



Sensory Integration:

A Companion to the NCAEP Report

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This white paper was created as a companion document to a larger systematic review of evidence-based intervention practices (EBPs) for children and youth on the autism spectrum (see Hume et al, 2020; Steinbrenner et al., 2020; <https://go.unc.edu/FPG-NCAEP-Report-2020>). In that review, three randomized group design studies documented the efficacy of Sensory Integration (SI), which qualified SI as a new EBP. SI and associated treatment terminology have various understandings across the field and is often inadequately defined clinically or in the research literature. Thus, the objectives of this white paper are to: (1) clearly define the Sensory Integration treatment for which we found evidence in our review, and (2) clarify recommendations for educators based on our findings.

Definition of Sensory Integration

Sensory Integration, as originated by A. Jean Ayres, is a theory and practice that targets a person's ability to process and internally integrate sensory information from their body and environment. Sensory information may be visual, auditory, tactile, proprioceptive, and/or vestibular in nature. SI uses individually tailored activities that utilizes "just right" challenges to an individual's existing patterns of sensory processing and motor planning and encourage movement and organization of self in time and space. SI incorporates specialized equipment and materials in purposeful and playful activities in order to improve adaptive behavior. SI is implemented by therapists with specialized training, most often occupational therapists (OT) and takes place in specially designed clinical settings that offer a safe and sensory-rich experience.

Sensory Integration (Ayres, 2005), has also been referred to in the literature as "SI therapy as originated by A. Jean Ayres," "classical sensory integration," or "Ayres Sensory Integration. (Roberts et al., 2007; Smith Roley et al., 2007)."

The Sensory Integration (Ayres, 2005) for which we found evidence involves:

- Active engagement of the child
- Naturalistic intervention approaches for arousal, attention, motor planning including arrangement of the intervention environment
- Individualized treatment that is one-on-one with a trained therapist
- Clinic-based services
- Time intensity - multiple treatment sessions within a week
- Treatment delivered by occupational therapists who are trained in this approach
- Treatment of children with autism who have clinically significant sensory processing dysfunction. Note that not all children with autism have these challenges and therefore, SI would not be appropriate for all children with autism.

Practitioners and researchers at times define individual interventions or practices and Ayres Sensory Integration synonymously, which they are not. These practices, which do not meet the criteria for evidence-based include:

- Use of specific equipment for passive stimulation like brushing protocols, swings, weighted vests, squeeze machines, and weighted blankets
- Sensory diets
- Use of a sensory gym
- Touch therapy
- Sensory-motor intervention
- Auditory Integration Therapy

The systematic review revealed insufficient evidence for these or any other sensory-based intervention practices.

Use of Our EBP Review in Practice:

Ayres SI is only one of several ways to address a child's sensory needs. Since Ayres SI requires specific training, equipment, and tools, it may be necessary for practitioners to consider other EBPs when the training and tools are not available. For example, antecedent-based intervention (an EBP) may be used to address an aversive sensory experience for a child, like visual, auditory, or tactile elements in the environment.

Recommendations for Educators:

- Ayres SI does not have evidence for and is not currently appropriate for implementation in a classroom setting. Though an OT trained in this approach may address sensory concerns in the classroom, classical SI therapy takes place in clinical settings.
- Ayres SI is a specialized intervention delivered by therapists, primarily OTs, but some SLPs and PTs have been trained.
- Educators and caregivers are not qualified or expected to independently deliver Ayres SI treatment to children with autism, though may be asked to implement certain SI-related activities under the direction and training of an OT.
- Treatment for sensory needs for children with autism should be considered as part of an interdisciplinary team that includes an occupational therapist. Ayres SI is one possible treatment option, but other EBPs identified in the review can also address sensory needs.

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