**Title:** Relationship between anxiety and executive functioning among youth with Down syndrome

**Authors:** Natalie A. Snodgrass, MS1, Lina Patel, PsyD2, Deborah J. Fidler, PhD3, Jennifer Smith, PhD4,5, Stephanie Weber, PsyD, MPH,5, Anna J. Esbensen, PhD4,5

**Introduction:** Down syndrome (DS) is commonly associated with various cognitive and behavioral challenges including difficulty with executive functioning (i.e., shifting, inhibition, initiation and working memory) and elevated rates of anxiety and depression (Patel et al., 2018; Tungate & Conners, 2021). Further, youth with DS and co-occurring neurodevelopmental or mental health conditions (i.e., ASD, disruptive behavior disorder) experience more EF challenges than those with DS alone (Pritchard et al., 2015).In adults with DS, EF difficulties have been associated with heightened internalizing symptoms (i.e., anxiety and depression; García-Villamisar et al., 2020). Given the high overlapping behavioral presentation of symptoms of anxiety and challenges in EF, the present study examined the relationship between anxiety symptoms and EF to better understand their interrelationship and understanding of directionality in this population.

**Method:** The sample included 158 individuals with DS ages 6 to 17 years (*M* = 11.83, *SD* = 3.34) who completed neuropsychological testing including the Stanford-Binet Intelligence Scale (SB-5-AQ), Peabody Picture Vocabulary Test, and the Expressive Vocabulary Test. As part of a larger longitudinal cohort study, parents reported on their child’s co-occurring mental health conditions (15.3% with anxiety), and competed rating scales twice across a one-year period of the children’s adaptive functioning with the Vineland Adaptive Behavior Scales (Vineland-3), executive functioning with the Behavior Rating Inventory of Executive Function (BRIEF-2) and anxious symptoms using the Child Behavior Checklist (CBCL).

**Results:** For the entire sample, at baseline, associations were observed between several subscales of the BRIEF-2 and measures of anxiety and internalizing symptoms on the CBCL (*r* = .17-.42). Our group comparisons controlling for age and Vineland-3 results suggested that those with co-occurring anxiety exhibited more pronounced co-occurring difficulties in several areas of the BRIEF-2 (Shift *F*[1,139] = 10.9, *p* = .001; Emotional Control *F*[1,139] = 12.8, *p* < .001; Initiate *F*[1,139] = 4.1, *p* = .045; Working Memory *F*[1,139] = 10.9, *p* = .001) than those without co-occurring anxiety. Longitudinally after controlling for covariates and baseline levels, shifting at baseline predicted anxiety symptoms (*β* = .16, *p* = .042) a year later while baseline anxiety predicted subsequent challenges with shifting (*β* = .20, *p* = .011) and initiation (*β* = .20, *p* = .013) a year later.

**Discussion:** Our findings suggest that while there are concurrent relationships between several measures of EF and anxiety symptoms and diagnoses, the longitudinal relationship between these constructs is more nuanced in DS. Over 15% of the sample had co-occurring anxiety diagnoses, and despite the modest concurrent relationship between EF with anxiety symptoms and diagnoses, only challenges with cognitive shifting capabilities contributed to heightened anxiety symptoms in this population a year later. Our findings extend the current literature from adults with DS suggesting that as executive dysfunction increases, so do anxiety symptoms (García-Villamisar et al., 2020). Inversely, elevated anxiety symptoms contributed to the presentation of more challenges with shifting and initiation a year later. EF challenges seen in DS may be contributing to diagnostic overshadowing of co-occurring anxiety, resulting in missed opportunities to intervene for anxiety symptoms in this populations.

**References:**

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1. Seattle Pacific University
2. University of Colorado School of Medicine, Children’s Hospital Colorado
3. Colorado State University
4. Cincinnati Children’s Hospital Medical Center
5. University of Cincinnati College of Medicine