

Special Interest Section Quarterly

Sensory Integration

Sponsored in part by Knit-Rite, Inc.
Volume 32, Number 1 • March 2009

Published by The American Occupational Therapy Association, Inc.

The History, Development, and Purpose of the Sensory Integration Global Network

■ Elisabeth Soechting, MA, OT, Tara J. Glennon, EdD, OTR/L, FAOTA, Heather Miller-Kuhaneck, MS, OTR/L, Brian Erwin, Diana A. Henry, MS, OTR/L, Colleen Basaraba, OTR, Zoe Mailloux, MA, OTR/L, FAOTA, and Susanne Smith Roley, MS, OTR/L, FAOTA

The Sensory Integration Global Network (SIGN) is a Web-based resource developed by a loosely structured group of international volunteers dedicated to protecting the integrity and promoting the work of Ayres Sensory Integration® (ASI). SIGN provides an international resource to educate the public and professionals about A. Jean Ayres and sensory integration theory and practice to help them to discriminate between ASI and other interventions, especially those that use similar descriptors of improving sensory integration and sensory processing.

This article aims to increase awareness of the existence of SIGN within the readership of the American Occupational Therapy Association's (AOTA's) Sensory Integration Special Interest Section. The persons working with SIGN hope that by informing the public about the trademark and exposing both the public and professionals to the underlying principles incorporated within the trademarked ASI approach, consumers will be able to make educated choices about the types of interventions they access. Additionally, the network hopes to assist practitioners by clarifying the terminology used when describing sensory integration practice.

The History of SIGN

At the 2003 AOTA Annual Conference & Expo, occupational therapy practitioners with expertise in sensory integration converged with common concerns about the proliferation of interventions using the words *sensory integration*, in either their name or their promotional materials that are inconsistent with principles proposed by A. Jean Ayres (1972). The use of the term *sensory integration* related to intervention strategies, both within and outside of occupational therapy, yields a concerning number of references to sensory integration interventions that use methods void of key occupational therapy principles, such as child-directed play or eliciting an adaptive response to promote engagement in occupation (Glennon & Smith Roley, 2007; Smith Roley & Glennon, 2006). Part of the controversy stemmed from the many publications and intervention programs at the time, which did not truly reflect the principles of Ayres's work, but nonetheless had been mistakenly associated with sensory integration (Parham et al., 2007). The Baker/Ayres Trust, therefore, trademarked the term *Ayres Sensory Integration* as a mechanism of protecting the integrity of this specific definition and practice of sensory integration (Smith Roley, Mailloux, Miller-Kuhaneck, & Glennon, 2007).

A second concern raised during these discussions included the growing number of parents seeking occupational therapy sensory-based services through their informal parent networks and Internet searches, only to be confused by the multitude of approaches claiming to be sensory integration. Practitioners involved in these discussions believed that parents should have accurate information available to assist in understanding sensory integration as developed by Ayres, including how it should be applied within the profession of occupational therapy and how it differs from some of the other promoted interventions.

Third, several practitioners from countries outside of the United States expressed concerns about non-occupational therapy professions claiming sensory integration as a psychoeducational tool and actively lobbying to limit occupational therapy's involvement in the assessment and intervention of children with sensory integration deficits. For example, representatives from an Austrian sensory integration organization described the situation of sensory integration in the German-speaking countries: Educators and teachers sell their sensory-based approaches as sensory integration, and a growing number of course programs are offered to train preschool teachers and teachers as "SI therapists." Also noted was a concern regarding the proliferation of literature written by parents, psychologists, and teachers that explains "sensory integration" without reinforcing the essential link between sensory integration theory and occupational therapy practice perspectives.

Finally, occupational therapy practitioners from the United States and abroad expressed a need for easily accessed references that provide a comprehensive, yet succinct summary of the research supporting ASI theory and practice. Practitioners requested a place to obtain information that they could share with their colleagues to support recommendations of sensory integration as a frame of reference for treatment.

After the initial meetings, flurries of coast-to-coast and international e-mails ensued. Over the next few years, meetings were convened twice annually at the AOTA Annual Conference & Expo and at other conferences, featuring content related to sensory integration. The interest in the SIGN project grew among practitioners in the United States and from various countries around the world. The discussions often included University of Southern California/Western Psychological Services course instructors, international occupational therapy practitioners with expertise in sensory integration, and representatives from corporations involved in sensory integration-related products. Information from all these discussions was shared with the family of A. Jean Ayres, who oversee her legacy and estate. This group of practitioners, scholars, and researchers created the eventual concept of SIGN, volunteering their time to provide a reputable source of information about ASI for the international community. The group's commitment is to continue to provide relevant and accurate information through the easily accessible SIGN Web site in order to promote ASI.

The International Committee

The SIGN International Committee that formed in 2004 intends to (1) alert the global community to SIGN; (2) promote ASI internationally; (3) provide the international community with a better understanding of ASI; (4) remove the barrier of physical distance through the use of a Web-based network; (5) connect and support occupational therapy practitioners globally who practice within the realm of ASI; (6) encourage all practitioners to monitor their own practice, ensuring that their intervention is true to the fidelity measures of ASI; and (7) collaborate with international community members who would be interested in volunteering their time to translate the information on the SIGN Web site into a variety of languages.

The Web Site

SIGN has developed a Web-based resource (www.siglobalnetwork.org) dedicated to protecting the integrity and promoting the body of work of sensory integration as originally designed by Ayres. Still in its infancy, it is maintained by SIGN volunteers and currently provides information about Ayres, sensory integration theory, and the trademark; resources for professionals; summaries of relevant research; and, soon, parent resources and a place for global connections. Volunteers create the site's content, which is approved by majority e-mail "vote" of the SIGN committee members. The Web site allows no advertising, and SIGN will not link to any other organizations or promote or sponsor particular facilities or corporations.

Conclusion

Only when practitioners and consumers are provided with accurate, consistent, and reliable information regarding occupational therapy's concept of sensory integration as Ayres originally described it can educated decisions be made. Through the World Wide Web, information that once may have been obscured, taken years to discover, or remained simply unavailable in remote areas of the world is now at the fingertips of anyone with a computer. Thus, opportunities for information sharing extend beyond what has ever been experienced in the past. These opportunities allow SIGN to provide a link to practitioners, researchers, and scholars, assisting in research and promoting the growth of Ayres's theory and recognition of her work worldwide for the benefit of all clients. This link is particularly important as sensory-based deficits associated with a variety of pediatric diagnoses are increasing and consumers need to find reputable services for their families. For ongoing updates about the development of SIGN, visit the Web site. To become involved with a SIGN committee, contact one of the authors of this article. ■

Acknowledgments

We thank Brian Erwin for his diligence in obtaining the ASI trademark. We also thank Andy Roussey and University of Southern California/Western Psychological Services Comprehensive Program in Sensory Integration for its contributions during the creation of SIGN, as well as the following individuals for their assistance: Megan Alfheim (USA), Mustafa Ahmad (Jordan), Erna Blanche (USA), Anita Bundy (Australia), Ann Bridgewater (Hong Kong), Valerie Cribban (Ireland), Supaporn Chinchai (Thailand), Sharon Cermak (USA), Paivi Danner (Finland), Paulo Fernandes (Portugal), Fernanda Gali (Canada), Margarita Gonzalez (Columbia), Lindsay Hardy (UK), Kathy Inamura (USA), Hemant Nandgaonkar (India), Gustavo Reinoso (Argentina), Anni Sampsonidou (Greece), Sarinya Sriphet (Thailand), Clare Summers (New Zealand), Annemarie Van Jaarsveld (South Africa), Naomi Weintraub (Israel), and Missy Windsor (USA).

References

- Ayres, A. J. (1972). *Sensory integration and learning disorders*. Los Angeles: Western Psychological Services.
- Glennon, T. J., & Smith Roley, S. (2007). *Sensory integration: International network to support occupational therapy practice*. Paper presented at the 2007 American Occupational Therapy Association Annual Conference & Expo, St. Louis, MO.
- Parham, L. D., Cohn, E. S., Spitzer, S., Koomar, J. A., Miller, L. J., Burke, J., et al. (2007). Fidelity in sensory integration intervention research. *American Journal of Occupational Therapy, 61*, 216–227.
- Smith Roley, S., & Glennon, T. J. (2006). *International perspectives: Ayres Sensory Integration theory in occupational therapy practice*. Paper presented at the 2006 Congress of the World Federation of Occupational Therapists, Sydney, Australia.
- Smith Roley, S., Mailloux, Z., Miller-Kuhaneck, H., & Glennon, T. J. (2007). Understanding Ayres Sensory Integration®. *OT Practice, 12*(17), CE1–CE8.

Elisabeth Soechting, MA, OT, is Project Manager, Center for Management and Quality Assurance in Healthcare, Austrian Society for Sensory Integration, Oberzeller 1/Stg. 19, A-1030 Wien, Austria; office@sensorische-integration.at.

Tara J. Glennon, EdD, OTR/L, FAOTA, is Professor of Occupational Therapy, Quinnipiac University, Hamden, Connecticut.

Heather Miller-Kuhaneck, MS, OTR/L, is Clinical Assistant Professor of Occupational Therapy, College of Education & Health Professions, Sacred Heart University, Fairfield, Connecticut.

Brian Erwin is Successor Trustee, Franklin B. Baker/A. Jean Ayres Baker Trust, Santa Rosa, California.

Diana A. Henry, MS, OTR/L, is President, Henry Occupational Therapy Services, Inc., Glendale, Arizona.

Colleen Basaraba, OTR, is Owner/President, Occupational Therapy & Educational Consulting Services, Inc., Calgary, Alberta, Canada.

Zoe Mailloux, MA, OTR/L, FAOTA, is Director of Research and Administration, Pediatric Therapy Network, Torrance, California.

Susanne Smith Roley, MS, OTR/L, FAOTA, is Project Director, Occupational Science and Occupational Therapy, University of Southern California, Los Angeles, California.

Soechting, E., Glennon, T. J., Kuhaneck, H. M., Erwin, B., Henry, D. A., Basaraba, C., Mailloux, Z., & Smith Roley, S. (2009, March). The history, development, and purpose of the Sensory Integration Global Network. *Sensory Integration Special Interest Section Quarterly, 32*, 1–2.

Research Brief: Preschoolers' Sensory Preferences During Play

■ Lisa Mische Lawson, PhD, CTRS

Play is a child's primary occupation and the avenue through which children learn and explore their environment (Bundy, 2002). During play, children discover interests, learn to make decisions, develop independence, and begin to understand their environment. Research supports the idea that play and leisure

Sensory Integration

Special Interest Section Quarterly

(ISSN 1095-7250)

Chairperson: Renee Watling
Editor: Stacey Reynolds
Production Editor: Jennifer Hart

Published quarterly by The American Occupational Therapy Association, Inc., 4720 Montgomery Lane, Bethesda, MD 20814-3425; cjotsis@aota.org (e-mail). Periodicals postage paid at Bethesda, MD. POSTMASTER: Send address changes to *Sensory Integration Special Interest Section Quarterly*, AOTA, PO Box 31220, Bethesda, MD 20824-1220. Copyright © 2009 by The American Occupational Therapy Association, Inc. Annual membership dues are \$225 for OTs, \$131 for OTAs, \$75 for Student-Plus members, and \$53 for Standard Student members. All *SIS Quarterly*s are available to members at www.aota.org. The opinions and positions stated by the contributors are those of the authors and not necessarily those of the editor or AOTA. Sponsorship is accepted on the basis of conformity with AOTA standards. Acceptance of sponsorship does not imply endorsement, official attitude, or position of the editor or AOTA.

preferences may develop from an individual’s preferred patterns for sensory processing (Bundy, Shia, Qi, & Miller, 2007; Clifford & Bundy, 1989; Coplan, Prakash, O’Neil, & Armer, 2004). Because children tend to play longer (Tegano & Burdette, 1991; Van Alstyne, 1932) and exhibit higher play skills (Desha, Ziviani, & Rodger, 2003) when playing with toys of their choice, it is helpful for professionals to know what toys children prefer as they work with them to develop skills.

Background

Mische Lawson and Dunn’s (2008) recent study of preschool-aged children with typical development supports the notion that children’s play preferences are related to their patterns of processing sensory information. However, these authors’ toy categories were based more on the toys’ function than on their sensory qualities, which they note as a weakness of the study. The purpose of this research brief is to describe how secondary analysis of Mische Lawson and Dunn’s data further informs us about the sensory qualities of toys and how sensory qualities affect toy preferences.

Method

For Mische Lawson and Dunn’s (2008) original study, parents of 53 preschool-aged children (23 girls) completed a Sensory Profile for their child. Each child then was observed in his or her classroom for 5 minutes at a time on 5 different days for a total observation time of 25 minutes. During observations, researchers recorded the child’s body position, body movement, and toy preference using a 15-second partial-interval recording system. Interrater reliability was established by two independent raters (Mische Lawson & Dunn).

Results

To reanalyze the toy data according to sensory qualities, researchers developed a Toy Sensory Qualities Rating Sheet. Using pictures of 106 different toys, teachers and occupational therapists rated each toy’s sensory properties in the areas of auditory, visual, tactile, vestibular, and taste and smell sensations. They used a 4-point scale to rate the involvement of each sensory system when the toy is used in typical play (0 = no involvement, 1 = slight involvement, 2 = moderate involvement, 3 = intense involvement). To categorize the toys by sensory qualities, the mean rating was used as the summary score for each toy and object. The toys then were categorized by how much sensory stimulation they provided (very low to very high) during typical play. More of the toys fell into the very low to moderate categories, with fewer toys in the high and very high categories (Table 1).

To reanalyze the data, an analysis of variance was conducted with the children’s preferred toy category as the factor variable and

children’s total scores from the Sensation Seeking, Sensation Avoiding, Sensitivity, and Low Registration quadrants of the Sensory Profile as dependent variables (Dunn, 2001). Analysis revealed no significant differences in children’s sensory patterns and their toy preferences as categorized by sensory qualities (sensation seeking, $p = 0.239$; sensation avoiding, $p = 0.76$; sensory sensitivity, $p = 0.876$; low registration, $p = 9.60$).

Discussion

Because previous studies (Clifford & Bundy, 1989; Mische Lawson & Dunn, 2008) found differences in toy preferences according to children’s sensory processing patterns, it was anticipated that even stronger preferences would be found when toys were categorized by sensory qualities rather than by function. Several factors may explain why this hypothesis was not supported. First, to categorize the toys according to sensory qualities, the researchers rated the amount of involvement by sensory system. However, like many preschool classrooms, the toys did not make loud noises or have flashing lights. Differences in toy preference according to sensory qualities, therefore, may not have been found because not enough variation existed in the sensory features of the toys.

Alternately, it may not be the sensory features of the toys that are important, but the function of the toy that allows for variation in the level of sensory stimulation. For example, if the function of the toy is to build, the child must change body position as the structure changes, so perhaps the process of building is more important than the texture or color of the blocks. Additionally, this study did not observe whether children played alone or with others. If the function of the toy encourages social play, it may be the sensations provided by being with other children that are motivating. Future analysis of the data will involve looking for differences in children’s movement and activity levels when playing with different toys. Future research also should consider observing children’s social interactions as they play with different toys.

Conclusion

Occupational therapy practitioners continuously consider sensory processing and how it relates to everyday life. What is unclear about sensory processing and play is what aspects should be considered. This study suggests that perhaps it is not the sensory qualities of a toy itself, but the sensations provided by the function of a toy and the kind of play it facilitates that are most important. With knowledge of sensory systems, play theory, and child development, occupational therapists are well equipped to serve as consultants to parents, teachers, and even the toy industry about the development and selection of age-appropriate, sensory-rich toys. ■

Table 1. Sensory Qualities of Toys

Toy Sensory Category	Rating on Toy Sensory Qualities Rating Scale	Examples of Toys ^a
Very low	3.5–4.75	Paper towels, air, posters, plastic cage, bucket
Low	5.0–5.75	Pencils, matching games, flash cards, art stencils, beanbag animals, liquid wand, rubber snakes, pillows and blankets
Moderately low	6.0–6.75	Markers, crayons, stuffed toys, pinwheels, kaleidoscopes, books, calendars, buttons, textured puzzles, dominoes, cardboard bricks, play food
Moderately high	7.0–7.75	Multisensory toys (e.g., cubes with water and glitter), plastic camera, telephone, beads, 12-inch dolls, wooden toys, action figures, felt board, puppets, doll house and dolls, plastic toys, vehicles, wooden blocks, face-changing head, bubble wrap, chalkboard
High	8.0–8.75	Art projects, interlocking building blocks, floor puzzles, wooden track and train, kitchen, books on tape, beads and string, marble run, plastic buildings, dress-up clothes
Very high	9.0+	Play clay, painted pine cones, macaroni table

^aToys are listed from lowest to highest rating within each category.

References

Bundy, A. C. (2002). Play theory and sensory integration. In A. C. Bundy, S. Lane, & E. A. Murray (Eds.), *Sensory integration: Theory and practice* (2nd ed., pp. 227–240). Philadelphia: F. A. Davis.

Bundy, A. C., Shia, S., Qi, L., & Miller, L. J. (2007). How does sensory processing dysfunction affect play? *American Journal of Occupational Therapy, 61*, 201–208.

Clifford, J. M., & Bundy, A. C. (1989). Play preference and play performance in normal boys and boys with sensory integrative dysfunction. *Occupational Therapy Journal of Research, 9*, 202–217.

Coplan, R., Prakash, K., O'Neil, K., & Armer, M. (2004). Do you want to play? *Developmental Psychology, 4*, 224–258.

Desha, L., Ziviani, J., & Rodger, S. (2003). Play preferences and behavior of preschool children with autistic spectrum disorder in the clinical environment. *Physical & Occupational Therapy in Pediatrics, 23*(1), 21–42.

Dunn, W. (2001). The sensations of everyday life: Empirical, theoretical, and pragmatic considerations, 2001 Eleanor Clarke Slagle lecture. *American Journal of Occupational Therapy, 55*, 608–620.

Mische Lawson, L., & Dunn, W. (2008). Children's sensory processing patterns and play preferences. *Annual in Therapeutic Recreation, 16*, 1–14.

Tegano, D. W., & Burdette, M. P. (1991). Length of activity periods and play behaviors of preschool children. *Journal of Research in Childhood Education, 5*(2), 93–99.

Van Alstyne, D. (1932). *Play behavior and choice of play materials of pre-school children*. Chicago: The University of Chicago Press.

Lisa Mische Lawson, PhD, CTRS, is Assistant Professor, University of Kansas Medical Center, Occupational Therapy Education, Mail Stop 2003, 3901 Rainbow Boulevard, Kansas City, Kansas 66160; lmische-lawson@kumc.edu.

Mische Lawson, L. (2009, March). Research Brief: Preschoolers' sensory preferences during play. *Sensory Integration Special Interest Section Quarterly, 32*, 2–4.

Free Educational Kit
Visit www.smartknitkids.com

SmartKnitKIDS™

Seamless Sensitivity Socks

No Seams to Bug Ya!®
Patented process makes socks completely seam-free for sensitive little feet.

Reduces wrinkling and bunching
Form-fitting design for socks that "hug" the foot to prevent wrinkling or bunching and reduce irritation.

Comfortable Non-Binding Top

Keeps Feet Dry & Healthy



www.smartknitkids.com
SmartKnitKIDS™ is a brand of Knit-Rite, Inc.

No seams to bug ya!

ACCEPTED
AMERICAN
ACADEMY
ON
MEDICAL
ASSOCIATION

SIS-3006

IS

PERIODICALS
POSTAGE
PAID AT
BETHESDA
MD

The American Occupational
Therapy Association, Inc.
PO Box 31220
Bethesda, MD 20824-1220

OTA
®