

Frequently Asked Questions About Ayres Sensory Integration®

What is sensory integration or Ayres Sensory Integration®?

Sensory integration is the process by which people register, modulate, and discriminate sensations received through the sensory systems to produce purposeful, adaptive behaviors in response to the environment (Ayres, 1976/2005). The sensory systems we depend on for input include vision, auditory, gustatory (taste), olfactory (smell), tactile (touch), proprioceptive (joint position sense), and vestibular (balance and movement). Effective integration of these sensations enables development of the skills needed to successfully participate in the variety of occupational roles we value, such as care of self and others, engagement with people and objects, and participation in social contexts. The therapeutic approach of sensory integration was originally developed by A. Jean Ayres, PhD, OTR, and is formally known as Ayres Sensory Integration® (ASI; Ayres, 1989). ASI® includes the theory of sensory integration, assessment methods to meas-

ure sensory integration, and a core set of essential intervention constructs that can be utilized to intervene with clients who have difficulty processing sensory information.

How does sensory integration affect occupational performance?

As children grow, they typically develop the refined ability to appropriately register, modulate, and discriminate sensory information to support the development of effective emotion regulation, social skills, play skills, and fine motor and gross motor skills. Problems effectively integrating sensation can limit a child's ability to attend to tasks, perform coordinated motor actions, plan and sequence novel tasks, develop social relationships, manage classroom demands, perform self-care tasks, and participate in family activities. When problems in processing sensory information interfere with the child's ability to perform or participate in age-appropriate activities of daily life or "occupations," occupational therapy using an ASI® approach can help to address these concerns.



When using an ASI® approach, therapists rely on their understanding of the dynamic interactions among all the sensory systems to understand the underlying reasons why a child might be struggling with the attainment of skills to support his or her occupational engagement.

How many children have problems with sensory integration?

According to available research findings, it is estimated that 40%–80% of children (Baranek et al., 2002) and 3%–11% of adults (Baranek, Foster, & Berkson, 1997) with developmental disabilities also have significant sensory processing difficulties. In addition, sensory processing difficulties are estimated to occur in 10%–12% of individuals in the general population who have no identified diagnostic condition (McIntosh, Miller, Shyu, & Hagerman, 1999).

Are sensory integration deficits known to be associated with any specific diagnoses?

Although a variety of children may benefit from occupational therapy using an ASI® approach, the children who are most typically referred for intervention include children ages birth through adolescence who are struggling academically but who do not have a clear diagnosis, as well as those children with such specific diagnoses as autism spectrum disorder, learning disability, nonverbal learning disability, developmental delay, ADHD [attention deficit hyperactivity disorder], regulatory disorder, and developmental coordination disorder.

How does a practitioner determine whether a child could benefit from occupational therapy using ASI®?

When a child is referred for an occupational therapy evaluation, the occupational therapist will rely on a variety of strategies to assess the issues underlying the expressed concerns. If sensory processing problems are suspected, the therapist may use specific ASI® evaluation methods including observation of the child in the natural setting, caregiver and teacher interviews, standardized testing, and structured clinical observations to determine the specific ways in which disordered use of sensation is interfering with the child's functional performance. When sensory integration deficits are suspected, a prac-

itioner with specialized training can administer the Sensory Integration and Praxis Tests (SIPT; Ayres, 1989) to determine the specific areas of sensory integration that are problematic for the child. If the evaluation results indicate that the child is having underlying problems processing sensory information, the occupational therapist would recommend therapy using an ASI® approach.

What are the Sensory Integration and Praxis Tests?

The SIPT is a battery of 17 standardized tests originally developed by Dr. A. Jean Ayres to assess the sensory processing abilities of children ages 4 years, 0 months to 8 years, 11 months (Ayres, 1989). The SIPT is the gold-standard for assessing sensory integration and praxis problems (Schaaf & Smith Roley, 2006) and provides therapists with a unique perspective on the underlying causes for problems in occupational performance. The SIPT is a norm-referenced test and scores obtained reliably provide insight about how the child is performing relative to same-age peers who are typically developing.

How does a therapist receive training in the Sensory Integration and Praxis Tests?

Administration of the SIPT requires advanced training in sensory integration theory and certification in test administration and interpretation. Certification is available to occupational therapists, physical therapists, and speech-language pathologists through the University of Southern California and Western Psychological Services Comprehensive Program in Sensory Integration. The certification process includes a series of four courses addressing sensory



integration theory, SIPT administration, SIPT interpretation, and sensory integration intervention. Certified occupational therapy assistants and physical therapy assistants are eligible to attend the courses on theory and intervention if they are “sponsored” by an occupational therapist or physical therapist who has completed or is in the process of completing all the courses of the certification in sensory integration and who pledges to continue supporting the assistant upon completion of the courses.

For more detailed information about certification in sensory integration, please visit www.wpspublish.com or www.usc.edu/schools/ihp/ot/sensory_integration/

Is advanced training in sensory integration required for me to practice as an occupational therapist?

No. Throughout the United States and the international occupational therapy community, many occupational therapists specialize in evaluating problems in sensory processing and provide ASI® intervention. Although advanced training in ASI® is not required, most therapists well versed in assessing the discrete needs of children with sensory integration difficulties have received specialized training and mentoring in the ASI® theory, which may include use of the SIPT and other specific methods of evaluating sensory integration, as well as specific use of ASI® intervention techniques.

When would I use an ASI® approach?

ASI® intervention would be used when, after evaluating the child’s occupational performance deficits, the therapist concludes that one of the underlying causes for these performance deficits is a result of poor sensory processing. Best practice to address the sensory processing deficits utilizing an ASI® approach would include the essential core elements outlined in the next answer.

What does an occupational therapy session using ASI® look like?

Once the evaluation is complete, the occupational therapist will design an intervention plan aimed at enhancing the child’s unique ability to utilize sensation. This often includes careful use of vestibular, proprioceptive, and tactile sensory input to help the child develop a foundation of ordered sensory processing on which functional skills can be built. When the occupational therapist is using ASI® intervention techniques, several core elements will be evident. Some of these core elements include:

- the ASI® intervention occurs within an environment that is rich in tactile, proprioceptive, and vestibular opportunities and that creates both physical and emotional safety for the child;

- adaptive responses by the child to the environmental context, activity challenge, and unique sensory experiences are evident;
- all therapeutic activities are child directed and therapist supported;
- many therapeutic activities will challenge the child to develop ideas about what to do, allow the child to plan out these ideas and then successfully carry out the plans; and
- many therapeutic activities will promote postural control and balance, which may include the use of specialized equipment such as suspended apparatus, scooters, and balls (Parham et al., 2007).

What’s the difference between modulation and discrimination?

The theory of ASI® includes the constructs of sensory modulation and sensory discrimination. Both are typical processes that develop in the human nervous system and are encompassed under the umbrella of sensory integration abilities. **Modulation** refers to the child’s ability to grade responses to incoming sensory information and produce behaviors that are neither overreactive nor underreactive to the situation. **Discrimination** refers to the child’s ability to accurately perceive a sensation and utilize the sensation in a refined way to produce adaptive functional behaviors. Both of these processes are needed for the child to successfully develop the occupational performance skills that allow them to learn from and interact with the world in which they live.

Can children with sensory integration difficulties have problems at school?

Yes. All children rely on the ability to successfully modulate and discriminate the sensory information they are receiving from the world around them to develop the skills needed to successfully participate in occupational roles, including that of student. The school readiness skills that are influenced by sensory integration include, but are not limited to, the ability to sustain attention to task; follow directions (praxis on verbal command); complete a series of tasks independently (praxis); use in-hand manipulation skills; demonstrate hand-writing skills including grasp, visual tracking, and visual praxis skills; use postural control to maintain an upright sitting position at a desk or on the floor; and demonstrate the gross motor skills needed to support play during PE and recess activities.

Can I use ASI® as a frame of reference in my school-based practice?

Yes. Occupational therapists and occupational therapy assistants should feel empowered by their professional training, national Association standards of practice and scope of

practice within state licensure laws (where applicable) to independently make decisions regarding service provision without the need for permission to provide intervention using a particular frame of reference. Therapists who utilize best practice become adept at moving across frames of reference, depending on the needs of the client, and are able to clearly articulate why one frame of reference is needed in a particular situation. Therapists who practice within the school setting can, and should when appropriate, specifically provide ASI® to affect the school performance of their clients.

How can I use ASI® as a frame of reference in my school-based practice?

Delivery of occupational therapy utilizing ASI® often includes careful use of vestibular, proprioceptive, and tactile sensory input to help the child develop a foundation of ordered sensory processing on which to build the functional skills that are missing. At the core of this therapeutic approach are environments and interventions that support the child's active participation in vestibular, proprioceptive, and tactile experiences and activities reflective of these needs. Within the schools and under the Individuals with Disabilities Education Improvement Act of 2004 (IDEA; Public Law 108-446), therapists promote a student's ability to access, participate, and make progress within the academic and nonacademic curriculum. Service delivery should be individualized and based on the needs of the student. A variety of service models, including service to the child and on behalf of the child, may include individual, small group, and/or whole classroom intervention. At times the sensory rich, natural environments in the school, such as the cafeteria, playground and gym, may serve as environments within which occupational therapy using the ASI® frame of reference is provided. Therapists who practice within school settings should advocate for the appropriate environment to best meet the desired outcomes or team-based goals within the least restrictive environment (LRE). When utilizing an ASI® frame of reference for intervention in the school, the therapist should make recommendations for service that have educational relevance and address the child's ability to fulfill his or her role as a student. To meet these goals and under certain circumstances, the intervention may need to take place outside of the classroom in a one-to-one situation. In addition to direct service, therapists can provide classroom modifications and sensory diets to be implemented by the teacher and classroom staff to facilitate the child's ability to access the curriculum.

What does the term *sensory diet* mean?

Within ASI®, a sensory diet refers to an individualized set of sensory-based activities in which the child is encouraged to participate throughout the day. In the same way that healthy

eating habits are characterized by feeding our bodies the nutrients we need, a sensory diet "feeds" the underlying sensory needs of the child. The child may need access to activities that incorporate movement, touch, or proprioception to a greater degree than is typically available throughout the average day of a child. The sensory diet is developed and overseen by the therapist to ensure that the individual sensory needs of the child are respected and nurtured.

Can ASI® be helpful for adolescents or adults? Is there a cutoff age for treatment?

Advances in neuroscience reveal that plasticity in the nervous system exists throughout adulthood (Elman et al., 1998). Clinical reports from adults who have participated in ASI® intervention document improvements in motor skills, self-esteem, and social participation (Ayres, Erwin, & Mailloux, 2004). Intervention may look different for older persons in order to address specific occupational role performance issues as they occur in adolescence and adulthood.

What evidence exists to support the use of ASI® in occupational therapy?

Sensory integration is the subject of ongoing research within the field of occupational therapy. A number of recent studies provide support for the use of ASI® as an intervention to improve occupational performance (e.g., Linderman & Stewart, 1999; Miller, Coll, & Schoen, 2007; Parham, 1998; Schaaf & Nightlinger, 2007).

How do I locate a therapist with the specialized knowledge and skills reflective of an understanding in ASI®?

Western Psychological Services maintains an active voluntary list of therapists who have successfully completed the series of courses and learning experiences required for certification in sensory integration. Visit the "SI Certified Therapists" area at www.wpspublish.com.

Where can I find additional resources on ASI®?

In addition to the Web sites that have already been referenced, additional information about ASI® can be obtained by visiting the Sensory Integration Global Network at: www.siglobalnetwork.org

Please refer to the AOTA Fact Sheet on Sensory Integration, which can be found at: <http://www.aota.org/Consumers/WhatisOT/FactSheets.aspx>

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AOTA® The American Occupational Therapy Association, Inc.

For more information, contact the American Occupational Therapy Association, the professional society of occupational therapy, representing more than 37,000 occupational therapists, occupational therapy assistants, and students working in practice, science, education, and research.

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