# The Executive Function Basis of Dyscalculia, Orthographic, Dyslexia, and Dysgraphia

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Mathematical learning disorder (dyscalculia - MLD) is the least researched and most underdiagnosed learning disorder. The concepts in our recent research article "Understanding Mathematical Learning Disorder in Regard to Executive and Cerebellar Functioning: A Failure of Procedural Consolidation" (published Journal of Pediatric Neuropsychology June 2022) are used to illustrate how dyscalculia, orthographic dyslexia, and dysgraphia must be understood and assessed from a neuropsychological perspective. Attendees are taught the executive function concept of procedural learning and coupling (PLC) and its relationship to procedural memory and consolidation in learning. Attendees are also taught a method of using standardized assessment along with an algorithm to streamline MLD assessment with 95% diagnostic accuracy. The lecture is filled with anecdotes and case examples to illustrate the methodology and the process of MLD in the gifted and other populations.

This workshop is designed to help the attendee:

A. Develop a greater understanding of the "red flags" of dyscalculia and other LDs that are frequently overlooked among the gifted disabled population.

B. Understand how identification of dyscalculia does not conform to the traditional "discrepancy model" identification of learning disability or the Bell-curve.

C. Understand the relationship between the brain function and how children express dyscalculia.

Attendees will walk away with the following in their hands and minds:

A. A novel way of understanding mathematical learning disability and other LDs.

B. A novel method for assessing for mathematical learning disability.

C. Logical and brain-based interventions to remediate mathematical learning disability. (242 words)

## Biography:

Dr. Paul Beljan is a pediatric neuropsychologist practicing in Scottsdale, AZ. He holds child diplomate with ABPdN and adult diplomate with the American Board of Professional Neuropsychology (ABN). He is a past president of the American Board of Pediatric Neuropsychology (ABPdN). Dr. Beljan earned a post-doctoral master's degree in psychopharmacology.

Dr. Beljan co-authored Misdiagnosis and Dual Diagnosis of Gifted Children and Adults: ADHD, BiPolar, OCD, Depression, and Other Disorders. He also co-authored Large Scale Brain Systems and Neuropsychological Assessment: An Effort to Move Forward. Dr. Beljan is a nationally retained forensic expert and lectures nationally and internationally.