STRONG CHILDREN'S RESEARCH CENTER

Summer Research Scholar

Name: Maia Beaudry

School: Vassar College

Mentor: Dr. Allyson Jordan, Division of Developmental and Behavioral Pediatrics

ABSTRACT

Title: *Assessing Progress Over Time for Minimally Verbal Children with Autism Spectrum Disorder (ASD): An Examination Across Measures and Informants*

Background: It is estimated that 2-4% of children in the United States has received a diagnosis of Autism Spectrum Disorder (ASD), and a recent nationwide study reported that 46.6% of children aged 8 with a diagnosis of ASD received early intervention services at some point.[1] As such, it is critical to examine children's progress over the course of early interventions in a manner that is sensitive to developmental delays. A variety of measures are commonly used to examine progress, two of the most common being the Mullen Scales of Early Learning (MSEL) and Vineland Adaptive Behavior Scales (VABS).[2] Since standardized scores rarely illuminate progress accurately in children with ASD with limited language, age equivalents and raw scores are oftentimes used as alternatives.[2, 3] However, there may be significant discrepancies between different informants' reports on progress, as teachers, parents, and clinicians all have unique perspectives on a child's development.[2, 4] This study investigates how different measures capture changes in language skills for young autistic children at group and individual levels.

Objective: Using the Mullen Scales of Early Learning (MSEL), Vineland Adaptive Behavior Scales (VABS), and MacArthur-Bates Communicative Development Inventories (MCBI) as three metrics from different informant perspectives, this exploratory study compares the relative alignment of receptive and expressive language age equivalent scores on the MSEL and VABS at both the individual and group level. The changes in raw scores on the MCBI were also compared with age equivalents on the MSEL and VABS at the individual level.

Methods: Data was collected through retrospective case review. The sample included autistic preschoolers (n=26) enrolled in a research study who were randomly assigned to receive either Joint Attention, Symbolic Play, Engagement and Regulation (JASPER) or Discrete Trial Training (DTT) intervention.

Results: Both the MSEL and the VABS showed a statistically significant increase in average age equivalents during both exit and follow-up visits for both receptive and expressive language. Individual case examination revealed that 26.9% (n=7) of participants exhibited significant[5] receptive age equivalent improvement on only the MSEL or VABS across both exit and follow-up visits. No participants exhibited this difference in expressive age equivalents. On average, progress on the MCBI showed incongruency with both the MSEL and VABS across more individual cases for receptive language than expressive language. No significant difference in age equivalent progress was found between JASPER and DTT groups.

Conclusion: Inspection at the individual case level revealed inconsistencies in receptive language age equivalents that were not visible at a cohort level. These same inconsistencies were not seen in expressive language age equivalents. Researchers defining significant progress in language skills over time should be cautious of using receptive language age equivalents as a sole outcome measure. Future research studying a larger sample size, more informant perspectives, and/or a comparison of additional measures may further validate these findings and inform clinicians about how to appropriately assess the language progress of minimally verbal preschool-aged children with ASD.

References:

1. Shenouda J, Barrett E, Davidow AL, et al. Disparities in Early Intervention Program Participation by Children With Autism Spectrum Disorder in a US Metropolitan Area, 2006 to 2016. *JAMA Pediatr.* 2022;176(9):906–914. doi:10.1001/jamapediatrics.2022.2366
2. Grzadzinski R, Janvier D, Kim SH. Recent Developments in Treatment Outcome Measures for Young Children With Autism Spectrum Disorder (ASD). Semin Pediatr Neurol. 2020 Jul;34:100806. doi: 10.1016/j.spen.2020.100806. Epub 2020 Mar 6. PMID: 32446440; PMCID: PMC7248125.
3. Luyster, R., Qiu, S., Lopez, K., & Lord, C. (2007). Predicting outcomes of children referred for autism using the MacArthur–Bates Communicative Development Inventory. *Journal of Speech, Language, and Hearing Research*, *50*(3), 667–681. doi:10.1044/1092-4388(2007/047)
4. Jordan, A.K., Thomeer, M.L., Lopata, C. *et al.* Informant Discrepancies in the Assessment of Adaptive Behavior of Children with Autism Spectrum Disorder. *J Autism Dev Disord* **49**, 2024–2034 (2019). doi:10.1007/s10803-018-03876-z
5. Brady, N. C., Romine, R. E., Holbrook, A., Fleming, K. K., & Kasari, C. (2020). Measuring change in the communication skills of children with autism spectrum disorder using the communication complexity scale. *American Journal on Intellectual and Developmental Disabilities*, *125*(6), 481–492. doi:10.1352/1944-7558-125.6.481