

ASSESSMENT ISSUES

Tutorial: Psychological & Neuropsychological Assessment

WHAT ARE PSYCHOLOGICAL AND NEUROPSYCHOLOGICAL ASSESSMENTS?

Understood narrowly, psychological, psycho-educational, and neuropsychological assessments are batteries of tests administered to students under standardized and carefully controlled conditions. These tests yield scores that are then related to scores of same-age students with the goal of determining where the student falls in relation to normative standards. Scores can be reported for each individual test, yielding a profile of abilities and disabilities on the tested items. In addition, some tests allow the evaluator to group test results into more general indices of performance in general domains. Intelligence quotient (IQ) scores are general indices of this sort. Using the Wechsler IQ batteries (most commonly used in school settings), psychologists report a composite Verbal IQ score (generally speaking, representing left hemisphere language-related functioning), a composite Performance IQ score (generally speaking, representing right hemisphere visual and visual-motor functioning), and a general IQ score that takes into account all of the sub-tests.

Psycho-educational assessments may use a core IQ test as a component, but highlight tests of academic functioning. The educational tests include various assessments of reading, writing, and mathematics. Other aspects of educational functioning may also be included.

Neuropsychological assessments may use a core IQ test as a component, but extend beyond IQ testing to evaluate specific domains of functioning that are correlated with specific brain regions or brain systems. Neuropsychological testing typically goes into detail in domains such as attention and concentration, memory and learning, visual-perceptual and visual-construction abilities, executive functions, and other more specific domains that may be selectively impaired by brain injury. Neuropsychologists may use many of the same tests used by school psychologists, but interpret the results in light of their special expertise in brain-behavior relationships. Originally, neuropsychological tests were designed in part to diagnose specific types of brain damage or impairment. However, with today's routine use of sophisticated neuro-imaging equipment (e.g., CT scans, MRI scans), neuropsychological tests are less commonly used for such neuro-diagnostic purposes.

Until recently, discrepancies within test performance (e.g., a Performance IQ substantially higher than Verbal IQ) or discrepancies between IQ scores and grade-level educational performance were used to determine qualification for services under the label Learning Disabled. Under the terms of the re-authorized Individuals with Disabilities Education Act (2006), these discrepancies are no longer needed to qualify for special education services. Rather, a multi-stage individualized evaluation of the student's response to instruction can be used as the critical indicator of need for special services.

Because historically important purposes for psychological and neuropsychological testing no longer apply, these tests are now looked to primarily for insights into how to help the students with disability. Thus the value of tests should be measured by their contribution to decisions about teaching approaches, remediation of deficits or compensation for deficits, and other decisions about intervention and support strategies.

Given this more functional understanding of psychological and neuropsychological assessments, procedures have broadened.

(1) **Observations during testing:** Many psychologists and neuropsychologists consider the observations they make as the student takes tests to be as important as the test results themselves. Observations are made of the student's impulsiveness versus deliberateness, anxiety, response to time pressures, strategies used to succeed, successful versus unsuccessful strategies, and the like.

(2) **Observations during everyday task performance:** Most psychologists and neuropsychologists interpret their test results in consideration of observations that they have made of the student in real learning situations or at least reports from others who observe the student in the real world. These observations are made as part of the attempt to validate the test results or to focus the testing. (See below.)

(3) **Dual scoring:** Many psychologists and neuropsychologists employ a dual scoring procedure to more thoroughly document the student's abilities and, more important, to determine what teaching procedures and supports may be beneficial to the student. With this procedure, tests are first administered according to the test manual's requirements. A score is then derived. Following this, the test may be re-administered, but with changes in administration. For example, the child may be given extra time, specific cues or prompts, altered materials (e.g., large print or fewer items on a page), strategy suggestions, and the like. If the student scores substantially higher with task modifications, strategy suggestions, or other supports, then conclusions might be drawn about teaching procedures and supports that should be implemented in the classroom.

(4) **Standardized surveys designed to gain access to real-world performance:** As the validity of standardized testing as a stand-alone procedure has been increasingly called into question for students with TBI (especially those with frontal lobe injury), psychologists and neuropsychologists have added real-world surveys as a component of the assessment. Currently the most popular survey used with students with suspected executive system/self-regulation impairment is the BRIEF (Behavioral Rating Inventory of Executive Functions). There are also preschool and adult versions of this assessment tool. The BRIEF for school age children and adolescents has a set of rating scales for teachers and another set for parents. Several studies have demonstrated that the real-world (ecological) validity of the BRIEF is superior to that of batteries of office-bound tests. As such it is recommended for students with TBI.

WHY ARE PSYCHOLOGICAL AND NEUROPSYCHOLOGICAL ASSESSMENTS IMPORTANT FOR SOME STUDENTS AFTER TBI?

Many students with TBI (especially those with frontal lobe injury) have ability profiles that are confusing for teachers, parents, and even school psychologists. The students may appear to have recovered fully (or nearly so) and may seem to have regained basic academic skills acquired before the injury, like reading, writing, calculation, and basic content knowledge. However, the student may have ongoing cognitive and information processing problems, new learning problems, and executive function/self-regulation problems that will cause serious difficulties in school. Without special supports, the student may fall further and further behind. Standard school assessment procedures may miss the student's critical domains of impairment, resulting in a decision to provide none of the needed supports. Thus specialized assessments may play a role in qualifying the student for services or supports. In addition, an experienced neuropsychologist may be able to use comprehensive assessment results to offer expert guidance to teachers seeking effective teaching methods and support procedures for the student with brain injury.

WHAT ARE THE MAIN THEMES IN PSYCHOLOGICAL AND NEUROPSYCHOLOGICAL ASSESSMENTS FOR STUDENTS WITH TBI?

1. **IQ Testing: Usefulness?** Because IQ testing is no longer required as a condition for special education services, its importance for students with brain injury has been called into question. IQ tests have been found to be a less valid form of assessment than other options, like careful situational assessment of learning and other behavior, and like neuropsychological assessments in some cases. The validity questions raised in #3 below should be seriously considered before IQ testing is selected as an assessment option in schools.
2. **Criteria for Requesting a Neuropsychological Assessment:** Because neuropsychological assessments are expensive and time consuming, their use should be governed by carefully considered criteria. (1) **Questions to be answered:** There is little value in referring a student for

neuropsychological assessment if there are no questions about the student's profile of abilities or appropriate teaching methods. The role or function of the assessment should be determined by the questions that staff and family have about the student. (2) **Experience of the neuropsychologist:** Experience in child neuropsychological assessment is mandatory as well as specialized knowledge of traumatic brain injury and its effects. (3) **Willingness of the neuropsychologist to collaborate with education staff in formulating the assessment plan:** The neuropsychologist should interact with school staff before formulating the assessment plan. In the absence of such collaboration, a comprehensive assessment might be completed, but with no good answers to the teachers' or parents' most important questions. (4) **Willingness of the neuropsychologist to work with school staff in developing an intervention plan based on the assessment results:** Neuropsychological assessments often yield lengthy reports that are of little practical use to school staff. The language used by the neuropsychologist may be foreign to the school staff. Alternatively, the recommendations may not fit the school context or may be based on test results that do not match the student's real-world performance. Thus there must be interaction between the neuropsychologist and selected school staff so that the results of the assessment become real and relevant for the school staff.

3. **Validity Questions: Psychological and Neuropsychological Testing:** The general theme underlying the frequent inaccuracy of office-bound test results is the paradox inherent in presenting brief and highly structured tasks in a highly controlled environment in an attempt to determine how effectively students can (1) set goals for themselves (based on their insight into their abilities), (2) plan and organize behavior in pursuit of those goals, (3) monitor and evaluate their performance, (4) use effective strategies and flexibly shift strategies in the event of failure, (5) retain new information or skills over extended periods of time, (6) maintain consistent performance from day to day, (7) remain focused over time, with unstructured and challenging tasks in messy real-world contexts, and (8) remain optimistic and encouraged without the encouraging interaction of an experienced evaluator. That is, the evaluator and evaluation context easily become the "prosthetic frontal lobes" for the student with frontal lobe injury. Therefore the student's most serious disabilities may be overlooked by the evaluator. This feature of prefrontal injury often necessitates creative deviation from traditional school assessment policies to ensure that needed services and supports are provided to students with TBI (e.g., going beyond standardized tests and fixed performance criteria to determine eligibility for services)
4. **Procedures to Enhance the Validity of Testing:** For purposes of ensuring the validity of assessment, psychologists and neuropsychologists should use the procedures discussed earlier for extending the assessment beyond office-bound tests. These include real-world observations of the student's behavior, double scoring to identify supports and strategies that should be used in instruction and surveys or rating scales completed by teachers and parents. In addition, the careful hypothesis testing detailed on this web site is a critical component of the assessment process that yields the most effective teaching methods and supports for the student.
5. **Collaborative, Context-Sensitive Hypothesis Testing:** Hypothesis testing is the process that is detailed by this web site. It essentially involved real-world collaborative exploration to determine what contributes to the student's difficulties and what interventions and supports truly help the student. This process avoids the speculation and inference that necessarily accompanies interpretation of test results and development of an intervention plan based solely on test results.

Context sensitive hypothesis testing begins with clear descriptions of real-world problems as they arise in school or at home. Possible explanations for the problem are then produced. Likely possibilities are then tested in the real contexts of the student's life, with all staff and possibly family collaborating in this exploration. Once it is known, based on this systematic exploration, that a possible contributor to the problem is actually playing a role, then appropriate interventions and supports can be implemented. This process takes the speculation or guess work out of developing intervention and support plans.