Encyclopedia of School Psychology

Neuropsychological Assessment

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Neuropsychology is the study of brain–behavior relationships that use both neuropsychological and psychological theories and methodologies; it is the clinical application of brain–behavior relations. Neuropsychological assessment is the assessment of those individuals with congenital or acquired neurological disorders and/or diseases that result in impaired functions, as well as psychiatric illnesses.

Other related definitions state that neuropsychological assessment focuses on the study of various behavioral domains related to neurological structures, or *functional systems*, in the brain and the relationship between these behaviors and the integrity of the central nervous system (CNS) (Hynd & Hooper, 1992). Behavioral domains often included in these definitions are:

- Cognitive ability
- Sensory-motor ability
- Memory
- Attention
- Achievement
- Emotional functioning
- Executive functioning (e.g., the ability to control and maintain attention)

Neuropsychological assessment is not simply the inclusion of specific components in the assessment battery; it is the conceptualization and interpretation of the findings in conjunction with current knowledge of development and brain–behavior relations.

Who Can Ethically Conduct Neuropsychological Assessments?

As with all psychological assessment, competency, as defined by training and experience, is needed to ethically conduct neuropsychological assessments. As with any specific measure, individuals may attain specialized training and supervised practice in administering any number of neuropsychological measures; the broader issue of competency relates to the practitioner's ability to then interpret these measures within the context of brain–behavior relations as opposed to a surface examination of obtained scores.

The level of competency and experience required before one can call oneself a “neuropsychologist” is defined by multiple professional boards. As recently as 2003, the specialty definition for clinical neuropsychology was approved by the APA Commission for the Recognition of Specialties and Proficiencies in Professional Psychology (CRSPPP). Multiple professional organizations (e.g., APA Division 40, International Neuropsychological Society) have concurred with these somewhat general requirements for competency. From the CRSPPP definition, competence includes specific knowledge and skills related to:

- Functional neuroanatomy and neuropathology
- Neurological and related disorders
- Child development
- Behavioral pathology
- Psychopharmacology
- Ontology of neuropsychological processes, as well as decrements in those same neuropsychological processes as a function of normal aging

- Psychophysiology and pathophysiology as related to various disorders

These competencies are in addition to the basic skills and knowledge incumbent of all practitioners including test administration and interpretation, sociocultural factors and their influence on behavior, and linkage between assessment and intervention strategies.

Although licensure is not specific to clinical neuropsychology, specialty status can be obtained from the American Board of Professional Psychology (ABPP). Eligibility requirements for a specialty in clinical neuropsychology include:

- A doctoral degree from a professional psychology program that is accredited by the APA or the Canadian Psychological Association (CPA), or that is listed in the publication *Doctoral Psychology Programs Meeting Designation Criteria*
- Licensure or certification as a psychologist in the state, province, or territory in which the psychologist practices
- A general internship that includes a special focus in neuropsychology *and* two years of postdoctoral training experience in clinical neuropsychology **or** successful completion of an approved clinical neuropsychology residency *and* (licensed) practice at the independent level *and* a variety of training and experiences that prepares the specialist in neuropsychology (e.g., basic neurosciences, psychopathology, assessment, intervention)

Beyond minimal competency, to be granted board certification in the specialty area by the ABPP, a psychologist must demonstrate advanced competencies required by the specialty.

Contributions of Neuropsychological Assessment for Youths in Educational Settings

Neuropsychological testing has become a popular topic when studying disabilities that affect children and their education. Historically, the assessment and identification of children for special education services in schools has consisted of cognitive ability and achievement tests as the primary assessment tools. One of the most common issues concerning neuropsychological testing in schools is the appropriateness and usefulness of neuropsychological tests in contributing additional information beyond that of traditional psychoeducational testing, as well as the validity and reliability of such measures, information gained, and the relevancy in creating intervention plans. Hynd and Hooper (1992, p. 3) asserted that from a biological and psychological perspective “better characterization of a disease or disorder will lead to a better understanding of etiology and the most effective means of differential treatment”; therefore, the most thorough assessment of a child's functioning would be the most beneficial.

Many authors have supported the need for neuropsychological testing in schools because of its usefulness in identifying individual strengths and weaknesses that lead to better intervention options and the creation of a more holistic view of a student's functioning. Hartlage and Williams (1990) further emphasized the importance and relevance of creating interventions based on neuropsychological assessment because of the critical changes in the central nervous system and frontal lobes (i.e., front portion of the brain) during childhood.

Table 1 Domains of Neuropsychological Assessment (*NEPSY*)

Domain	*NEPSY Subtests*
Auditory/linguistic functioning	Auditory Attention and Response Set
	Phonological Processing
	Comprehension of Instructions
	Oromotor Sequences
Motor functioning	Finger Tapping
	Imitating Hand Positions
	Visuomotor Precision
	Manual Motor Sequences
	Design Copy
	Oromotor Sequences
Visual-spatial functioning	Design Copy
	Arrows
	Block Construction
	Route Finding
Sensory perception	Finger Discrimination
	Design Copy
Attention/ concentration	Auditory Attention and Response Set
	Visual Attention
	Statue
Learning/memory	Memory for Faces
	Memory for Names
	Narrative Memory
	Sentence Repetition
	List Learning
Executive functions	Tower
	Statue
	Design Fluency
	Knock and Tap

The Strengths and Weaknesses of Measures Used in Neuropsychological Assessment

As with any assessment, neuropsychological assessment should incorporate measures that are psychometrically sound, valid, and fair. Historically, measures used with children and youths have been based on neuropsychological measures of adults (Riccio & Wolfe, 2003). Further, child neuropsychology has been criticized for its failure to incorporate and understand measurement issues in test use and construction. Specific concerns have been raised on the availability of adequate normative data across the life span. A second concern is related to the need to establish reliability and validity of scores as well as their subsequent interpretation (Riccio & Reynolds, 1998). With developmental issues, a prominent focus of child assessment, the sensitivity of neuropsychological measures to neurobehavioral and neurodevelopmental differences in children is important. In recent years, there has been an increase in the number of

studies to establish normative data and to investigate the validity and reliability of obtained scores. At the same time, at least one comprehensive battery was developed for children to obtain a developmental neuropsychological assessment (the NEPSY; Korkman & colleagues, 1998). Table 1 gives the tasks and domains covered by the *NEPSY* for children ages 3 to 12 years.

- neuropsychological assessment
- neuropsychology
- neuropsychological tests
- validity and reliability
- assessment
- children
- central nervous system

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See also

- Behavioral Assessment
- Bias (Testing)
- Communication Disorders
- Intelligence
- Learning
- Reliability
- Social–Emotional Assessment

References and Further Readings

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