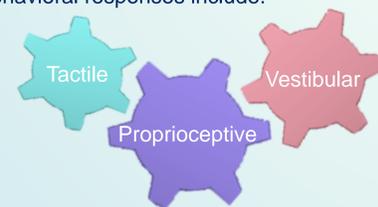
Introduction

Autism Spectrum Disorder is a developmental disorder typically characterized by core deficits in social skills, communication abilities and atypical patterns of behavior (American Psychiatric Association, 2013)

- Currently this disorder is seen in 1 out of 59 children (Baio, Wiggins, Christensen et al., 2018)

What is Sensory Integration

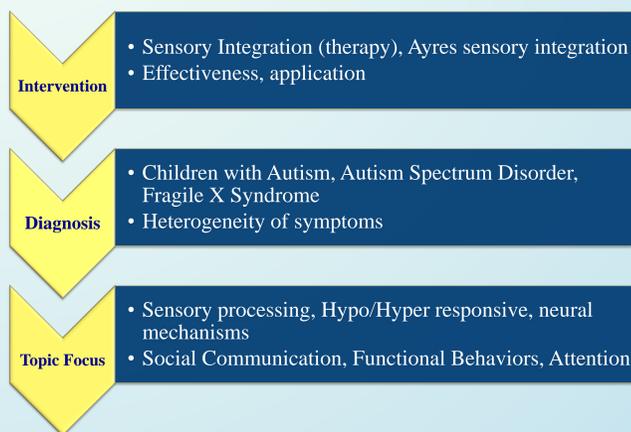
- A multimodal processing system for retrieving and forming perceptions about one's surroundings to effectively function within the environment (Mauer, 1999)
- Developed by Dr. A. Jean Ayres in 1972:
 - Important senses to strengthen nervous system to maintain attention and promote learning of adaptive behavioral responses include:



- Sensory Integration Therapy: established in 1972 to promote learning of adaptive responses, organized behavior and engagement in activities of daily living (Parham et al., 2007; Smith-Roley et al., 2007, p. 2-3)
 - Activities like swinging, bouncing on a ball, etc.

Subjects, Methods & Analysis

- Electronic search of six databases to identify literature relevant to the topic:
 - ASHA Journal
 - ASHA SIG Perspectives
 - PubMed
 - AOTA
 - Google Scholar
 - Science Direct



- Exclusion Criteria:
 - Studies involving different forms of sensory integration therapy, not consistent with the original method
 - i.e. Sensory Diet, Sensory-based, Stimulation, etc.
 - Other diagnosis areas: children's aphasia, articulation, sensory-processing disorder (SPD)

Current Research Focus

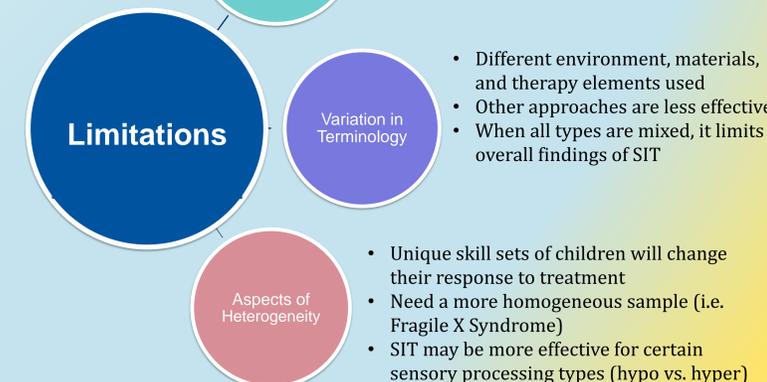


Conclusions

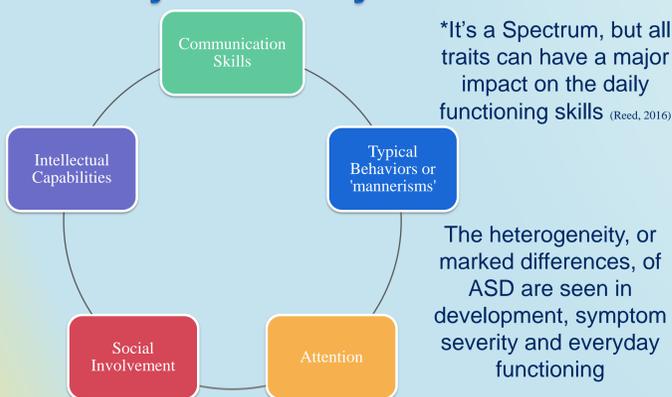
- Mixed findings in the effectiveness of Sensory Integration for children with autism, but minimal changes to research could improve efficacy and expand use of SIT to other disciplines
- Important to consider sensory processing as these skills help build a foundation for learning and promote development of social-communication & functioning in daily activities

Directions for Future Research

- Small Sample Sizes
 - Single-subject or small group – not representative of different qualities to generalize to whole population
 - Increase size & quality to improve efficacy

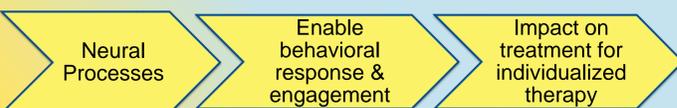


“When you have met one child with autism, you have only met one.”



Sensory Processing: function of the central nervous system (CNS) to take in and code information from our surroundings

- The brain's neural systems differ in children with ASD than typically developing kids, which cause the atypical *hypo-sensitive*, *hyper-sensitive* or *sensory-seeking* responses (Boyd et al., 2010; Thye et al., 2017)



Principle	Description
Just Right Challenge	The therapist creates playful activities with achievable challenges; the activities incorporate a challenge but the child is always successful.
The Adaptive Response	In response to the Just Right Challenge, the child adapts their behavior with new and useful strategies, thus furthering development
Active Engagement	The therapist's artful creation of challenging, yet playful, sensory-rich environments entice the child to participate actively in play; the methods of play incorporate new and advanced abilities that increase the child's repertoire of skills and processing.
Child Directed	The therapist constantly observes the child's behavior and reads their behavioral cues, thus following the child's lead or suggestions. The therapist uses the child's cues to create enticing, sensory-rich activities.

(Schaaf & Miller, 2005)