Title: Expressive Communication in Individuals with a Dual Diagnosis of Autism Spectrum Disorder and Down Syndrome

Authors: Alexandria Cook,1 & Emily D. Quinn,1,2

1Oregon Health and Science University, 2Vanderbilt University

Introduction: Estimates of the prevalence of autism spectrum disorder (ASD) in individuals with Down syndrome (DS) range from 1-19% (Reilly, 2009; Moss, et al., 2013). While a diagnosis of both Down syndrome and ASD is rare, individuals with a dual diagnosis show greater deficits in social communication than individuals with DS (Channell et al., 2015). It is critical to understand the nature of expressive communication and social communication differences in individuals with ASD and DS to inform the development of interventions optimized for individuals with a dual diagnosis.

The Communication Matrix (Rowland, 2011) is an online assessment used to evaluate early expressive communication skills in individuals who have complex communication needs (CCN) including individuals with ASD and DS. It is unique in measuring all possible communicative behaviors used by individuals who have no speech or who have minimal speech, including pre-symbolic communication, augmentative and alternative communication, and early language forms. In this study, we hypothesized that individuals with a dual diagnosis (DS and ASD) will have significantly lower expressive communication scores and specifically, lower expressive social communication scores than their peers with a diagnosis of DS and not ASD.

Method: The Communication Matrix database includes over 100,000 assessments of expressive communication skills of individuals with intellectual and developmental disabilities. This database was mined to provide a portrait of expressive communication in individuals a diagnosis of DS confirmed by at least one professional and who were 0-21.11 years of age (N = 6,142; M = 8.49 years, SD = 4.98 years). The sample was made up of 35% female participants and 64% males. Within this sample of individuals with DS, 7.4% of participants (n = 457) had a diagnosis of ASD, consistent with previous estimates of prevalence. Scores on the Matrix assessment serve as the independent variable on a scale of 0-160 possible points. Scores represent the degree of mastery of each expressive communication intent and behavior that the Matrix measures. Social scores represent a subscale consisting of questions about social communication skills ranging from 0-32 points.

Result: Mean scores on the Communication Matrix were 60.38 (SD = 35.60) for individuals with DS and no ASD and 43.04 (SD = 27.87) for individuals with a dual diagnosis. Multiple linear regressions were conducted to determine if dual diagnosis was a significant predictor of total score and social score on the Communication Matrix after adjusting for age, cognitive impairment, profession of the assessor, sex, primary language, race, and country. Dual Diagnosis was a significant predictor of overall score, $F(14, 4749) = 34.00, p < .000, R^2 = .09$, and social score, $F(13, 4750) = 36.81, p < .000, R^2 = .09$. Scores for individuals with a dual diagnosis were on average 17.39 points and 6.20 points lower for total score and social score respectively.

Discussion: As hypothesized individuals with a dual diagnosis had significantly lower total scores on the Communication Matrix and the social communication subscale. Both models accounted for a small amount of variance in expressive communication scores (9%), which suggested there is high variability in performance on Communication Matrix, with other factors contributing to score. Limitations of this research include that measures consist of professional report instead of observational assessment, limited supplemental information is included about participants, and the study is correlational in nature. While the population is limited by the nature of the assessment to only include individuals with severe communication deficits (i.e. CCN), this study does include one of the larger samples of individuals with a dual diagnosis of DS and ASD. Findings from this research can inform the development of future language and social communication interventions tailored for individuals with a dual diagnosis.

References/Citations: