

# The importance of neuropsychological assessment for the evaluation of childhood learning disorders NAN Policy and Planning Committee

Cheryl H. Silver\*, Lynn B. Blackburn, Sharon Arffa, Jeffrey T. Barth, Shane S. Bush,  
Sandra P. Koffler, Neil H. Pliskin, Cecil R. Reynolds, Ronald M. Ruff,  
Alexander I. Tröster, Rosemarie S. Moser, Robert W. Elliott

*Department of Rehabilitation Counseling, University of Texas Southwestern Medical Center,  
5323 Harry Hines Boulevard, Dallas, TX 75390-9088, USA*

Accepted 17 August 2006

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## Abstract

When children experience learning difficulties, an appropriate evaluation of abilities and skills can provide the foundation for an accurate diagnosis and useful recommendations. When comprehensive information about a child's brain-related strengths and weaknesses is necessary to understand potential sources of the problem and implications for functioning, a neuropsychological evaluation is most often the best choice. This paper was written to help parents, educators, health care providers, and third-party payors to understand the nature of neuropsychological assessment and to choose the type of evaluation that will furnish relevant information for the child's educational planning.

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*Keywords:* Child; Assessment; Learning disorder; Neuropsychological test

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## 1. Purpose

This article describes the nature of neuropsychological assessment and the importance of obtaining neuropsychological evaluations when children are experiencing learning difficulties. The information that follows can help parents, educators, health care providers, and third-party payors make decisions about the type of evaluation that will best serve the needs of the child who has a possible learning disorder. The intent of this paper is to explain the value of seeking a comprehensive neuropsychological evaluation, and highlight what it can offer in understanding a child's brain function and in providing a relevant educational plan. This article is not intended to define which professionals may conduct these evaluations nor to offer an opinion as to the setting in which these evaluations may take place. Neuropsychological evaluations can be offered in school settings or in private practice and hospital settings, as is the case for other types of evaluations. There are many types of professionals who conduct evaluations of children with learning problems; however, neuropsychological evaluations should be conducted by psychologists who have specialized training in neuropsychology.

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\* Corresponding author. Tel.: +1 214 648 1740; fax: +1 214 648 1771.  
E-mail address: [cheryl.silver@utsouthwestern.edu](mailto:cheryl.silver@utsouthwestern.edu) (C.H. Silver).

## 2. Choosing the best-fitting evaluation for a child

Sometimes confusion exists about how neuropsychological assessment can help provide a better understanding of a child's learning disorder. Children participate in educational experiences that provide regular monitoring of their performance. It is often a school psychologist, employed by the school and on the child study team, who is asked to monitor the performance of children with learning problems. The evaluations of school psychologists are helpful in assessing many abilities and skills, and contribute to the academic placement of the child. However, typical school-based evaluations may be limited in their scope due to organizational constraints, and may not offer the extensive, comprehensive analysis of brain functioning that is provided by trained neuropsychologists. Schools do not routinely provide comprehensive neuropsychological evaluations as part of their child study team assessments. Therefore, it is important for the parent, educator, or other adult seeking an evaluation to understand the type of evaluation that will be conducted and what it has to offer.

There are times when a child is not progressing in school because the standard instructional approaches do not work. When this occurs, a child may be referred for an evaluation for a suspected learning disorder or learning disability. In other situations, a child may have had an initial evaluation and subsequent instructional modifications, but the intervention has not been successful. Under these circumstances, referral for an evaluation of brain-related factors such as the child's memory or problem-solving may be useful to the educators. The learning problem may be a consequence of a documented neurological disease or condition, and teachers need to know how to modify and adapt the child's instructional program with specific educational strategies and methods.

For example, teachers may change how they present verbal or visual material to a child depending on the strengths and weaknesses in the child's memory profile. It is also helpful for teachers to know how "flexible" the child's brain is. Can the child "shift" or change quickly from one idea to another? Can the child learn a task and then reapply it or "generalize" it to a new situation? The answers to these and other brain-related questions help teachers design educational programs that can be tailored to the child's ability profile. Without this kind of information, a child's progress is slowed, and frustration mounts for teachers and parents, as well as the child.

To optimize time, effort, and resource utilization, when a parent, educator, or health care professional requests an evaluation for learning difficulties, it is critical to choose the specific type of evaluation that will comprehensively answer the questions. When third party payors or health care insurance coverage is sought, it is important that the diagnostic question is clearly identified and that the appropriate referral for evaluation is made.

## 3. Choosing a neuropsychological evaluation

A child's primary "job" is learning. When a child fails to acquire academic skills as expected, this failure may mean the presence of subtle brain dysfunction of a developmental nature. Additionally, a child who has medical risk factors (such as a seizure disorder or traumatic brain injury) may experience learning disorders (Williams & Sharp, 2000; Yeates, 2000). The critical issue is to identify brain-related dysfunction, so that academic and behavioral interventions can begin in a timely fashion and maximize a child's benefit from schooling. Early, appropriate intervention can reduce the likelihood that the child will experience continued failure, which may lead to more severe emotional or behavioral difficulties. These types of interventions may include environmental modifications, remediation, rehabilitation, or the introduction of compensatory strategies.

For some children with learning problems, the typical school-based evaluation is sufficient to identify their learning problems and to recommend appropriate intervention. However, there are children for whom the common educational strategies may not be effective. These children need a more detailed neuropsychological assessment of cognitive abilities. Some children may have experienced traumatic insult to their brains that affects their neurological and/or behavioral functioning. In these cases, a comprehensive neuropsychological evaluation is medically necessary. Compared with a psychoeducational evaluation, a neuropsychological evaluation covers a broad spectrum of issues related to central nervous system functions considered necessary to diagnose and design effective rehabilitation and related interventions. The neuropsychological evaluation integrates information about how the brain functions with observable performance, making it a practical, useful, and cost-effective tool in educational and rehabilitation planning.

#### 4. What is a neuropsychological evaluation?

A neuropsychological evaluation is composed of (1) a clinical interview and observations of the child, (2) if possible, an interview of significant others, (3) a review of relevant school and/or medical records, and (4) administration of a series of tests that measure areas of brain functioning that may include: attention, executive functioning, memory, language, visuospatial abilities, sensory-perceptual functioning, fine motor skills, academic performance, intellectual abilities, and behavioral/emotional functioning. Neuropsychological evaluations include intelligence tests, which may be used to make brain-related interpretations. The selection of the tests that a neuropsychologist uses will depend on the child's presenting problems, the referral questions, and any documented or suspected diagnosis. The evaluator uses the information obtained in the evaluation, knowledge of the disorder in question, knowledge of brain anatomy and function, and knowledge of developmental issues to provide an effective interpretation of test results. Thus, a neuropsychological evaluation offers more than just intelligence quotient (IQ) or intelligence testing; more than just achievement or academic skills testing; and more than just determination of whether a child qualifies for special services, or qualifies as having a "disability."

The purposes of a neuropsychological evaluation are to determine the pattern of brain-related strengths and weaknesses, to develop an understanding of the nature and origin of the difficulties, to make a diagnosis, and to provide specific recommendations for appropriate intervention and treatment. As D'Amato, Rothlisberg, and Work (1998) have stated, "providing effective interventions should be the cornerstone of any evaluation" (p. 463). The neuropsychological evaluation integrates etiological and performance factors, keeping in mind the effects of emotional/behavioral factors, to assist in developing effective interventions.

Professionals who are trained to perform neuropsychological evaluation of children possess knowledge about normal development and cognition, normal and abnormal brain functioning, and the patterns of cognitive performance produced by various types of brain dysfunction. This knowledge base includes subtle conditions such as classic learning disabilities (e.g., dyslexia, dyscalculia) and nonverbal learning disabilities, which are known to have neurodevelopmental etiologies (e.g., Zeffiro & Eden, 2000). Other conditions include genetic syndromes, structural defects of the central nervous system, toxin exposure such as lead exposure, or other brain injury that can occur during or after pregnancy and birth.

#### 5. Specific needs of children with traumatic brain injury (TBI) or medical diseases

Mandated educational services for children who have sustained traumatic brain injury (TBI) have changed the face of assessment needs in public schools during the past decade as a result of the *Individuals with Disabilities Education Act (IDEA 1990, 2004)*. Public schools are required to provide services related to the educational needs of children who have impaired school functioning as a result of TBI. The type of information required to guide instructional programming for children with TBI is more complex than that which is provided in the typical school-based evaluation. A neuropsychological evaluation is the foundation for understanding the child's cognitive strengths and weaknesses, so that the best educational planning can take place. A neuropsychological evaluation can determine the integrity of brain functioning, such as the child's memory functioning for the process of learning, or the child's psychomotor functioning for participation in certain classroom activities. From this evaluation, appropriate individualized educational plans (IEPs) can be created, as required by law.

Similarly, IEPs are mandated for children in public schools who have medical diseases or disorders that affect their academic progress. Federal law defines the eligibility category of other health impaired, which covers children who have learning disorders produced by conditions such as seizure disorders, hydrocephalus, or brain tumors. These children need evaluations of their cognitive functioning before appropriate instructional plans can be created. A comprehensive neuropsychological evaluation is the appropriate method to obtain the necessary information about the child's functioning.

#### 6. Conclusions

The neuropsychological evaluation is the evaluation of choice when educators and parents want to answer not only "what" is going on academically, but "why?" Grounded in knowledge of pathophysiology and neuroanatomy, the professional trained in pediatric neuropsychology is best able to distinguish the characteristics of both the neurological

and the emotional/behavior factors that can impact academic functioning, to provide an explanation of the child's current brain-related strengths and weaknesses, and to offer appropriate recommendations. Parents, educators, and other adults maintain the responsibility for choosing the type of evaluation that will best and most effectively address the needs of child. This paper is designed to assist them in making an informed decision.

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