

Sensory Processing Interventions

This is an alternate version of the characteristics overview chart on the next page. It is provided for accessibility.

Verbal skills

- Nonverbal
- Mixed
- Verbal

Grade Level

- PK
- Elementary
- Middle/High


Cognitive Level

- Classic
- High Functioning

Areas Addressed

- Behavior

Sensory Processing Interventions

 Verbal Skills	Grade Levels	Cognitive Level	Areas Addressed
<input checked="" type="checkbox"/> Nonverbal	<input checked="" type="checkbox"/> PK	<input checked="" type="checkbox"/> Classic	<input type="checkbox"/> (Pre)Academic/ Cognitive/Academic
<input checked="" type="checkbox"/> Mixed	<input checked="" type="checkbox"/> Elementary	<input checked="" type="checkbox"/> High Functioning	<input type="checkbox"/> Adaptive Behavior/ Daily Living
<input checked="" type="checkbox"/> Verbal	<input checked="" type="checkbox"/> Middle/High		<input checked="" type="checkbox"/> Behavior
			<input type="checkbox"/> Communication/Speech
			<input type="checkbox"/> Social/Emotional



Brief Introduction

A growing body of evidence is showing that young people with autism (AU) are challenged by a variety of sensory processing deficits (Case-Smith, Arbesman, & Scheinholtz, 2008; Dunn, Myles, & Orr, 2002; Myles et al., 2004). Results of recent research indicate that children can be hyper- and/or hypo-sensitive to any one or more of the seven sensory systems of the body (tactile, vestibular, proprioception, visual, auditory, gustatory, and olfactory). These processing deficits are often linked to disruptive behaviors.



Description

Occupational therapists are trained to evaluate sensory processing capabilities and formulate individualized plans of therapeutic interventions that can then be carried out by teachers, parents, and other support personnel. It is important to remember that sensory processing interventions are still being examined for efficacy on young people with AU, so they should only be initiated under the supervision of trained professionals.

Slant Board and Seat Cushion to Help with Sensory Integration



From Henry, S. Used with permission.

Movement Break in the Classroom



From Henry, S. Used with permission.

Student Writing in Salt to Work on Fine-Motor and Tactile Issues










From Henry, S. Used with permission.

Interventions that are frequently seen in the school setting include therapy balls as alternative seating, slant boards, weighted vests, gross-motor exercise or use of occupational therapy equipment in a supervised setting, and environmental modifications that allow students to be more successful in the classroom. Little controlled research has been conducted on sensory interventions and additional research is needed before definitive conclusions can be drawn.

Interventions

The following figure briefly describes the sensory areas, their location, their function, and interventions that an occupational therapist or other professional trained in sensory integration can provide.

Sensory Systems, Location, Function, and Intervention Samples

System	Location	Function	Sample Interventions
Tactile (touch) 	Skin – density of cell distribution varies throughout the body. Areas of greatest density include mouth, hands, and genitals.	Provides information about the environment and object qualities (touch, pressure, texture, hard, soft, sharp, dull, heat, cold, pain).	Weighted vests, weighted blanket, resistive putty, handheld fidgets, holding something cold, writing in sand or salt
Vestibular (balance) 	Inner ear – stimulated by head movements and input from other senses, especially visual.	Provides information about where our body is in space, and whether or not we or our surroundings are moving. Tells about speed and direction of movement.	Jumping on a trampoline, hanging upside down on a jungle gym, sitting on a therapy ball, rocking on a rocker, swinging on a swing, twirling and spinning
Proprioception (body awareness) 	Muscles and joints – activated by muscle contractions and movement.	Provides information about where a certain body part is and how it is moving.	Movement (i.e., handing out books, running an errand), exercise, weighted backpack, pushing a cart, wheelbarrow walk, seat cushion
Visual (sight) 	Retina of the eye – stimulated by light.	Provides information about objects and persons. Helps us define boundaries as we move through time and space.	Sunglasses, cap with bill, highlighting pen, elevated slant board, lights turned off, study carrel
Auditory (hearing) 	Inner ear – stimulated by air/sound waves.	Provides information about sounds in the environment (loud, soft, high, low, near, far).	Earplugs, headphones, music, chimes, squeeze toys, books on tape, talking calculator
Gustatory (taste) 	Chemical receptors in the tongue – closely entwined with the olfactory (smell) system.	Provides information about different types of taste (sweet, sour, bitter, salty, spicy).	Eating crunchy foods, blowing bubbles, drinking cold water, playing a musical instrument, sucking a thick liquid through a straw
Olfactory (smell) 	Chemical receptors in the nasal structure – closely associated with the gustatory system.	Provides information about different types of smell (musty, acrid, putrid, flowery, pungent).	Scented pens or markers, scratch-and-sniff stickers, scented candles, noseplug

From Myles, B. S., Cook, K. T., Miller, N. E., Rinner, L., & Robbins, L. A. (2000). *Asperger Syndrome and sensory issues: Practical solutions for making sense of the world*. Shawnee Mission, KS: Autism Asperger Publishing Company. Used with permission.



Brief Example

Chu, a 12-year-old with classic AU, often exhibited behavior challenges. A functional assessment determined that when he entered a novel environment these behaviors were likely to occur. Interventions included (a)

music provided through headphones to help him remain calm and (b) a handheld fidget to serve as a distraction. Data showed that when Chu entered new environments with these interventions, his behavior challenges decreased.



Summary

Sensory interventions initiated by an occupational therapist can impact the functioning of individuals with AU.



Research Table

# of Studies	Ages (years)	Sample Size	Area(s) Addressed	Outcome
45*	3-adult	761	Weighted vests, therapy balls as alternative seating, sensory integration therapy, auditory integration therapy, Snoezelen multisensory environments, sensory and motor interventions	Mixed

*Note: This number includes results from three reviews.



Studies Cited in the Research Table

- Morrison, E. (2007). A review of research on the use of weighted vests with children on the autism spectrum. *Education, 127*, 323-327.

While many occupational therapists advocate the use of weighted vests, there is little evidence for the effectiveness of this intervention or for the proper procedures associated with the use of a weighted vest. Three empirical investigations that included 12 students with AU showed that the use of weighted vests for young people with AU is primarily based on the therapist's observation and experience.
- Schilling, D. L., & Schwartz, I. (2004). Alternative seating for young children with autism spectrum disorder: Effects on classroom behavior. *Journal of Autism and Developmental Disorders, 34*, 4, 423-432.

This study was conducted with four preschool-age children with AU who were allowed to sit on therapy balls while working in the classroom. Each student could move or use the ball as they saw fit, in some cases bouncing vigorously and in others rocking back and forth gently. Therapy balls were recommended to supplement the educational curriculum, not replace it. Students made improvements in on-task behaviors and engagement.
- Baranek, G. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders, 32*, 397-422.

This review summarized the sensory and motor difficulties often manifested in AU and evaluated the scientific basis of 29 studies of 757 individuals with AU on sensory and motor interventions used with this population. Recommendations for educational settings included developmentally appropriate sensory-motor experiences, consultation with knowledgeable professionals, environmental modifications based on documented sensory processing or motor deficits, individualized approaches to application of interventions, and integration of interventions into daily routines in a natural setting. The authors suggest a conservative approach to sensory-based interventions by trained professionals using accepted data collection and evaluation methods.

4. Dawson, G., & Watling, R. (2000). Interventions to facilitate auditory, visual and motor integration in autism: A review of evidence. *Journal of Autism and Developmental Disorders*, 30, 415-421.
Evidence is reviewed on the prevalence of sensory and motor abnormalities in AU and the effectiveness of three interventions – sensory integration therapy, traditional occupational therapy, and auditory integration training. Four objective outcome studies of sensory integration therapy were identified, but their sample sizes were so small that no firm conclusions regarding efficacy could be made. No empirical studies of traditional occupational therapy in AU were noted. Five studies of auditory integration training were found. Results of these studies provided no, or at best equivocal, support for the use of auditory integration training in AU. (These studies were also reviewed in the aforementioned studies).



References

- Baranek, G. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders*, 32, 397-422.
- Case-Smith, J., Arbesman, M., & Scheinholtz, M. (in press). Evidence based review on interventions for autism used in occupational therapy. *The American Journal of Occupational Therapy*.
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- Dunn, W., Myles, B. S., & Orr, S. (2002). Sensory processing issues associated with Asperger Syndrome: A preliminary investigation. *The American Journal of Occupational Therapy*, 56(1), 97-102.
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- Schilling, D. L., & Schwartz, I. (2004). Alternative seating for young children with autism spectrum disorder: Effects on classroom behavior. *Journal of Autism and Developmental Disorders*, 34, 4, 423-432.



Resources and Materials

- Kranowitz, C. S., Szklut, S., Balzer-Martin, L., Haber, E., & Sava, D. I. (2002). *Answers to question teachers ask about sensory integration: Forms, checklists, and practical tools for teachers and parents*. Las Vegas, NV: Sensory Resources.
 - Oden, A. (2006). *Ready bodies: Learning minds*. Spring Branch, TX: Ready Bodies, Learning Minds.
 - Williams, M. S., & Shellenberger, S. (1996). *How does your engine run? A leader's guide to self-regulation*. Albuquerque, NM: Therapy Works.
 - Williams, M. S., & Shellenberger, S. (2001). *Take five: Staying alert at home and school*. Albuquerque, NM: Therapy Works.
- These materials all provide information on how to address sensory processing needs in a student's program.