

Reasons for Neuropsychological Evaluation of Children and Adolescents

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5/17/2016

Objectives

- At the end of this presentation, participants will be able to:
 - Define pediatric neuropsychology
 - Identify at least 3 domains of functioning that are assessed by a neuropsychological evaluation
 - Incorporate knowledge of pediatric neuropsychology into work with children and adolescents
 - Recognize when a referral to a pediatric neuropsychologist is warranted

What is pediatric neuropsychology?

- Pediatric neuropsychology is a specialty within the field of psychology and related health care sciences. The emphasis in pediatric neuropsychology is the study and understanding of *brain-behavior relationships*
- Results of a neuropsychological evaluation provide understanding of a patient's behavior and learning at home, school, and in the community that will help guide interventions and recommendations for parents, medical professionals, mental health professionals, and teachers to help the patient function to the best of his/her abilities

Who is a pediatric neuropsychologist?

- A neuropsychologist has earned a doctoral level degree (i.e., Ph.D., Psy.D.)
 - Degree earned in clinical or school psychology
 - Completed specific coursework and clinical training in neuropsychology
 - 1 year internship with emphasis in neuropsychology required prior to graduation
- Neuropsychology specialization requires 2 year fellowship/post-doctoral residency in neuropsychology
- Neuropsychologists may be board certified (ABPP-CN), however, this is not a requirement to practice as a neuropsychologist at this time

Common referral reasons for a neuropsychological evaluation:

- Impact of brain injury
- Impact of medical condition (i.e., epilepsy, genetic disorders, cancer, etc.)
- Difficulty learning
- Difficulty paying attention
- Behavioral difficulties
- Emotional dysregulation
- Differential diagnosis (e.g., ADHD vs. Anxiety; Intellectual Disability vs. Learning Disability)
- Delayed development (i.e., speech delay, motor delay)
- Impaired social functioning

What is involved in a neuropsychological evaluation?

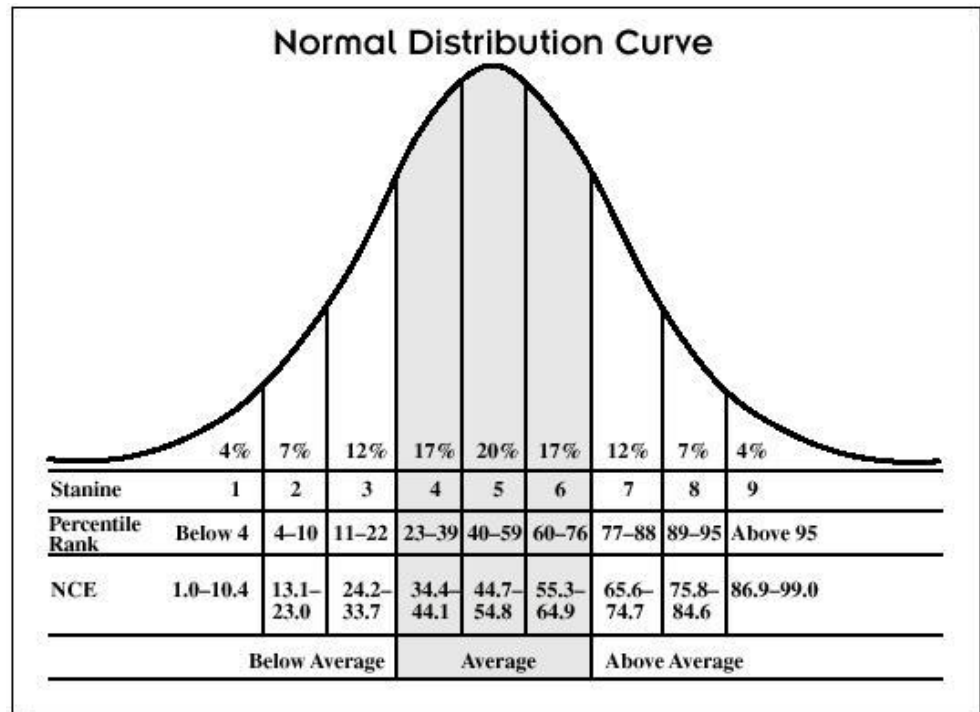
- A neuropsychological evaluation is a full day assessment involving:
 - Comprehensive interview about relevant history
 - Review of pertinent medical and academic records
 - Parents will likely be asked to complete questionnaires about the patient's functioning
 - Teachers will likely be asked to complete questionnaires about the patient's functioning
 - Patient will complete a series of standardized neuropsychological assessments with the neuropsychologist and/or a trained technician
 - This likely will take an entire day
 - Parents will be invited back at a later date for a feedback appointment in which the neuropsychologist will review the results of the evaluation
 - Parents will be provided with a comprehensive report, including a write up of relevant history, assessment results, diagnoses, and treatment recommendations

Domains of Functioning Evaluated in a Neuropsychological Evaluation

- Intellectual Functioning
- Academic Achievement
- Attention
- Executive Functioning
- Learning and Memory
- Visual-Spatial Abilities
- Language
- Motor coordination
- Social Skills
- Behavioral Functioning
- Emotional Functioning
- Adaptive Functioning

Interpretation of Neuropsychological Findings

- Most tests are standardized, so that the patient's performance is compared to other children his/her age, and sometimes also his/her gender



Interpretation of Neuropsychological Findings

- The neuropsychologist integrates all obtained information to conceptualize each individual child's pattern of strengths and weaknesses and determine if criteria for a diagnosis is supported by background information, parent report, teacher report, behavioral observations, and test data
- Example:
 - A low average score for a child who generally functions in the impaired range may be a personal strength
 - A low average score for a child who generally functions in the high average to superior range may be interpreted as a personal weakness

Clinical Utility of a Neuropsychological Evaluation

- Characterize developmental level and determine if early intervention services or special education is warranted
- Characterize cognitive and behavioral effects of a brain disorder or injury (e.g., TBI, epilepsy, tumor)
- Monitor improvement/decline following an injury to guide medical treatment and academic planning
- Can estimate “baseline” functioning prior to a medical intervention (i.e., brain surgery, medications, chemotherapy)
- Can monitor effectiveness of chosen treatment
- Can clarify role of psychiatric vs. cognitive vs. behavioral symptoms
- High comorbidity between psychiatric and neurological conditions (Baker et al., 2005; Hoie et al., 2006; Rodenburg et al., 2006)
 - Children with central nervous system chronic illnesses are 3-9 times greater risk for psychopathology
 - 16-77% of children with epilepsy have comorbid psychiatric diagnoses

Clinical Utility of a Neuropsychological Evaluation

- “Neuroscience teaches us that neither the structure or development of brain are independent of context in which they operate. Must evaluate the systemic influences that contribute to the behavioral outcome. Therefore, the primary goal is not to “rule in” the brain, but to “rule out” all non-brain variables” (Holmes-Bernstein, 1994)

Psychoeducational Evaluation vs. Neuropsychological Evaluation

- **Neuropsychological Evaluation**
 - Performed by a psychologist with specialized training in neuropsychological assessment
 - Comprehensive assessment of neuropsychological domains with history/context of individual considered
 - Interpretation grounded in current knowledge of functional neuroanatomy, brain-behavior relationships, sequelae associated with neurological/medical/neurodevelopmental conditions
 - Treatment-focused
- **Psychoeducational Evaluation**
 - Typically performed by educational diagnostician, usually master's level training
 - Limited assessment: typically includes IQ, achievement, "process" tests only; may or may not include behavioral/emotional assessment
 - Limited history or knowledge of developmental psychopathology or neurological/medical condition
 - School focus (i.e., does or does not qualify for special education)

It's not the test, but who does the testing, why, and how results are interpreted and used!

When Should a Referral to a Neuropsychologist be Considered?

- When diagnostic clarification is needed
 - Psychiatric vs. cognitive vs. behavioral etiology
 - Attempted treatments have not been effective
 - Parents or providers feel like they are missing something/something else is going on
- When child's functioning is impaired in some area and those involved are unsure of the cause
- To provide a medical diagnosis to allow access to services
- Prior to initiation of a specific treatment (i.e., brain surgery, medication, chemotherapy)

When Should Schools Refer for Neuropsychological Testing?

- When child presents with learning or behavior problems in the school setting that a psychoeducational evaluation cannot resolve
- School may want to refer for a second opinion if family disagrees with school's assessment
- When medical diagnosis is required to allow access to services

When Should Parents Seek Out a Neuropsychological Evaluation?

- Family observes behavioral/cognitive concerns that school does not recognize
- If family is concerned about abnormal development

When Should Physicians/Medical Professionals Refer for Neuropsychological Testing?

- When cognitive or behavioral concerns arise in the context of:
 - Known brain injury/illness
 - Genetic disorder
 - Neurodevelopmental disorder
 - Medical treatment with possible CNS effects
 - Exposure to neurotoxins
 - Failure to respond to previous interventions
 - Gradual or sudden change in child's functioning

- When in doubt, refer! Neuropsychologists typically have waitlists up to several months
 - In New Mexico, waitlists can be up to or over a year!
 - Important to implement services as soon as possible
- Neuropsychological clinics likely have a triage system that sorts through referrals and determines if an evaluation is necessary

Common Medical Diagnoses that are Referred for a Neuropsychological Evaluation:

- Epilepsy
- Cerebral palsy
- Stroke
- TBI
- CNS infection
- Hypoxic event
- Genetic disorders
- Spina bifida
- Muscular dystrophy
- Multiple sclerosis
- Autism
- Brain tumor
- ADHD
- Tic disorder
- Learning Disorder*

Where to Obtain a Neuropsychological Assessment

- Schools, physicians, therapists often have a list of providers
- UNM Center for Neuropsychological Services
 - 505-272-8833

Resources

- The American Psychological Association Division 40 (Clinical Neuropsychology) has created an informational brochure for parents explaining pediatric neuropsychological assessment:
 - <http://www.div40.org/pdf/PedNeuropsychBroch3.pdf>
- National Academy of Neuropsychology - A Physician's Guide to Pediatric Neuropsychological Assessment
 - <http://psychiatry.unm.edu/centers/cns/common/docs/Physicians%20Guide.pdf>
- Brain Injury Association of America
 - <http://www.biausa.org/>
- Autism Speaks
 - www.autismspeaks.org/