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Kelly Allen and Kaitlyn Felt

**Background:** Autism spectrum disorder (ASD) is a complex developmental condition that often presents with struggles in behavioral problems arising from sensory processing abnormalities, emotional dysregulation, self-stimulatory behavior, and anxiety, negatively impacting social interaction skills and limit the ability to engage with peers, productivity in school, and participating in daily routines (Wood, et al, 2009). Sensory integration therapy (SIT), often used in OT with clients with ASD, focuses on neurological processing of sensory information and helps clients modulate sensory responses. (Khodabakhshi, Abedi & Malekpour, 2014). This approach differs greatly from another commonly-used strategy focused on cognitive behavioral therapy (CBT). Cognitive-based approaches used in OT seek to promote conceptual development through the simulation of different situations and other such structural training.

## 1 Ask: Research Question

Should Sensory Integration (SI)-focused occupational therapists introduce interventions consistent with CBT in treatment for clients with high-functioning autism to improve social interaction skills as a multifaceted approach?

## 2a Acquire: Search Terms

**Databases:** Pubmed, Google Scholar, AJOT, WMU Library

**Search Terms:** sensory integration, occupational therapy, pediatrics, autism, ASD, social interaction skills, cognitive therapy, outcomes

## 2b Acquire: Selected Articles

**Wood, J., et. al. (2009):** Cognitive behavioral therapy (CBT) intervention was implemented with children aged 7-11 with a diagnosis of autism spectrum disorder (ASD), to explore whether CBT improved social communication skills. Each child was randomly selected for the immediate treatment (IT) group or the waitlist group (control group). The children participated in 16 weekly sessions, each lasting 90 minutes and conducted by a trained therapist. Post-treatment assessments were completed on the final day of treatment; post-waitlist assessments were conducted 3 months after the baseline assessment, but before CBT.

**Khodabakhshi, M., Abedi, A., & Malekpour, M. (2014):** Authors used a pre/post test design to investigate the effects of SIT with children diagnosed with ASD. Participants who received intervention attended 100 therapy sessions over 25 weeks.

## 3a Appraise: Study Quality

**Wood, J., et. al. (2009):** RCT Level II. 19 children total participated in the study, which is a small sample size. The Social Responsiveness Scale (SRS), Autism Diagnostic Interview-Revised (ADI-R), and Autism Diagnostic Observation Schedule (ADOS) were used to assess social communication skills in children both prior to and after intervention. All assessments were conducted by trained and blinded evaluators. The SRS has demonstrated "robust" reliability and validity (Wood, et al, 2009).

**Khodabakhshi, M., Abedi, A., & Malekpour, M. (2014):** RCT Level II. A small sample size of 24 children were selected from two institutions for children with ASD in Isfahan participated in the study. The Gilliam Autism Rating Scale-Second Edition (GARS-2) and the Sensory-Motor Performance Scales (SMPS) were used to measure the severity of social dysfunction; each requiring the caregiver to report and rate behaviors exhibited by each of the children. The SMPS and GARS-2 have been widely used and demonstrate good validity and reliability. Intervention was conducted by trainers after completing 12 hours of training.



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## 3b Appraise: Study Results

**Wood, J., et. al. (2009):** Significant differences favoring CBT were found in several SRS subscales, including Social Awareness, Social Communication, and Social Motivation ( $p < .05$ ), and also in Social Cognition ( $p = 10$ ). Overall, parent-reported symptoms of ASD were reported as lower in the CBT group compared to the waitlist group. A large effect size ( $d = .77$ ) was noted post-CBT for the immediate treatment (IT) group compared to the wait list group. Significant group differences ( $F(1, 16) = 5.39, p < .05$ ) were reported in favor of the post-treatment group compared to the post-wait list group. Follow-up scores of the IT group indicated that CBT gains had been maintained post-treatment.

**Khodabakhshi, M., Abedi, A., & Malekpour, M. (2014):** Findings demonstrate that SIT can improve social interaction skills with a lasting effect. SIT showed significant improvements in social interaction ( $p = .001, \eta^2 = 34\%$ ) and sensorimotor performance ( $p < .001, \eta^2 = 66\%$ ) as evidenced by results of a repeated measures ANOVA test. No changes were reported in visual and auditory performance. Positive changes remained as evidenced by two-month post-test results.

## 4 Apply: Conclusions for Practice

CBT-informed strategies develop target goals that are matched with procedures for enhancing memory retrieval for improved management of negative emotion and successful engagement in social situations through education and highly-structured training in the use of cognitive, physical, and social tools (i.e. social communication groups) (Wood, et al, 2009). SI theory posits that psychosocial issues may stem from an impaired sensory integration system that can be improved through SI interventions to help these children learn to regulate sensory information, leading to improved behavioral states and increased engagement in social interactions as part of one's daily activities (Khodabakhshi, Abedi & Malekpour, 2014). While effective, the dosage of therapy provided in this study is greater than what is typically seen in the outpatient environment. Though both studies demonstrated positive outcomes, longitudinal data that measures long-term change is needed to demonstrate neurological changes and prolonged benefit of treatments.

While OTs combine CBT-informed interventions along with SIT for increasing social interaction skills in this population, there is a gap in the literature that examines and compares the treatment outcomes separately versus a combined approach. This is necessary to broaden the knowledge base and improve treatment outcomes for this population.

## References:

Wood, J. J., et al. (2009). Brief Report: Effects of Cognitive Behavioral Therapy on Parent-Reported Autism Symptoms in School-Age Children with High-Functioning Autism. *Journal of Autism and Developmental Disorders*, 39(11), 1608-1612. doi:10.1007/s10803-009-0791-7

Khodabakhshi, M., Abedi, A., & Malekpour, M. (2014). The effect of sensory integration therapy on social interactions and sensory and motor performance in children with autism. *Iranian Journal of Cognition and Education*, 1(1), 35-45.

Sensory Integration-based intervention and CBT showed greater improvement in social interaction skills; however, more research with larger sample sizes are recommended in future studies that focus on these approaches.

