Title: A Novel Computerized Assessment for Examining Memory in Children with Intellectual Disability

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Introduction: Recent advances in pharmacological treatment for cognitive deficits in intellectual disabilities have been numerous, resulting in multiple clinical trials that will soon proceed to stages of human testing in children and adults. However, treatment studies in individuals with intellectual disabilities (ID) face many measurement challenges, and few studies have been conducted to assess the suitability of neuropsychological measures for use in children with ID. In particular, while several pharmacological agents target the function of the hippocampus and associated memory systems, relatively little work has been completed to validate measures assessing function in this domain. Given that a number of proposed pharmacological agents target the function of the hippocampus, memory will likely be a “primary” outcome in upcoming trials. This makes memory test validation a critical next step in supporting pharmacological approaches to cognitive interventions in ID. Therefore, our group (currently the University of Arizona and expanding to include Drexel University and the MIND Institute) is in the process of developing a theoretically-informed, comprehensive touch-screen memory assessment system for use in young children with ID. This poster will present the preliminary results from the Arizona Memory Assessment for Preschoolers and Special Populations (A-MAP), a comprehensive memory assessment that our group will validate over the next five years in children with intellectual disability.

Methods: We employed the A-MAP (Form A) memory assessment in school-age children and young adults with and without DS (28 DS and 28 typically developing (TD) controls). The measure is a 45-minute assessment of verbal and non-verbal memory, processing speed, and executive control administered on a large format touch screen (iPad). While the measure includes 3 alternate forms, our preliminary data focus on Form A.

Results: Preliminary results show that individuals with Down syndrome have deficits on memory tasks requiring temporal or spatial pattern separation, and the measures showed adequate internal consistency and low floor effects. The measures related to long-term retention of words after a one-week delay in typically developing children, suggesting good construct validity.

Discussion: Our overall goal of this National Institute of Health funded measurement development study is to provide a methodological advancement that will set the field forward toward a more consistent and valid assessment of the memory domain for clinical trials. The A-MAP test is still in development and will be on display at the Gatlinburg conference so that stakeholders and potential end-state users may view and provide feedback on the measure.