

## **Comprehensive Neuropsychological Evaluations for Children with NF1**

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Children with NF1 are at risk for the development of learning and cognitive problems (e.g., difficulties with thinking, reasoning, memory, language, attention, etc.). Indeed, more people with NF1 will report school problems and academic failure than will experience serious physical complications associated with the disease. Cognitive problems have been described as the most significant cause of impairment across the lifespan for individuals with NF1. Children with NF1 often receive psychoeducational testing through their school district to determine if the child qualifies for special education services as a result of learning or cognitive problems. Psychoeducational testing typically includes an evaluation of a child's intellectual ability (IQ) and academic achievement. In addition, if concerns are present, additional testing related to speech-language skills, fine- and gross-motor development, and emotional/behavioral functioning may be provided.

Importantly, children with NF1 are at risk for deficits in cognitive domains that typically are not assessed through psychoeducational evaluations. For example, children with NF1 are at-risk for the development of problems with sustained attention and executive functioning skills. Executive functions refer to a wide-range of skills that allow the individual to manage and regulate his or her behavior and includes skills such as organization, planning ahead, problem-solving, inhibition of inappropriate behavior, and emotional regulation. Further, children with NF1 may develop problems with visual and verbal memory, visual-spatial processing, and social perception/interactions. Deficits in each of these domains are likely to interfere with a child's functioning; however, difficulties in these areas may go undetected in the traditional psychoeducational evaluation.

A comprehensive neuropsychological evaluation typically involves assessment of the domains that are covered in psychoeducational evaluations (e.g., intelligence and academic achievement) and also includes evaluation of a wide range of other cognitive skills. By evaluating all of the domains in which children with NF1 may demonstrate deficits, a comprehensive neuropsychological evaluation has the potential to identify all of the areas of difficulty that are impacting a child's learning. A full understanding of the child's cognitive strengths and weaknesses facilitates the development of a thorough intervention plan for use at home and school that is designed to maximize the child's functioning.

Neuropsychological evaluations are conducted by a neuropsychologist. A neuropsychologist holds a doctoral degree (Ph.D.) in Clinical Psychology or a related field and receives specific pre- and post-doctoral training in brain development and brain-behavior relationships. Thus, a neuropsychologist is positioned uniquely to understand how a particular disease that impacts the brain (such as NF1) will influence an individual's behavior in a variety of settings. A pediatric neuropsychologist specializes in understanding how conditions (such as NF1) impact the developing brain.

If you suspect that your child has cognitive deficits that are impacting his or her learning, you should talk with your child's NF1 physician regarding his or her potential need for a neuropsychological evaluation. Adults with NF1 also may benefit from a comprehensive neuropsychological evaluation, which may assist with post-secondary education and vocational training. Your NF1 physician may know of a neuropsychologist in your area. Your insurance company also may be able to identify a neuropsychologist in your area who is covered by your plan. The website for the American Board of Professional Psychology provides a searchable directory of board certified neuropsychologists that may identify a provider in your area (go to [www.abpp.org](http://www.abpp.org), click on "find a board certified psychologist," select clinical neuropsychology, and input information about where you live).