**Title**: The impact on Executive-Functioniong of Center-based Pivotal Response Treatment in Young Children with Autism

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**Introduction:** Executive Functioning (EF) deficits are a common challenge for young children with autism spectrum disorder (ASD) (Leitner, 2014). EF skills begin to develop after early language development in typically developing children (Nelson, 2000), and, following language development, are some of the core skills needed to navigate preschool, home, and social settings. Indeed, a report from Yale University’s Child Study Center found that three-year-old autistic children with early elevated EF deficits score lower on adaptive daily living skills, socialization, and communication scores when compared to autistic peers with less EF deficits (Powell et al., 2022). Unfortunately, little is known about both the early development of EF skills and the effects of early intervention on EF deficits in young children with ASD. Given that both language and EF develop during those critical first five years of life, the link between language development and EF development must be further examined to understand the development of EF in young children with ASD. This study investigates the impact of early language intervention, Pivotal Response Treatment (PRT), on the development of EF in young autistic children to better understand how early intervention impacts their EF development.

**Method:** This study analyzed the pre and post-treatment measures of 37 children, ages 24 – 47 months, who were enrolled in a larger ongoing randomized controlled trial (RCT) comparing a 12-week center-based Pivotal Response Treatment (PRT-C; N=19) with a treatment as usual (TAU) control group (N=18). Standardized measures included the Behavior Rating Inventory of Executive Function- Preschool (BRIEF-P) and the Vineland Adaptive Behavior Scale, 3rd Edition (Vineland-3), which were analyzed to assess changes over time and between treatment groups. Secondary analyses examined the impact of age at the start of treatment.

**Results:** Results from the superiority study found that both groups exhibited a significant increase in EF deficits over the study period (F(1, 28) = 4.56, p = 0.042), and there was not a statistically significant between-group difference in EF change (F(1, 28) = 1.23, p = .28). Secondary analyses found no significant relationship between age at treatment initiation and EF change and no significant group difference in daily living skill improvement over time.

**Discussion:** Although limited by a small sample size, the observed increase in EF deficits over the 12-week study period for children in both groups suggests a potential need for EF-targeted early intervention in ASD. This observation indicates that PRT-C was not superior to community treatment in remediating EF deficits. Future research should continue to investigate the developmental trajectory of EF skills in young children with ASD by expanding means of EF measurement beyond caregiver-report questionnaires and by further exploring the effectiveness of early interventions in fostering EF development.

**References:**

Leitner, Y. (2014). The Co-Occurrence of Autism and Attention Deficit Hyperactivity Disorder in Children “What Do We Know?

Frontiers in Human Neuroscience, 8. https://doi.org/10.3389/fnhum.2014.00268

Nelson, C. A. (2000). Neural plasticity and human development: the role of early experience in sculpting memory systems.

Developmental Science, 3(2), 115–136. https://doi.org/10.1111/1467-7687.00104

Powell, K., Macari, S., Brennan‐Wydra, E., Feiner, H., Butler, M., Fortes, D., Boxberger, A., Torres-Viso, M., Morgan, C., Lyons, M.,

& Chawarska, K. (2022). Elevated symptoms of executive dysfunction predict lower adaptive functioning in 3‐year‐olds with autism spectrum disorder. Autism Research, 15(7), 1336–1347. https://doi.org/10.1002/aur.2715

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