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Neuropsychological Evaluation in Older Adults

by Katherine J. Bangen, Ph.d., Barton W. Palmer, Ph.d., & Gauri N. Savla, Ph.D.

With advances in medicine during the last century, people are living longer, and are often active well into “old age,” often considered to be 65 years of age and older. Older adults are at risk for cognitive deficits related to cerebrovascular, systemic, psychiatric, and neurodegenerative illness. Therefore, clinical care of older adults should almost invariably include some consideration of the presence and impact of cognitive deficits. Cognitive decline is a central feature of many conditions that increase in prevalence with advancing age including neurodegenerative conditions such as Alzheimer’s disease, dementia with Lewy bodies (DLB), and Parkinson’s disease, as well as cardiovascular conditions such as stroke. In addition, chronic metabolic illnesses (e.g., diabetes) and long-standing autoimmune diseases (e.g., multiple sclerosis) may also be associated with cognitive impairment.

Psychiatric disorders, such as primary psychotic disorders or severe mood disorders, that typically begin earlier in life and often extend into later life are also often (but not always) associated with cognitive deficits. In general, these deficits tend to remain relatively stable over the course of the illness. In other words, there are rarely sharp declines in cognitive functioning in later life in the absence of a new-onset neurodegenerative illness or other condition contributing to cognitive decline. The emergence of such a new-onset decline should therefore alert the clinician to the possibility of a secondary acquired condition. One potential exception being that cognition in bipolar disorder may continue to deteriorate over time, with repeated mood episodes. This finding, if confirmed via prospective research studies currently underway, may be particularly relevant for those older adults with bipolar disorder who have lived with the condition for decades. In either case, an important point to consider is that cognitive deficits in outpatients with schizophrenia or bipolar disorder are more predictive of level of adaptive functioning (i.e., practical everyday skills) than symptoms of the primary psychopathology. The bottom-line is that, in geriatric mental health settings, assessment of neuropsychological functioning should be a key component of diagnosis and long-term treatment planning.

What is a Neuropsychologist?

Neuropsychology is a sub-specialty of clinical psychology and is concerned with relationships between the brain and behavior. The term “neuropsychologist” refers to a clinical psychologist, who, in addition to the broader training required for a doctorate and licensure in clinical psychology, has also completed additional specialized training in basic neuroscience, neuroanatomy, neuropathology, and neurobehavioral syndromes, and their psychometric assessment. A neuropsychologist, therefore, is an expert in brain-behavior relationships, their

standardized assessment, as well as cognitive interventions.

What is a Neuropsychological Evaluation?

Standardized neuropsychological tests that measure cognitive abilities form the core of neuropsychological evaluation. Major domains that are commonly assessed include general intellectual functioning, learning and memory, executive functioning, attention/concentration, language, visuospatial abilities, speed of information processing, and motor speed and strength. Data from standardized neuropsychological tests can then be compared with normative databases. However, neuropsychological evaluation involves much more than administering and scoring standardized tests. Valid and clinically useful interpretation of test performance requires the neuropsychologist to consider the examinee's performance within the broader context of his or her presenting complaint as well as current and prior medical history, psychosocial history, and daily functioning. Therefore, comprehensive clinical neuropsychological evaluations generally include a thorough review of available medical records as well as a clinical interview of the patient and a family member or other collateral information sources. Emotional functioning including mood symptoms is also often assessed via clinical interview, behavioral observations, clinical rating scales, and/or standardized psychological tests. A neuroimaging exam is frequently included in the evaluation to provide additional data that may aid in diagnosis.

Common Clinical Applications of Neuropsychological Assessment

Neuropsychological assessment can be invaluable in geriatric mental health care settings. These assessments assist in distinguishing between normal versus abnormal cognitive and functional changes; aiding in differential diagnosis among neuropsychiatric and neuropathological conditions; informing treatment recommendations; and monitoring an individual's progress. Despite recent technological advances in neuroimaging techniques, their clinical relevance (particularly in regard to diagnostic specificity) remains unclear. For example, a common concern among older patients relates to distinguishing normal age-related cognitive changes from early Alzheimer's disease or other neurodegenerative disorders. A second presenting problem frequently seen in the clinic relates to determining whether an individual's reports of memory or other cognitive changes are due to depression or primary neurocognitive dysfunction. Such distinctions are very difficult, if not impossible, to make based on neuroimaging results alone and often involve considering information from multiple sources including the pattern of neuropsychological test performance together with the individual's medical and psychosocial functioning.

For example, consider an older patient presenting with concerns of "poor memory." "Memory" has a many meanings in colloquial use. These include remembering to perform a task ("prospective memory"); remembering where within one's house an object, such as a set of keys, was left (which may reflect attention or organizational skills rather than memory per se); and remembering recent events or newly acquired information ("episodic memory"). Even when the concern is narrowed down to an episodic memory deficit, it is important to distinguish between a variety of underlying memory-related processes, including difficulties

with initial learning or encoding information or difficulties efficiently retrieving previously learned information. Results from standardized learning and memory tests are critical in making such distinctions. For example, if an individual performs poorly on initial learning or recall trials of a memory test yet, after a delay, he or she is still able to recall most of the information he or she learned, then his or her deficit is likely one of learning or encoding rather than retrieval. Comparison of performance on a cued-recall recognition format relative to free recall (without cues) permits identification of patients with inefficient retrieval rather than an encoding deficit. These distinctions are invaluable in the differential diagnostic process. Rapid forgetting, or the inability to retain recently learned information, is relatively uncommon in normal aging and even in individuals with depression but is very common among patients with some forms of dementia including Alzheimer's disease. One would not make a diagnosis based on one isolated test score (when given a large test battery, most healthy adults will have one or more "impaired" scores), but the presence of rapid forgetting would be more consistent with the presence of a cortical dementia than with normal aging or depression.

Even in those cases in which an individual's diagnosis is known, neuropsychological assessment can be valuable in the documentation of the trajectory and rate of cognitive change. There is considerable variability among individuals with neurodegenerative conditions in terms of the rate of cognitive decline. Repeat evaluations can be extremely useful in determining how quickly an individual may reach a point requiring a more intensive level of care. Conversely, for an individual who experienced a stroke or other form of brain trauma, repeated neuropsychological assessment can be useful in documenting the rate, trajectory, and degree of recovery of cognitive functioning.

Neuropsychological assessment in geriatric mental health care settings can also be useful in treatment planning and developing strategies for remediation of deficits in everyday functioning. For example, a patient's memory deficit may cause difficulties in everyday functioning (such as missed appointments, missed medication dosages, unpaid bills, etc.). In such instances, a goal of neuropsychological evaluation is to identify areas of cognitive strengths in addition to documenting the type and degree of any cognitive deficits. With information on both cognitive strengths and weaknesses, the specific cognitive processes underlying any apparent deficits in independent functioning can be identified. Information about spared abilities can be used to arrange the environment in a way that draws upon the individual's strengths and reduces any deleterious functional effects related to cognitive deficits.

Issues in the Assessment of Older Adults

Sensory Impairment

Hearing impairment is fairly common among older adults and can considerably complicate administration of verbal neuropsychological measures (e.g., memory measures involving verbal list learning) and the interpretation of results. An examinee's hearing should be at least informally assessed to determine whether it is adequate for the administration of verbal neuropsychological tests. If hearing is deemed too impaired, the individual can still be

evaluated using visual tests (assuming he or she has adequate visual acuity). Visual acuity may be informally assessed, for instance, using the Rosenbaum Pocket Screener. Visually impaired patients can be assessed with a variety of tests involving auditory or tactile test materials.

Interpretation of Test Results in the Context of Normal Aging

Normal aging is associated with changes in cognitive functioning including slowing of mental processing speed and psychomotor speed as well as subtle declines in some aspects of memory and executive functioning. A major advantage of the standardized testing emphasized in neuropsychological assessment over other neurobehavioral examinations is that the interpretation of an examinee's responses is not based solely on the absolute level or content of responses but also in reference to the level of performance expected from a neurologically healthy individual with similar demographics. The latter is determined by comparing the examinee's test scores to demographically-appropriate norms (based on age, education, sex, etc.). Most widely-used neuropsychological tests have normative data that are developed and collected using standardized administration and scoring procedures.

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