Innovative Neurocognitive Therapy Intervention for Autistic Children: Preliminary Results from a Remote, Synchronous Training Program for SLPs

Janice Nathan, M.S., CCC-SLP, Nathan Speech Services, LLC.
Miriam Sheynblyum, University of Pittsburgh, Department of Psychiatry
Barry R. Nathan, PhD, Nathan Speech Services, LLC.
Barbara L. Baumann, PhD, University of Pittsburgh, Department of Psychiatry
Valire Carr Copeland, PhD, University of Pittsburgh, School of Social Work
Shaun M. Eack, PhD, University of Pittsburgh, Department of Psychiatry

Background: Speech language pathologists (SLPs) play a critical role in supporting children on the autism spectrum. However, SLPs receive minimal autism training in graduate school. Effective autism interventions are essential to improve social and academic outcomes for autistic populations. Therefore, we developed a remote training program to train SLPs in a neurocognitive intervention that helps autistic children independently solve emotional, social or academic problems. The intervention, called *Thinking in Speech*® (*TiS*), develops inner speech - the voice in our head we use to think. "*Inner speech*" (Alderson-Day & Fernyhough, 2015). The ability to use inner speech is critical for problem-solving, and is the foundation for effective self-regulation (Alderson-Day, et. al., 2018; Fahy, 2014; Morin, et al., 2018). Research shows that autistic children have underdeveloped inner speech (Whitehouse, et al., 2006). Without inner speech, these children cannot adapt to new situations, and cannot talk themselves through stressful experiences — resulting in greater anxiety and more emotional meltdowns. Our prior research found that autistic children seen by SLP graduate students trained to use *TiS* outperformed autistic children seen by experienced SLPs not trained in *TiS* (Nathan & Nathan, 2019).

Thinking in Speech is a neurocognitive therapy grounded in cognitive psychology, neuroscience, language acquisition, and traumatic brain disorder treatment (Nathan & Nathan, 2018). It is the only therapy that helps autistic children develop inner speech to self-regulate in any stressful situations. *TiS* was developed in a community setting over 22 years by an autistic SLP who as worked with over 100 autistic individuals of diverse ages, races, and economic settings. To our knowledge, it is the only therapy to follow the five recommendations described by Gardiner from his interviews with autistic adults (Gardiner, 2017). Through *TiS*, autistic children learn executive functions and problem-solving skills that they need to solve academic and everyday problems. They also learn to use emotions vocabulary so they can better understand that everything is not an 'end-of-the-world' situation resulting in emotional meltdowns.

Objective: To test whether SLPs report improved knowledge and comfort using *TiS* strategies (e.g., asking for help, developing emotions vocabulary, category development; Hypothesis 1), taking responsibility for a child's dysregulation during therapy (Hypothesis 2) and interacting with the caregiver/parent after each therapy session (hypothesis 3).

Method: Experienced SLPs (n = 9) were trained remotely by the developer in two groups. Training consisted of: 1) readings; 2) four two-hour synchronous formal training sessions; 3) two one-hour synchronous feedback sessions; and 4) an individual asynchronous evaluation session of the recorded session. All trainees completed a post-training evaluation questionnaire. Group 2 trainees (n=5), completed questionaries on their knowledge and comfort with key components of the therapy at pre-and post-training on a 5-point Likert scale.

Results: Hypotheses 1 and 2 were supported; hypothesis 3 was not. (See Figure 1 for 1-tailed paired-t test results.) All nine SLPs reported high levels of satisfaction with the training program; average evaluation on the eight-item questionnaire was 4.8. (See Table 1 for items and scores.)

Conclusions: Though only a small sample, results are encouraging, and provided us with feedback that adjustments need to be made in the training program. Best practices find that parents are critical for long-term carry-over, but SLPs have reported that they receive little to no training in how to work with parents. We plan to address this in future training sessions.

Our long-term objective is to bring our training program to scale by developing train-the-trainer programs for experienced professionals working with autistics, and for graduate students interested in working with autistic children. We want more SLPs, psychologists, and special education teachers, to have access to this autistic-friendly, problem-solving intervention.

About this Research: This research was funded as part of our 2020 Pitt Innovation Challenge (PInCh) Award from the University of Pittsburgh Clinical and Translational Science Institute, which funds this research. When completed later this year, we will have data to assess:1) Whether we can train SLPs remotely to deliver this cognitively-based form of therapy for working with autistic children (*Improve* SLP Skills); 2) Whether this therapy will help autistic children become independent problem-solvers, and who are able to self-regulate in stressful situations (*TiS* Effectiveness); 2) Whether this training helps parents to better understand autism and become effective advocates for their children (*Reduce* Parent Stress).

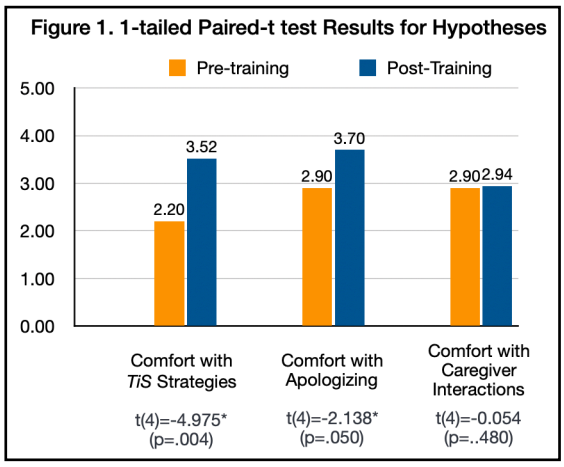

Table 1 (n=9) Item	Mean rating out of 5
Thoroughly covered training topics	4.56
Encouraged participation	5.00
Explained new concepts clearly	4.44
Included useful activities	4.78
Contributed to my knowledge	4.89
Helped me to build skills	4.89
I would recommend this trainer to colleagues	4.78
Overall quality of training	4.67

References

Alderson-Day, B. & Fernyhough, C. (2015). Inner speech: development, cognitive functions, phenomenology, and neurobiology. *Psychological Bulletin*, *141,* 931-965.

Alderson-Day, B., Mitrenga, K., Wilkinson, S., McCarthy-Jones, S., & Fernyhough, C. (2018). The varieties of inner speech questionnaire - Revised (VISQ-R): Replicating and refining links between inner speech and psychopathology. *Consciousness and cognition*, *65*, 48–58.

Fahy, J.K. (2014). Language and Executive Functions: Self-Talk for Self-Regulation. *SIG 1 Perspectives on Language Learning and Education. 21, 61-71.*

Gardiner, F. (2017). *First-hand perspectives on behavioral interventions for autistic people and people with other developmental disabilities*. Autistic Self Advocacy Network. [web]. Retrieved from: https://autisticadvocacy.org/policy/briefs/interventions.

Morin, A., Duhnych, C., & Racy, F. (2018). Self‐reported inner speech use in university students. *Applied Cognitive Psychology*, *32*, 376-382.

Nathan, J., & Nathan, B. R. (2018). *Building Reasoning and Problem-solving skills in Children with Autism Spectrum Disorder: A Step-by Step guide to the Thinking in Speech® Intervention*. London, UK: Jessica Kingsley Publishers.

Nathan, J. & Nathan, B. R. (September, 2019). *Turning Behavior and Anxiety into Communication for Social Problem-Solving by Thinking in Speech®*. 12th International Autism-Europe Congress. Nice, France.

Whitehouse, A. J. O., Maybery, M. T., & Durkin, K. (2006). Inner speech impairments in autism. *Journal of Child Psychology and Psychiatry, 47*, 857–865.

For more information contact:

Barry R.Nathan, PhD
Research & Development Director
Nathan Speech Services, LLC.
www.thinkinginspeech.com
barrynathan2009@gmail.com
412.901.2685