**Symposium Title**: From Trials to Triumphs: Exploring Predictors of Treatment Success in Autistic Individuals

**Chair**: Amanda C. Gulsrud[[1]](#footnote-2)

**Discussant**: Connie Kasari1

**Overview**: Recent methodological advances have allowed researchers to better study the variability in intervention outcomes amongst autistic individuals. This symposium will highlight the work of three research groups, each using rigorous and innovative methods to better understand individual responses to treatment. These methods include adaptive treatment designs and randomized controlled trials. Each of the studies explores predictors of individual treatment response to broaden our discussion of who is likely to benefit from varying supports and interventions, leading to optimization of treatments.

The first talk will present employment outcomes from an adaptive treatment trial that tested the timing of coach-implemented support during a soft skills employment training and internship phase. This study aimed to understand the added benefit of having a coach provide one-on-one support during a group-based intervention to better inform the timing and level of support required for employment-related outcomes.

Second, we will present a responder analysis from a randomized controlled trial of a parent advocacy intervention for adolescents transitioning from school to adult services. Individual characteristics in the young adult and parent were explored in relation to the response to intervention.

Third, a secondary data analysis of a previously published SMART design for minimally verbal children will be presented. The focus will be on baseline predictors of language growth and what skills are most relevant to those “fast responders” to treatment.

A discussion of each presentation, including methodological implications and future directions will be led by our discussant, an expert in intervention development and design. This symposium aims to push beyond the standard methods of treatment evaluation and identify data to inform treatment planning, adaptive decision-making and maximize cost effectiveness to ultimately lead to more responsive, timely and accessible treatments for those who choose them.

**Paper 1 of 4**

**Paper Title**: PEERS® for Careers: Optimizing Support in an Employment-Related Social Skills Program

**[[2]](#footnote-3)Authors**: Christine T. Moody1, Amanda C. Gulsrud1, Leonardo Dominguez Ortega1, James Yang1, Gabrielle Sotomayor1, Elizabeth A. Laugeson1

**Introduction:** As a predictor of quality of life, employment is a critical outcome for autistic adults (Mason et al., 2018). Yet, autistic adults are more likely to be under-employed and unemployed than their peers, despite having significant strengths to bring to the workplace (Solomon, 2020). Limited research on employment-focused interventions for autistic adults have produced benefits (Fong et al., 2021). One such program, PEERS® for Careers, includes 20 group lessons on employment-related social skills and individualized career coaching, showing preliminary promise in supporting job attainment and maintenance (Moody et al., 2022). However, given increases in autism prevalence (Maenner et al., 2023), there is a critical need for increased availability and capacity in adult support services (Shattuck et al., 2020). Yet, individualized support services such as career coaching may not be feasible in all treatment settings. The current study aimed to investigate different levels of individualized career coaching support in PEERS® for Careers to inform service planning and maximize cost-effectiveness.

**Methods:** Participants included 106 autistic adults (Mage = 22.9, SD = 3.6; 81.4% male) who had cognitive abilities in the average or above average range and previous college experience. Using a Sequential Multiple Assignment Randomized Trial (SMART) design, participants were initially randomized to receive either PEERS® for Careers with additional individualized career coaching or PEERS® for Careers with no individualized career coaching. After the 20-week program, half of those who did not receive a career coach initially were randomized to receive career coaching over the next 10 weeks. Career coaches met weekly with participants one-on-one to support skills acquisition and application toward participant employment goals. Thus, three randomized coaching conditions emerged: consistent coaching, delayed coaching, and no coaching. Participants completed measures at baseline (T1), after PEERS® for Careers (T2, 20 weeks), after the extended coaching phase (T3, 30 weeks), and at follow-up (T4, 40 weeks). Adults self-reported on employment activities, employment-related social skills knowledge (Test of Employment Social Skills; TESS; Moody et al., 2022), social responsiveness (Social Responsiveness Scale, 2nd Edition; Constantino & Gruber, 2012); and subjective feelings of preparedness for employment. Mixed effects models were tested with the effects of time, coaching condition, and their interaction for each outcome.

**Results:** For the primary outcome of paid employment, the interaction effect between time and coaching condition was nonsignificant, χ2(6) = 1.48, p = .961. However, a significant overall effect of time emerged, χ2(3) = 20.75, p < .001, indicating significant improvements in paid employment from T1 to T2, p = .014, that maintained through T3 and T4. A similar pattern of results emerged for social responsiveness, with a significant overall effect of time, χ2(3) = 26.53, p < .001, driven by improvements from T1 to T2, p < .001. With respect to employment-related social skills knowledge, the interaction between time and condition was significant, χ2(6) = 17.14, p = .009, such that all groups improved but those with consistent coaching showed greater gains through follow-up than both the no coaching group, p = .007, and the delayed coaching group, p = .003. A significant interaction between time and coaching condition also emerged for subjective feelings of preparedness for employment, χ2(6) = 13.33, p = .038; however, the nature of the interaction suggests that the consistent coaching group reported greater improvements in feelings of preparedness from T1 to T4 than the delayed coach group, p = .002, but did not differ from the no coach group, p = .116.

**Discussion**: Findings indicate that additional individualized career coaching only produced added benefits on specific outcomes and in specific conditions. However, across all outcomes, participants made improvements, including paid employment, an ecologically valid, real-world result. Findings suggest that PEERS® for Careers group lessons alone may have been sufficient to produce benefit, as the never coach group made significant improvements on all outcomes. More research is needed to further explore for whom career coaching may be most useful and ultimately identify the most cost-effective approach to bolstering employment outcomes in autistic adults.

**References**

Fong, C. J., Taylor, J., Berdyyeva, A., McClelland, A. M., Murphy, K. M., & Westbrook, J. D. (2021). Interventions for improving employment outcomes for persons with autism spectrum disorders: A systematic review update. Campbell Systematic Reviews, 17(3), e1185.

Maenner, M. J., Warren, Z., Williams, A. R., et al. (2023). Prevalence and characteristics of autism spectrum disorder among children aged 8 years—Autism and Developmental Disabilities Monitoring Network, 11 sites, United States, 2020. CDC Morbidity and Mortality Weekly Report: Surveillance Summaries, 72(2), 1-14.

Mason, D., McConachie, H., Garland, D., Petrou, A., Rodgers, J., & Parr, J. R. (2018). Predictors of quality of life for autistic adults. Autism Research, 11(8), 1138-1147.

Moody, C. T., Factor, R. S., Gulsrud, A. C., Grantz, C. J., Tsai, K., Jolliffe, M., ... & Laugeson, E. A. (2022). A pilot study of PEERS® for Careers: A comprehensive employment-focused social skills intervention for autistic young adults in the United States. Research in Developmental Disabilities, 128, 104287.

Shattuck, P. T., Garfield, T., Roux, A. M., Rast, J. E., Anderson, K., Hassrick, E. M., & Kuo, A. (2020). Services for adults with autism spectrum disorder: A systems perspective. Current Psychiatry Reports, 22, 1-12.

Solomon, C. (2020). Autism and employment: Implications for employers and adults with ASD. Journal of Autism and Developmental Disorders, 50(11), 4209-4217.

**Paper 2 of 4**

**Paper Title**: Which families of autistic youth respond to interventions to improve service access?

**[[3]](#footnote-4)Authors**: Julie Lounds Taylor2, Meghan M. Burke3, Leann Smith DaWalt4, James C. Slaughter2, Meng Xu2

**Introduction**: Accessing services as autistic youth transition from school-based to adult service systems is a significant challenge, leading to gaps in service access and high unmet service needs (Laxley et al., 2019). To address this issue, we tested a group-based parent advocacy program, "Advocating for Supports to Improve Service Transitions” (ASSIST), to equip parents to advocate for services that will meet their autistic youth’s needs. Using a randomized controlled trial (RCT), we previously found that participating in ASSIST led to improvements in parent advocacy ability and better access to government services for families of youth who had exited high school (Taylor et al., 2023; in preparation). In the current analyses, we take the next step in this line of research by investigating which families are most likely to translate information on adult services into better service access.

**Method**: Participants in this analysis included 138 parents of autistic youth between the ages of 16-26. All parents were part of an RCT to test the effectiveness of a parent advocacy intervention on improving access to services for transition-aged autistic youth. 185 parents were recruited across three states in the U.S. and assigned to a treatment group who received the ASSIST intervention (a 12-week class that teaches parents how to advocate for adult services), or a control group who received comprehensive written information about adult services. Most parents were mothers (91.3%, n=126) and white, non-Hispanic (77.7%, n=107). Just over 40% (n=56) of autistic youth had exited high school at baseline and 35.5% (n=49) had co-occurring intellectual disability. Data on services was collected via interview at baseline, 6-months, and 12-months after intervention.

Participants in this analysis had had at least one unmet service need at baseline, and data collected at both the 6-month and 12-month follow-up. At each time point, parents were asked if their youth was receiving 21 different services (e.g., transportation services; psychological/mental health services), drawn from the National Longitudinal Transition Study-2. If families were not receiving a service, they were asked if their son or daughter currently needed that service. From this information, we determined whether the youth had any unmet service needs at baseline and which services were unmet needs. Service questions were asked again at the follow-ups; when youth was receiving at least one service (at either follow-up) that was noted as an unmet need at baseline, they were considered a treatment “responder.” Predictors of treatment response were collected at baseline and included treatment condition, youth characteristics (intellectual disability, in/out of high school, autism symptoms using the Social Responsiveness Scale-2), and parent/family characteristics hypothesized to be important for utilizing information about adult services (whether parent had a bachelor’s degree, parent distress measured by the Depression Anxiety Stress Scales, active coping measured by the active coping subscale of the Coping Orientation for Problems Experienced Inventory). Frequencies of responders were generated, and logistic regression was used to predict treatment response.

**Results:** Overall, 58.7% of parents (n=81) were “responders” meaning that they were receiving at least one service at follow-up that had been identified as an unmet need at baseline. The difference in rate of responders by treatment group was not statistically significant (60.9% in treatment group versus 56.5% in control group), χ2 (1) = .27, p=.60. In the logistic regression model, the only statistically significant predictor of responder status was parental distress, OR = 1.03, p = .04. Parents who were more distressed were more likely to respond to treatment.

**Discussion**: Findings from the current study are consistent with analyses examining the impacts of ASSIST on parent advocacy ability (Taylor et al., 2023); in both circumstances, families who appeared to be least prepared to advocate for services were those who benefitted most from intervention. Further analyses will examine whether factors that predict likelihood of responding differ by condition.

**References:**

Laxman DJ, Taylor JL, DaWalt LS, Greenberg JS, Mailick MR. Loss in services precedes high school exit for teens with ASD: A longitudinal study. Autism Research. 2019;12:911-921.

Taylor JL, DaWalt LS, Burke MM, Slaughter JC, Xu M. Improving parents' ability to advocate for services for youth with autism: A randomized clinical trial. Autism Research. 2023;16:1976-1988.

Taylor JL, DaWalt, LS, Burke, MM, Slaughter, JC, Xu, M (in preparation). Effects of a parent advocacy intervention on service access for transition-aged youth with autism: A multi-site randomised controlled trial.

**Paper 3 of 4**

**Paper Title**: Predictors of Expressive Language Improvement Among Minimally Verbal Autistic Children

**[[4]](#footnote-5)Authors**: Jonathan Panganiban1, Wendy Shi 1, Connie Kasari1, AIM-ASD Team

**Introduction**: Autistic children who enter Kindergarten with fewer than 20 functional words are often classified as minimally verbal (MV) (Tager-Flusberg & Kasari, 2013). A goal of intervention remains focused on spoken language, and the window for improving spoken language is greatest between 5 and 8 years of age for children still not speaking at school entry (Pickett et al, 2009). Current interventions have been mostly untested with these children as they are often excluded from intervention studies. The current study aims to explore the prediction to early response of evidence-based, language interventions for MV autistic 5- to 8-year-old children. The early response outcome is improvement in spoken number of different words (NDW) after six weeks of intervention (approximately 30 sessions) provided in school. Several entry characteristics of children are explored as predictors of response, including social communication behaviors.

**Method**: This is a secondary data analysis of 194 MV autistic children (M=72.42 months old, SD=15.14 months) that received an adaptive intervention. Intervention was adapted based on early response using an interventionist rating of clinical global improvement (CGI). However, this analysis examines prediction from entry social communication, play, expressive language, and cognition prior to receiving intervention, and number of words from a Natural language sample (administered and coded by blinded assessors) at early response (6 weeks).

**Results**: Logistic regressions were used to determine the association between entry characteristics and improvement in NDW after six weeks of intervention, while controlling for site differences, age, and gender. Child initiated joint attention (Z=2.87, p=0.005) and response to joint attention (Z=2.90, p=0.003) predicted improvement in NDW. Exploratory analysis with conditional inference trees shows that children that respond to joint attention bids in over 38% of opportunities and initiate more than 2 joint attention skills at baseline, have increased odds of improving in NDW at early response.

**Discussion**: Joint attention plays a critical role in expressive language development. In our sample of elementary age MV autistic students, early joint attention skills were predictive of improvements in expressive language after six weeks of intervention. These data are consistent with studies of preschool aged children with autism (Mundy et al., 1990).

**References**

Mundy, P., Sigman, M., & Kasari, C. (1990). A longitudinal study of joint attention and language development in autistic children. *Journal of Autism and developmental Disorders*, *20*(1), 115-128.

Pickett, E., Pullara, O., O'Grady, J., & Gordon, B. (2009). Speech acquisition in older nonverbal individuals with autism: a review of features, methods, and prognosis. *Cognitive and behavioral neurology*, *22*(1), 1-21.

Tager‐Flusberg, H., & Kasari, C. (2013). Minimally verbal school‐aged children with autism spectrum disorder: The neglected end of the spectrum. *Autism research*, *6*(6), 468-478.

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