**Title**: Post-Secondary Activities Among Young Adults with Down Syndrome and their Associations with Autism Spectrum Disorder Symptomatology

**Authors**: Jessica McNulty 1, Hannah Grosman 1, Meghan O’Brien 2, Angelita Seak 1, Sarah Grey 1, Ketevan Pirosmanashvili 1, Daisy Russo,1 Gregory L. Wallace 3, & Nancy Raitano Lee 1

**Introduction**: As life expectancy for individuals with Down syndrome (DS) continues to increase, there is a heightened need for research that characterizes daytime activities of adults and how these relate to cognition and behavior. Such research is particularly important in young adulthood, as identifying factors that are associated with more favorable everyday outcomes will inform efforts to promote healthy aging. Employment is one important daytime activity closely linked to social, mental, and physical health in both the general population (e.g., Arena et al., 2023) and individuals with DS (Sheridan et al., 2019; Piro-Gambetti et.al, 2024). Yet, limited research is available on employment and other daytime activities among young adults with DS. Thus, the current research sought to characterize vocational/educational activities among young adults with DS and to examine factors that may be associated with greater independence. Given the elevated risk of autism spectrum disorder (ASD) in this population (Richards et al., 2015) and its link to poorer adaptive outcomes (Bradbury, 2022; Spinazzi et al., 2024), the impact of autism symptomatology on post-secondary activities will also be examined.

**Method**: Close family members (e.g., parents and adult siblings) of 101 young adults with DS, ages 18-39 years (*M* = 27.5 years, 46.5% female), completed a battery of measures, including a questionnaire that probed daytime activities (e.g., paid work, post-secondary education programs, volunteer activities, and day programs). Activities were then coded for degree of independence using the Vocational Index (VI) developed by Taylor and Seltzer (2012), which assigns ratings of 1 (least independent) to 9 (most independent) to characterize vocational, post-secondary educational, volunteer, and day program activities. In addition, family members rated autistic symptomatology using the Social Responsiveness Scale – 2nd edition (SRS-2). The SRS-2’s Social Communication and Interaction (SCI) and Restricted Interests and Repetitive Behaviors (RIRB) subscales were the focus of primary analyses with follow-up analyses examining the four SCI treatment scales.

**Results**: Daytime activities for adults with DS were varied. The median VI score was 5, indicating over 10 hours/week of sheltered work/day activities or supported community work. The mode was 4, corresponding to sheltered work/day program activities with or without volunteering for over 10 hours a week. A minority (8.9%) reported no vocational/educational involvement, citing behavioral issues, lack of financial need, and difficulty finding a suitable fit as factors impacting the individual’s vocational/educational engagement. Over a quarter of the sample (27.7%) was engaged in sheltered work/day programs (with or without volunteering), 11.9% of participants were engaged in volunteering or non-degree programs, 44.5% of participants had supported community jobs, and 7% percent were pursuing a degree or working in the community without supports. Spearman correlations examining associations between VI scores and autistic traits using the SRS-2 revealed a modest significant association with the SCI T-score (rho(78) = -.30, *p* < .01) and a non-significant correlation with the SRS-2 RIRB T-score (rho(78) = -.16, *p* > .1). Given the association between the VI and SCI, follow-up analysis examining the relation between the VI and the SCI treatment scales were completed. Modest, significant associations were observed for three of the four SCI subscales: Social Awareness (rho(78) = -.33, *p* < .01), Social Cognition (rho(78) = -.27, *p* < .05), and Social Communication T-Scores (rho(78) = -0.26, *p* < .05).

**Discussion:** Consistent with findings of prior research (Kumin et al., 2015), many individuals with DS continue to face barriers to finding full time community employment and most are engaged in sheltered work/day activities or volunteer roles. Encouragingly, these findings are also consistent with Kumin’s observations that most individuals with DS are engaged in some form of post-secondary activity for at least 10 hours per week. The current study also supports existing research linking higher ASD symptomatology to poorer everyday outcomes in DS (e.g., Bradbury, 2022; Spinazzi et al., 2024). Importantly, it also extends this work to the vocational/post-secondary educational domain in adulthood, highlighting the importance of co-occurring ASD symptomatology to outcomes for individuals with DS. The clinical implications of these findings, particularly as they relate to supporting post-secondary activities among young adults with DS, will be discussed.

**References**

Arena, A, Mobbs, S,  Sanatkar, S, Williams, D, Collins, D, Harris, M (2023) Mental health and unemployment: A systematic

review and meta-analysis of interventions to improve depression and anxiety outcomes. *Journal of*

*Affective* *Disorders,* Vol. 335, 450-472.

Bradbury, K. R., Anderberg, E. I., Huang-Storms, L., Vasile, I., Greene, R. K., & Duvall, S. W.  (2022). Co-occurring Down

Syndrome and Autism Spectrum Disorder: Cognitive,  Adaptive, and Behavioral Characteristics. *Journal of*

*autism and developmental* *disorders*, *52*(3), 1235–1246.

Kumin, L. and L. Schoenbrodt (2016). Employment in Adults with Down Syndrome in the  United States: Result from a

National Survey. *J Appl Res Intellect Disabil*, 29(4). 330– 345.

Piro-Gambetti B, Schworer EK, Handen B, Glukhovskaya M, Hartley SL (2024). Does Employment Complexity Promote

Healthy Cognitive Aging in Down Syndrome? *Intellect Disabil.*(2):499-513

Richards C, Jones C, Groves L, Moss J, & Oliver C (2015). Prevalence of autism spectrum disorder phenomenology in

genetic disorders: A systematic review and meta- analysis. *The Lancet Psychiatry*, 2(10), 909–916.

Sheridan, C., M. O Malley-Keighran, and C. Carroll (2019) What are the perspectives of adolescents with Down syndrome

about their quality of life? A scoping review. *British Journal of Learning Disabilities*, 48(2): p. 98-105

Spinazzi NA, Velasco AB, Wodecki DJ, Patel L (2024) Autism Spectrum Disorder in Down Syndrome: Experiences from

Caregivers. *J Autism Dev Disord*. 54(3). 1171-1180.

Taylor, J. L., & Seltzer, M. M. (2012). Developing a vocational index for adults with autism   spectrum disorders. *Journal of*

*Autism and Developmental Disorders*, 42 (12), 2669- 2679.

1 Drexel University

2 University of Nebraska-Lincoln

3 The George Washington University