Scope of Occupational Therapy Services for Individuals With Autism Spectrum Disorder Across the Life Course

The primary purpose of this paper is to define the role of occupational therapy and the scope of occupational therapy services available for individuals with autism spectrum disorder (ASD) to persons outside of the occupational therapy profession. In addition, this document is intended to clarify the role of occupational therapy with this population for occupational therapists and occupational therapy assistants.

Background

The American Occupational Therapy Association (AOTA; 2014c) strongly supports the right of all individuals to "have the same opportunities to participate in the naturally occurring activities of society" (p. S23). Occupational therapy practitioners[1] work collaboratively with individuals on the autism spectrum, their families, other professionals, organizations, and community members in multiple contexts to advocate for and provide a range of needed resources and services that support the individuals' ability to participate fully in life (Case-Smith & Arbesman, 2008; Kuhaneck, Madonna, Novak, & Pearson, 2015; Tanner, Hand, O'Toole, & Lane, 2015; Watling & Hauer, 2015a; Weaver, 2015). According to a study conducted by the Interactive Autism Network (2011), occupational therapy ranks second to speech–language pathology as the most frequently provided services for individuals with autism throughout the United States.

Prevalence data suggest that ASD currently affects approximately 1 in 68 children (Centers for Disease Control and Prevention, 2014), and the World Health Organization (WHO; 2013) estimates the prevalence of ASD to be 1 in 160 individuals worldwide. Other estimates of ASD diagnoses in the United States have suggested that these rates might be higher, with as many as 2% of children ages 6–17 years having a parent-reported diagnosis (Blumberg et al., 2013). These figures reflect a dramatic increase in the number of individuals living with ASD in the United States over the past 20 years.

ASD is the diagnosis used in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM;* 5th ed., American Psychiatric Association [APA], 2013) to describe a cluster of symptoms that range in type and severity and include (1) "persistent deficits in social communication and social interaction" and (2) "restricted, repetitive patterns of behavior, interests or activities" (p. 31). This diagnostic category combines a range of disorders, including autistic disorder, Asperger disorder, and pervasive developmental disorder–not otherwise specified, which were identified as separate diagnoses in the previous edition of the *DSM* (4th ed., text rev., APA, 2000).

Rather than using the term *autism spectrum disorder,* the Individuals With Disabilities Education Improvement Act of 2004 (IDEA; Pub. L. 108–446) uses the term *autism* as a disability category under which children might be eligible for special education and related services. IDEA regulations define *autism* as "a developmental disability significantly affecting verbal and nonverbal communication and social interaction generally evident before age 3 that adversely affects a child's educational performance." Other charac-

[1]The term *occupational therapy practitioner* refers to both occupational therapists and occupational therapy assistants (AOTA, 2013a). *Occupational therapists* are responsible for all aspects of occupational therapy service delivery and are accountable for the safety and effectiveness of the occupational therapy service delivery process. *Occupational therapy assistants* deliver occupational therapy services under the supervision of and in partnership with an occupational therapist (AOTA, 2014a).

teristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences (§300.8[c][1][i]).

Under Part B of IDEA, occupational therapy is a related service; under Part C, occupational therapy is a primary service. Thus, occupational therapy must be provided to children with autism if those services will help the child benefit from special education (§602[26][A]). Because educational classification and identification criteria vary considerably from state to state, readers are referred to specific state policies and requirements.

Occupational Therapy Domain and Process

Occupations are daily life activities that are "central to a client's . . . identity and sense of competence and have a particular meaning and value to that client" (AOTA, 2014b, p. S5). Occupational therapy services focus on "achieving health, well-being, and participation in life through engagement in occupation" (AOTA, 2014b, p. S4). Occupations are categorized into activities of daily living, instrumental activities of daily living (IADLs), rest and sleep, education, work, play, leisure, and social participation within their natural and daily contexts. Consistent with all occupational therapy intervention, the focus of services for individuals with ASD is determined by the client's specific goals and priorities for participation. Given that individuals with ASD may experience complex challenges, including social–communication difficulties, collaboration with key individuals such as family members, caregivers, and educators is important for determining goals and priorities. Some examples of occupations (daily life activities) that may be challenging for individuals with ASD and that can be addressed by occupational therapy practitioners are included in Table 1.

The process of client-centered occupational therapy service delivery includes evaluation and intervention to achieve targeted outcomes using occupations to promote health, well-being, and participation in life (AOTA, 2014b). Services can be provided to the client at the person, group, and population levels and may include direct service, consultation, education, and advocacy to support the person, family members, health professionals, educational staff, and community agencies.

At the person and group levels, collaboration with family, caregivers, educators, and other team members is essential for understanding the daily life experiences of individuals with ASD and those with whom they interact. At the systems level, services may focus on educating staff and designing programs and environments for individuals or groups that are served by an organization to be more socially inclusive for persons on the autism spectrum. At the population level, occupational therapy practitioners may engage in education, consultation, and advocacy initiatives with communities or ASD consumer groups.

Evaluation

The evaluation process is designed to provide an understanding of the client's occupational profile and performance. This process includes an analysis of the client's strengths and challenges related to occupations, performance skills, performance patterns, body functions and body structures, and activity demands. Evaluation is comprehensive and tailored to the concerns of the specific client, organization, or population. Information collected through interviews, structured observations, and standardized assessments guides occupational therapy services.

Because the literature shows that individuals with ASD may have difficulties in areas of occupation such as self-care; IADLs; sleep; functional and pretend play; leisure pursuits; social participation; education and work performance; and performance skills, performance patterns, and client factors such as sensory integration and modulation, self-regulation, praxis, and motor imitation, occupational therapy evaluations conducted at the individual level should assess these areas (Baranek, 2002; Case-Smith & Bryan, 1999;

Foster & Cox, 2013; Johnson & Myers, 2007; Kientz & Dunn, 1997; Libby, Powell, Messer, & Jordan, 1998; Rutherford & Rogers, 2003; Shattuck et al., 2007; Tomchek & Case-Smith, 2009; Watson, Baranek, & DiLavore, 2003; Zaks, 2006). At the group level, the evaluation process may focus on analyzing the program structure, resources, and services that support individuals on the autism spectrum to engage in desired occupations. At the population level, the evaluation process may focus on collaborating with ASD consumer groups to identify their capacities and needs to support societal participation. Recent book chapters and practice guidelines have been developed to inform the practice of occupational therapy related to ASD and include comprehensive chapters on the evaluation process (Boyt Schell, Gillen, & Scaffa, 2014; Case-Smith & O'Brien 2015; Foster & Cox, 2013; Tomchek & Case-Smith, 2009; Watling, 2010).

Intervention

Occupational therapy intervention is based on the results of the evaluation and is implemented to foster occupational engagement and social participation by attending to the transactions among the client, the activity, and the environment. The goal of intervention is to promote engagement in and performance of daily activities, personal satisfaction, adaptation, health and wellness, role competence, quality of life, and occupational justice for individuals with ASD within the contexts of their families and communities.

At the individual level, the intervention may emphasize social engagement and participation, include strategies to improve adaptive behaviors and occupational performance, and support family priorities. Some research has demonstrated the effectiveness of occupational therapy interventions for children and adolescents with ASD that lead to improvement in self-care and play (Tanner et al., 2015; Weaver, 2015). These interventions include the use of activities that promote social interaction, problem solving, and pivotal behaviors (e.g., joint attention, initiative, persistence, executive functioning, cooperation) and address specific skill acquisition (Tanner et al., 2015). Effective interventions also address contextual factors such as structure, consistency of routine, sensory environments that optimize attention and arousal, and caregiver skills that contribute to occupational performance.

Research indicates that the occupational therapy intervention process should be individualized, intensive, and comprehensive; include the family; and facilitate active engagement of the individual (see Tomchek & Case-Smith, 2009). The literature provides additional support for the use of developmental and behavioral approaches to intervention, particularly for young children (Callahan, Henson, & Cowan, 2008; Dawson et al., 2010; National Autism Center [NAC], 2015; Rogers & Vismara, 2008). Environmental modification to address problem behaviors also has been shown to be effective (Horner, Carr, Strain, Todd, & Reed, 2002), and emerging evidence shows that families of children with ASD can be supported through telehealth and other online communication technologies (AOTA, 2013b; Gibbs & Toth-Cohen, 2011; Vismara, McCormick, Young, Nadhan, & Monlux, 2013).

At the systems level, interventions could include recommendations for educational and policy initiatives, participation on a transition team, provision of staff education, and development of new programs. At the population level, emphasis may be on inclusion and advocacy initiatives.

Outcomes

Targeting outcomes of service is an integral part of the occupational therapy process. Outcomes describe what clients can achieve through occupational therapy intervention and are important for determining future actions. Targeting outcomes involves monitoring the client's responses to intervention, reevaluating and modifying the intervention plan, and measuring intervention success through outcomes that are important to the client within the dynamic physical and social environments and cultural contexts where functioning occurs. Progress is noted through improvement in the client's occupational performance, adaptation, participation in desired activities, satisfaction, role competence, health and wellness, and quality of life and through prevention of further difficulties and facilitation of effective transitions.

Occupational therapy practice for individuals with ASD is consistent with the WHO's (2013) action agenda for ASD and the National Research Council's (2001) recommended practices for educating individuals with ASD. Occupational therapy practitioners also use established interventions as identified by the NAC (2015). Table 2 provides case examples that reflect a range of occupational therapy evaluation and intervention services for individuals with ASD at the individual, group, and population levels across the lifespan.

References

American Occupational Therapy Association. (2013a). Policy 1.44: Categories of occupational therapy personnel. In *Policy manual* (2009 ed.). Bethesda, MD: Author.

American Occupational Therapy Association. (2013b). Telehealth. *American Journal of Occupational Therapy, 67*(Suppl. 6), S69–S90. http://dx.doi.org/10.5014/ajot.2013.67s69

American Occupational Therapy Association. (2014a). Guidelines for supervision, roles, and responsibilities during the delivery of occupational therapy services. *American Journal of Occupational Therapy, 68*(Suppl. 3), S16–S22. http://dx.doi.org/10.5014/ajot.2014.686S03

American Occupational Therapy Association. (2014b). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy, 68*(Suppl. 1), S1–S48. http://dx.doi.org/10.5014/ajot.2014.682006

American Occupational Therapy Association. (2014c). Occupational therapy's commitment to nondiscrimination and inclusion. *American Journal of Occupational Therapy, 68*(Suppl. 3), S23–S24. http://dx.doi.org/10.5014/ajot.2014.686S05

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Baranek, G. T. (2002). Efficacy of sensory and motor interventions for children with autism. *Journal of Autism and Developmental Disorders, 32,* 397–422. http://dx.doi.org/10.1023/A:1020541906063

Baron, K., Kielhofner, G., Iyenger, A., Goldhammer, V., & Wolenski, J. (2006). *Occupational Self Assessment (OSA)* (version 2.2). Chicago: MOHO Clearinghouse.

Bayley, N. (2006). *Bayley Scales of Infant and Toddler Development* (3rd ed.). San Antonio, TX: Psychological Corporation.

Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children, 73,* 264–287. http://dx.doi.org/10.1177/001440290707300301

Blumberg, S. J., Bramlett, M. D., Kogan, M. D., Schieve, L. A., Jones, J. R., & Lu, M. C. (2013). Changes in prevalence of parent-reported autism spectrum disorder in school-aged U.S. children: 2007 to 2011–2012. *National Health Statistics Reports, 65,* 1–11.

Borrero, C. S., & Borrero, J. C. (2008). Descriptive and experimental analyses of potential precursors to problem behavior. *Journal of Applied Behavior Analysis, 41,* 83–96. http://dx.doi.org/10.1901/jaba.2008.41-83

Boyt Schell, B. A., Gillen, G., & Scaffa, M. E. (Eds.). (2014). *Willard and Spackman's occupational therapy* (12th ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.

Brown, C., & Dunn, W. (2002). *Adolescent/Adult Sensory Profile*. San Antonio, TX: Pearson.

Brown, C., Rempfer, M., & Hamera, E. (2009). *Test of Grocery Shopping Skills*. Bethesda, MD: AOTA Press.

Bruininks, R. H., Woodcock, R. W., Weatherman, R. F., & Hill, B. K. (1997). *Scales of Independent Behavior–Revised*. Rolling Meadows, IL: Riverside.

Callahan, K., Henson, R. K., & Cowan, A. K. (2008). Social validation of evidence-based practices in autism by parents, teachers, and administrators. *Journal of Autism and Developmental Disorders, 38,* 678–692. http://dx.doi.org/10.1007/s10803-007-0434-9

Case-Smith, J., & Arbesman, M. (2008). Evidence-based review of interventions for autism used in or of relevance to occupational therapy. *American Journal of Occupational Therapy, 62,* 416–429. http://dx.doi.org/10.5014/ajot.62.4.416

Case-Smith, J., & Bryan, T. (1999). The effects of occupational therapy with sensory integration emphasis on preschool-age children with autism. *American Journal of Occupational Therapy, 53,* 489–497. http://dx.doi.org/10.5014/ajot.53.5.489

Case-Smith, J., & O'Brien, J. (2015). *Occupational therapy for children and adolescents* (7th ed.). St. Louis, MO: Mosby/Elsevier.

Case-Smith, J., & Weaver, L. (2015a). *What is the evidence for the effectiveness of interventions within the scope of occupational therapy practice to improve performance in education for persons with autism spectrum disorder (ASD)?* [Critically Appraised Topic]. Bethesda, MD: American Occupational Therapy Association, Evidence-Based Practice Project. Retrieved from http://www.aota.org/-/media/Corporate/Files/Secure/Practice/CCL/Autism/Autism_Education_CAT.pdf

Case-Smith, J., & Weaver, L. (2015b). *What is the evidence for the effectiveness of interventions within the scope of occupational therapy practice to improve performance in work and vocational tasks for persons with autism spectrum disorder (ASD)?* [Critically Appraised Topic]. Bethesda, MD: American Occupational Therapy Association, Evidence-Based Practice Project. Retrieved from http://www.aota.org/-/media/Corporate/Files/Secure/Practice/CCL/Autism/Autism_Work_CAT.pdf

Centers for Disease Control and Prevention. (2014). Prevalence of autism spectrum disorders among children aged 8 years—Autism and Developmental Disabilities Monitoring Network, 11 sites, United States, 2010. *Morbidity and Mortality Weekly Report, 63,* 2–21. Retrieved from http://www.cdc.gov/mmwr/pdf/ss/ss6302.pdf

Classen, S., Monahan, M., & Wang, Y. (2013). Driving characteristics of teens with attention deficit hyperactivity and autism spectrum disorder. *American Journal of Occupational Therapy, 67,* 664–673. http://dx.doi.org/10.5014/ajot.2013.008821

Cohen, H., Amerine-Dickens, M., & Smith, T. (2006). Early intensive behavioral treatment: Replication of the UCLA model in a community setting. *Developmental and Behavioral Pediatrics, 27*(Suppl.), S145–S155. http://dx.doi.org/10.1097/00004703-200604002-00013

Coster, W., Deeney, T., Haltiwanger, J., & Haley, S. (1998). *School Function Assessment*. San Antonio, TX: Psychological Corporation.

Dawson, G., Rogers, S., Munson, J., Smith, M., Winter, J., Greenson, J., . . . Varley, J. (2010). Randomized, controlled trial of an intervention for toddlers with autism: The Early Start Denver Model. *Pediatrics, 125,* 17–23. http://dx.doi.org/10.1542/peds.2009-0958

Dunn, W. (2014). *Sensory Profile–2*. San Antonio, TX: Psychological Corporation.

Dunn, W., Cox, J., Foster, L., Mische-Lawson, L., & Tanquary, J. (2012). Impact of a contextual intervention on child participation and parent competence among children with autism spectrum disorders: A pretest–posttest repeated-measures design. *American Journal of Occupational Therapy, 66,* 520–528. http://dx.doi.org/10.5014/ajot.2012.004119

Foster, L., & Cox, J. (2013). Best practices in supporting students with autism. In G. Frolek Clark & B. E. Chandler (Eds.), *Best practices for occupational therapy in schools* (pp. 273–284). Bethesda, MD: AOTA Press.

Ganz, J. B. (2007). Classroom structuring methods and strategies for children and youth with autism spectrum disorders. *Exceptionality, 15,* 249–260. http://dx.doi.org/10.1080/09362830701655816

Gibbs, V., & Toth-Cohen, S. (2011). Family-centered occupational therapy and telerehabilitation for children with autism spectrum disorders. *Occupational Therapy in Health Care, 25,* 298–314. http://dx.doi.org/10.3109/07380577.2011.606460

Gray, C. (2010). *The new social story book*. Arlington, TX: Future Horizons.

Greenspan, S. I., & Wieder, S. (1997). Developmental patterns and outcomes in infants and children with disorders in relating and communicating: A chart review of 200 cases of children with autistic spectrum diagnoses. *Journal of Developmental and Learning Disorders, 1,* 87–141.

Haley, S. M., Coster, W. J., Ludlow, L. H., Haltiwanger, J. T., & Andrellos, P. J. (1992). *Pediatric Evaluation of Disability Inventory*. San Antonio, TX: Psychological Corporation.

Harper, C. B., Symon, J. B., & Frea, W. D. (2008). Recess is time-in: Using peers to improve social skills of children with autism. *Journal of Autism and Developmental Disorders, 38,* 815–826. http://dx.doi.org/10.1007/s10803-007-0449-2

Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K. (2002). Problem behavior interventions for young children with autism: A research synthesis. *Journal of Autism and Developmental Disorders, 32,* 423–446. http://dx.doi.org/10.1023/A:1020593922901

Hwang, B., & Hughes, C. (2000). The effects of social interactive training on early social communicative skills of children with autism. *Journal of Autism and Developmental Disorders, 30,* 331–343. http://dx.doi.org/10.1023/A:1005579317085

Individuals With Disabilities Education Improvement Act of 2004, Pub. L. 108–446, 20 U.S.C. §§ 1400-1482.

Interactive Autism Network. (2011). *IAN research findings: Treatment series.* Retrieved from https://iancommunity.org/cs/ian_treatment_reports/overview

Johnson, C. P., & Myers, S. M.; American Academy of Pediatrics Council on Children With Disabilities. (2007). Identification and evaluation of children with autism spectrum disorders. *Pediatrics, 120,* 1183–1215. http://dx.doi.org/10.1542/peds.2007-2361

Kasari, C., Freeman, S., & Paparella, T. (2006). Joint attention and symbolic play in young children with autism: A randomized controlled intervention study. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 47,* 611–620. http://dx.doi.org/10.1111/j.1469-7610.2005.01567.x

Kientz, M. A., & Dunn, W. (1997). A comparison of the performance of children with and without autism on the Sensory Profile. *American Journal of Occupational Therapy, 51,* 530–537. http://dx.doi.org/10.5014/ajot.51.7.530

Kuhaneck, H. M., Madonna, S., Novak, A., & Pearson, E. (2015). Effectiveness of interventions for children with autism spectrum disorder and their parents: A systematic review of family outcomes. *American Journal of Occupational Therapy, 69*, 6905180040. http://dx.doi.org/10.5014/ajot.2015.017855

Law, M., Baptiste, S., Carswell, A., McColl, M., Polatajko, H., & Pollack, N. (2014). *Canadian Occupational Performance Measure* (5th ed.). Ottawa, ON: CAOT Publications.

Ledford, J. R., & Gast, D. L. (2006). Feeding problems in children with autism spectrum disorders: A review. *Focus on Autism and Other Developmental Disabilities, 21,* 153–166. http://dx.doi.org/10.1177/10883576060210030401

Libby, S., Powell, S., Messer, D., & Jordan, R. (1998). Spontaneous play in children with autism: A reappraisal. *Journal of Autism and Developmental Disorders, 28,* 487–497. http://dx.doi.org/ 10.1023/A:1026095910558

Mahoney, G., & Perales, F. (2005). Relationship-focused early intervention with children with pervasive developmental disorders and other disabilities: A comparative study. *Developmental and Behavioral Pediatrics, 26,* 77–85. http://dx.doi.org/10.1097/00004703-200504000-00002

Miller, L. J. (2006). *Miller Function and Participation Scales (M–FUN)*. San Antonio, TX: Psychological Corporation.

National Autism Center. (2015). *Findings and conclusions: National standards project, phase 2*. Randolph, MA: Author.

National Research Council. (2001). *Educating children with autism*. Washington, DC: National Academy Press.

Ozonoff, S., & Cathcart, K. (1998). Effectiveness of a home program intervention for young children with autism. *Journal of Autism and Developmental Disorders, 28,* 25–32. http://dx.doi.org/10.1023/A:1026006818310

Panerai, S., Ferrante, L., & Zingale, M. (2002). Benefits of the Treatment and Education of Autistic and Communication Handicapped Children (TEACCH) programme as compared with a non-specific approach. *Journal of Intellectual Disability Research, 46,* 318–327. http://dx.doi.org 10.1046/j.1365-2788.2002.00388.x

Reynhout, G., & Carter, M. (2006). Social Stories for children with disabilities. *Journal of Autism and Developmental Disorders, 36,* 445–469. http://dx.doi.org/10.1007/s10803-006-0086-1

Rogers, S. J., & Vismara, L. A. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology, 37,* 8–38. http://dx.doi.org/10.1080/15374410701817808

Rutherford, M. D., & Rogers, S. J. (2003). Cognitive underpinnings of pretend play in autism. *Journal of Autism and Developmental Disorders, 33,* 289–302. http://dx.doi.org/10.1023/A:1024406601334

Salt, J., Sellars, V., Shemilt, J., Boyd, S., Coulson, T., & McCool, S. (2001). The Scottish Centre for Autism preschool treatment programme. I: A developmental approach to early intervention. *Autism, 5,* 362–373. http://dx.doi.org/10.1177/1362361301005004003

Salt, J., Shemilt, J., Sellars, V., Boyd, S., Coulson, T., & McCool, S. (2002). The Scottish Centre for Autism preschool treatment programme. II: The results of a controlled treatment outcome study. *Autism, 6,* 33–46. http://dx.doi.org/10.1177/1362361302006001004

Shattuck, P. T., Seltzer, M. M., Greenberg, J. S., Orsmond, G. I., Bolt, D., Kring, S., . . . Lord, C. (2007). Change in autism symptoms and maladaptive behaviors in adolescents and adults with an autism spectrum disorder. *Journal of Autism and Developmental Disorders, 37,* 1735–1747. http://dx.doi.org/10.1007/s10803-006-0307-7

Smith, T., Groen, A. D., & Wynn, J. W. (2000). Randomized trial of intensive early intervention for children with pervasive developmental disorder. *American Journal of Mental Retardation, 105,* 269–285. http://dx.doi.org/10.1352/0895-8017(2000)105<0269:RTOIEI>2.0.CO;2

Tanner, K., Hand, B. N., O'Toole, G., & Lane, A. E. (2015). Effectiveness of interventions to improve social participation, play, leisure, and restricted and repetitive behaviors in people with autism spectrum disorder: A systematic review. *American Journal of Occupational Therapy, 69*, 6905180010. http://dx.doi.org/10.5014/ajot.2015.017806

Tomchek, S. D., & Case-Smith, J. (2009). *Occupational therapy practice guidelines for children and adolescents with autism*. Bethesda, MD: AOTA Press.

Vismara, L. A., McCormick, C., Young, G. S., Nadhan, A., & Monlux, K. (2013). Preliminary findings of a telehealth approach to parent training in autism. *Journal of Autism and Developmental Disorders, 43,* 2953–2969. http://dx.doi.org/10.1007/s10803-013-1841-8

Watling, R. (2010). Occupational therapy evaluation for individuals with an autism spectrum disorder. In H. Miller Kuhanek & R. Watling (Eds.), *Autism: A comprehensive occupational therapy approach* (3rd ed., pp. 285–303). Bethesda, MD: AOTA Press.

Watling, R., & Hauer, S. (2015a). Effectiveness of Ayres Sensory Integration® and sensory-based interventions for people with autism spectrum disorder: A systematic review. *American Journal of Occupational Therapy, 69*, 6905180030. http://dx.doi.org/10.5014/ajot.2015.018051

Watling, R., & Hauer, S. (2015b). *What is the evidence for non-Ayres Sensory Integration® (ASI®) sensory-based interventions within the scope of occupational therapy practice to improve performance in daily life activities and occupations for children with autism spectrum disorder (ASD)?* [Critically Appraised Topic]. Bethesda, MD: American Occupational Therapy Association, Evidence-Based Practice Project. Retrieved from http://www.aota.org/-/media/Corporate/Files/Secure/Practice/CCL/Autism/Autism_Sensory_Non-Ayres_%20SI_CAT.pdf

Watling, R., & Hauer, S. (2015c). *What is the evidence for using Ayres Sensory Integration® (ASI®) intervention to improve performance in daily life activities and occupations for children with autism spectrum disorder (ASD)?* [Critically Appraised Topic]. Bethesda, MD: American Occupational Therapy Association, Evidence-Based Practice Project. Retrieved from http://www.aota.org/-/media/Corporate/Files/Secure/Practice/CCL/Autism/Autism_Sensory_Ayres_SI_CAT.pdf

Watson, L. R., Baranek, G. T., & DiLavore, P. C. (2003). Toddlers with autism: Developmental perspectives. *Infants and Young Children, 16*, 201–214. http://dx.doi.org/10.1097/00001163-200307000-00003

Weaver, L. L. (2015). Effectiveness of work, activities of daily living, education, and sleep interventions for people with autism spectrum disorder: A systematic review. *American Journal of Occupational Therapy, 69*, 6905180020. http://dx.doi.org/10.5014/ajot.2015.017962

Williams, M. S., & Shellenberger, S. (1996). *How does your engine run? A leader's guide to the Alert Program for Self-Regulation*. Albuquerque, NM: Therapy Works.

World Health Organization. (2013). *Meeting Report—Autism spectrum disorders and other developmental disorders: From raising awareness to building capacity.* Geneva: Author. Retrieved July 2014 from http://apps.who.int/iris/bitstream/10665/103312/1/9789241506618_eng.pdf?ua=1

Zaks, Z. (2006). *Life and love: Positive strategies for autistic adults*. Shawnee Mission, KS: Autism Asperger Publishing.

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Adopted by the Representative Assembly Coordinating Council for the Representative Assembly (2015).

Note. This revision replaces the 2010 document *The Scope of Occupational Therapy Services for Individuals With an Autism Spectrum Disorder Across the Life Course,* previously published and copyrighted in 2010 by the American Occupational Therapy Association in the *American Journal of Occupational Therapy, 64*(6, Suppl.), S125–S136. http://dx.doi.org/10.5014/ajot.2010.64S125-64S136

Citation. American Occupational Therapy Association. (2015). Scope of occupational therapy services for individuals with autism spectrum disorder across the life course. *American Journal of Occupational Therapy, 69*(Suppl. 3), 6913410054. http://dx.doi.org/10.5014/ajot.2015.696S18

Table 1. Examples of Potentially Challenging Areas of Occupation for Individuals With ASD

Occupation	Example
ADLs	Participating in daily self-care routines such as showering, toileting, and dressing; accepting a healthy variety of foods during mealtime; tolerating the sensory aspects of grooming activities
IADLs	Accessing the community by driving or using public transportation; managing finances; running a household; planning and preparing healthful, balanced meals
Rest and sleep	Achieving a calm state to rest, preparing for sleep, developing routines and rituals that support sleep, participating in and achieving restful sleep
Education	Engaging in formal education activities such as reading, writing, and math; accessing academic curricula; organizing and using school tools and materials; participating in various school environments and activities such as cafeteria, playground, and gym; identifying and pursuing informal educational interests and needs
Work	Identifying and pursuing employment options, seeking and acquiring employment, sequencing job tasks, developing effective job performance and interaction skills, exploring and participating in volunteer work
Play	Identifying a range of play interests, exploring and participating in a variety of play activities, developing interactive play skills
Leisure	Exploring and participating in community recreational leisure activities, developing leisure skills and interests
Social participation	Developing peer friendships, interacting appropriately with others, engaging in community-based social activities and outings, understanding social nuances and maintaining appropriate behavior, participating in family gatherings and rituals

Note. ADLs = activities of daily living; ASD = autism spectrum disorder; IADLs = instrumental activities of daily living.

Table 2. Case Examples of Occupational Therapy Evaluation and Intervention Services for Individuals With ASD

Client Description	Evaluation	Intervention
Kamau, age 2 1/2 years, has autism. His language consists of single-word utterances. He has an intense interest in a few objects such as wheels and mobiles. His mother's primary concerns are his limited social interaction, delayed pretend play, hyperactive behaviors, and picky eating. Kamau also is receiving speech therapy services and an applied behavioral analysis program at home through the state early intervention program.	Develop occupational profile of play behaviors, family interactions, and food preferences through parent interview. Gather clinical observations of behavior, self-regulation, and parent–child interaction during free play and interactive parent–child play. Conduct structured observation of parent–child interaction during play and while Kamau is eating. Administer Toddler Sensory Profile–2 (Dunn, 2014); Bayley Scales of Infant and Toddler Development (Bayley, 2006); and Pediatric Evaluation of Disability Inventory, Self-Care Scale (Haley, Coster, Ludlow, Haltiwanger, & Andrellos, 1992).	Provide weekly occupational therapy in the home setting with mother present to help Kamau establish self-regulation, social engagement, and pretend play skills (Greenspan & Wieder, 1997; Kasari, Freeman, & Paparella, 2006; Mahoney & Perales, 2005; Salt et al., 2001). Use sensory integration methods (Watling & Hauer, 2015c); behavioral strategies, including positive reinforcement; and reciprocal play to improve social interaction. Collaborate with the SLP regarding Kamau's intervention program, and arrange cotreatment sessions to promote social interaction. Collaborate with the behavioral therapist (Cohen, Amerine-Dickens, & Smith, 2006; Smith, Groen, & Wynn, 2000) to integrate sensory and behavioral strategies helpful in modulating Kamau's behavior. Provide parent training related to sensory processing and behavior management strategies and social participation (NAC, 2015). Provide parent consultation to improve the family's mealtime routine and the variety of foods Kamau eats (Horner et al., 2002; Ledford & Gast, 2006).

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Table 2. Case Examples of Occupational Therapy Evaluation and Intervention Services for Individuals With ASD *(cont.)*

Client Description	Evaluation	Intervention
Heang, age 4 years, has autism and attends an inclusive preschool through her school district. Her parents have sought individualized occupational therapy services from an outpatient clinic. Heang uses only a few basic gestures to communicate. She primarily engages in solitary sensory–motor exploration of her environment and does not yet spontaneously play beside other children or with toys. She has frequent tantrums and screams particularly when there are changes in the environment or when she is being directed toward a specific task.	Develop an occupational profile of behavior and self-regulation in play through parent and teacher interview. Conduct clinical observations of behavior, self-regulation, parent–child and teacher–child interaction, and play skills. Administer the Sensory Profile–2 (Dunn, 2014) and the Miller Function and Participation Scales (Miller, 2006).	Provide weekly occupational therapy in a clinical setting with the parent present. Consult with preschool team, including teacher and SLP. Provide interventions to improve self-regulation to allow for socially appropriate behavior (Greenspan & Wieder, 1997; Kasari et al., 2006; Mahoney & Perales, 2005; NAC, 2015; Salt et al., 2001, 2002). Incorporate sensory integration techniques (Baranek, 2002; Watling & Hauer, 2015a, 2015b, 2015c); visual supports for structure (NAC, 2015; Ozonoff & Cathcart, 1998) and communication; and behavioral strategies, including positive reinforcement, redirection, elimination of antecedents to her tantrums, and reinforcement of her positive behaviors (Horner et al., 2002; NAC, 2015; Rogers & Vismara, 2008). Educate parents on how to recognize when Heang is becoming overaroused, and implement both positive behavior (Horner et al., 2002) and sensory-based strategies to help her modulate her arousal (Baranek, 2002; Watling & Hauer, 2015a).
Jorge, age 6 years, is a kindergartener with a diagnosis of PDD–NOS. He demonstrates minimal social initiation with peers, although he interacts better with adults. When peers initiate interaction, Jorge withdraws or responds aggressively. He needs direct adult supervision to manage his school materials and complete school tasks.	Develop an occupational profile of play, work–reward routine, and behavior regulation through parent and teacher interview. Conduct structured clinical observations of classroom behavior, social–communication skills, parent–child interaction, and play skills. Administer Sensory Profile–2 (Dunn, 2014) and School Function Assessment (Cognitive/Behavior Scales; Coster, Deeney, Haltiwanger, & Haley, 1998). Conduct formal functional behavior analysis of aggressive behaviors.	Provide occupational therapy services within the school setting (Case-Smith & Weaver, 2015a; Weaver, 2015). Collaborate with teacher to implement structured teaching methods based on TEACCH (Ozonoff & Cathcart, 1998; Panerai, Ferrante, & Zingale, 2002) and a visual schedule in the classroom (Ganz, 2007). Implement positive behavior supports (Horner et al., 2002; NAC, 2015) and a sensory diet, including strategies for self-regulation based on the functional analysis of aggressive behaviors (Borrero & Borrero, 2008). Develop and implement Social Stories (NAC, 2015; Reynhout & Carter, 2006) before challenging school situations (e.g., standing in line, assemblies, fire drills) to encourage appropriate behavior. Develop peer buddies and modeling program to build social–communication skills during naturally occurring play activities (Harper, Symon, & Frea, 2008; NAC, 2015). Consult with the classroom teacher and family to promote generalization of strategies across home and school settings.
The local **museum of science** is interested in making the museum more accessible to individuals with ASD. The museum hosts school classes daily and specialized weekend learning programs.	Develop an occupational profile of supports and inhibitors to engagement in museum activities through observation of museum patrons of various ages interacting with museum exhibits. Complete structured observation of behavioral, sensory, and social demands of the museum, including structure, timing, and transitions of docent-led groups; signage; "way-finding" materials; and universal design features of physical space.	Provide an educational presentation to museum education staff about the characteristics associated with ASD and strategies for supporting informal learning. Consult with museum staff to develop a Social Story (Gray, 2010) to be placed on the museum website for families to use before visiting the museum. Consult with museum staff to develop an after-school program for adolescents with ASD.

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Table 2. Case Examples of Occupational Therapy Evaluation and Intervention Services for Individuals With ASD *(cont.)*

Client Description	Evaluation	Intervention
	Conduct focus groups at the museum with parents who have children with ASD to elicit their recommendations for improving accessibility.	
T. J., age 21 years, is a young man with high-functioning autism. T. J. currently is enrolled in a junior college and is having difficulty finding a needed part-time job. He lives independently in an apartment. T. J. presents with poor grooming and hygiene skills and pragmatic language deficits. He has several interests but spends most of his free time reading about antique cars. His interest in cars has led to distractibility during driving and resulted in a minor auto accident and a traffic citation for failing to stop at a stop sign.	Develop an occupational profile of ADL and IADL performance, leisure activities, and driving behaviors through personal interview about his concerns and his interests. Conduct structured observation of role playing a job interview. Administer the Scales of Independent Behavior–Revised (Bruininks, Woodcock, Weatherman, & Hill, 1997) and Occupational Self Assessment (Baron, Kielhofner, Iyenger, Goldhammer, & Wolenski, 2006). Develop an occupational profile for behavior regulation and interpersonal relatedness through interview.	Initially provide occupational therapy weekly in the clinic, then in the community (Case-Smith & Weaver, 2015a; Weaver, 2015). Provide direct intervention to address grooming and hygiene needs through the use of a step-by-step self-monitoring system. Consult with the Division of Vocational Rehabilitation to assist in the employment search. Use role playing, video self-modeling, and collaborative problem solving to address social communication and pragmatic language needs related to the interview process and interaction with coworkers (Case-Smith & Weaver, 2015b; Weaver, 2015). Initiate job coaching to allow T. J. to learn and master job functions and to problem solve when needed. Refer to an occupational therapy DRS to assess driving safety and provide interventions to improve executive functioning and focused attention during driving (Classen, Monahan, & Wang, 2013). Facilitate T. J.'s enrollment in an existing on-campus support group of other college students with Asperger disorder.
Sanjaya, age 34 years, has Asperger disorder. He lives in an apartment with his wife and contributes to the family income through an online business. Sanjaya has challenges with arousal regulation and coping skills, difficulty with body space awareness, and difficulty reading and sending body language signals that affect his social participation. Sanjaya has tactile defensiveness, which leads to difficulties with intimacy.	Administer the Adolescent/Adult Sensory Profile (Brown & Dunn, 2002) and the COPM (Law et al., 2014).	Initially provide occupational therapy services in the OT's office to address Sanjaya's poor processing of tactile, vestibular, and proprioceptive input. Develop a sensory diet for Sanjaya to implement daily in his natural environment (Dunn, Cox, Foster, Mische-Lawson, & Tanquary, 2012; Watling & Hauer, 2015a). Consult with and train Sanjaya and his wife in the Alert Program (Williams & Shellenberger, 1996) to recognize when his arousal level is high and to provide a language to aid in their communication. Perform video analysis (Bellini & Akullian, 2007) and role playing to help develop an awareness of nonverbal communication through facial expression and body language and to practice pragmatic skills. Train Sanjaya and his wife in the use of massage to provide deep tactile pressure and proprioceptive input to diminish tactile defensiveness.

(Continued)

Table 2. Case Examples of Occupational Therapy Evaluation and Intervention Services for Individuals With ASD *(cont.)*

Client Description	Evaluation	Intervention
Martina, age 47 years, has autism and has recently transitioned from her parent's home to a group home with 24-hour supervision due to her parents' declining ability to care for her. Martina works at a local library where she sorts and reshelves books. She has funding for services through the Department of Developmental Disabilities and a small amount of private resources. Martina becomes anxious when her routine is disturbed, demands are placed on her, or her desires are not granted. She enjoys leisure activities with her parents, but her parents are worried about her making friends and joining activities with peers at the group home. Her parents have arranged for contract occupational therapy services to facilitate her transition to the group home, with a focus on establishing routines for self-care and household chores, understanding and using transportation services to and from work, and participation in leisure activities with peers at the group home.	Develop an occupational profile through observation of and interview with Martina and her parents. Administer the COPM (Law et al., 2014), Adolescent/Adult Sensory Profile (Brown & Dunn, 2002), and Test of Grocery Shopping Skills (Brown, Rempfer, & Hamera, 2009). Conduct clinical observations of behavior during leisure, self-care, cooking, laundry, and cleaning tasks and of path finding and skills for using public transportation.	Provide occupational therapy services in the group home to help Martina organize her belongings; establish a routine for daily self-care and weekly household tasks; and ensure her success in using the available microwave oven, washer, dryer, and vacuum (Weaver, 2015). Work with Martina in using public transportation to get to and from work each day. Coach Martina in how to follow a picture sequence on her smart phone to help her follow her walking route, identify where to get off the bus, and know what to do if the bus is late. Teach residential program staff to implement educational strategies, such as forward and backward chaining, visual supports, and environmental structure to support success during intervention (Horner et al., 2002; Hwang & Hughes, 2000; NAC, 2015) and during everyday activities. Conduct staff training regarding environmental accommodations and environmental supports. Collaborate with group home staff to identify leisure activity choices that match the interests Martina and her parents identified during the occupational profile. Coach Martina in how to engage with peers during leisure activities and provide Social Stories, scripts, and role-playing opportunities to help her learn new routines and what to do and say (Tanner et al., 2015).

Note. ADL = activity of daily living; ASD = autism spectrum disorder; COPM = Canadian Occupational Performance Measure; DRS = driving rehabilitation specialist; IADL = instrumental activity of daily living; NAC = National Autism Center; OT = occupational therapist; PDD–NOS = pervasive developmental disorder, not otherwise specified; SLP = speech–language pathologist; TEACCH = Treatment and Education of Autistic and Related Communication Handicapped Children.