

CHAPTER ONE

**NEUROPSYCHOLOGICAL APPROACHES TO
UNDERSTANDING AND DIAGNOSING DEMENTIA**

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VIII. SUMMARY

I. WHAT IS A NEUROPSYCHOLOGIST?

A. DEFINITIONS

Consistent with definitions provided by the National Academy of Neuropsychology, a clinical neuropsychologist is *a professional within the field of psychology with special expertise in the applied science of brain-behavior relationships. Clinical neuropsychologists use this knowledge in the assessment, diagnosis, treatment, and/or rehabilitation of patients across the lifespan with neurological, medical, neurodevelopmental and psychiatric conditions, as well as other cognitive and learning disorders.*¹

There are many practicing clinical psychologists with a broad-base of training who self-identify as having a neuropsychological subspecialty. Over the past decade, specific training requirements have been set forth by various professional organizations outlining precise aspirational guidelines regarding who can officially identify themselves as a neuropsychologist. Board certification by either the American Board of Professional Neuropsychology (ABN) or American Board of Clinical Neuropsychology (ABPP/Cn) is the most obvious sign of recognized competency in this field.

B. ROLES

Prior to the advent of modern neuroimaging techniques, two of the earliest roles of the neuropsychologist included:

1. To help determine if abnormal behavior was more likely the result of some form of brain damage or due to a psychiatric illness, and
2. To help localize the probable site of brain injury.

Although many neuropsychologists still administer extensive test batteries designed to accomplish these goals (i.e., the Halstead-Reitan battery), the role of neuropsychological assessment has moved away from detecting "organicity" or lesion localization to assessing the general cognitive and behavioral deficits and functional impairments associated with known or suspected cerebral lesions and injury.

Most neuropsychological batteries are constructed to assess standard neurobehavioral aspects of brain impairment associated with focal brain lesions or obtained through the study of patients with traditional neurobehavioral syndromes. Dementia is a neurologic disease with predominately behavioral consequences, and is thus classic example of a disorder for which clinical neuropsychological testing procedures have strong indication.

II. BEHAVIORAL TOPOGRAPHY OF THE BRAIN

To understand the impact of dementia on mental capacity and assessment of functioning, you must first have a grasp of the basic layout and behavioral geography of the brain.

The structure of the brain can be summarized in two basic, inter-related ways: evolutionary and topographical. Evolutionary refers to how our brain is layered, and what we share in common with lesser species, and what makes us most unique.

¹ <https://www.nanonline.org/PostitionPageLinks/Pages/DefinitionofaNeuropsychologist.aspx>

A. EVOLUTIONAL LEVELS

1. Hindbrain (brain stem)
2. Midbrain (diencephalon)
3. Forebrain (telencephalon, neocortex, or cortex)

B. TOPOGRAPHY OF THE CORTEX

The cortex consists of two roughly symmetrical hemispheres connected by a large band of fibers in the middle. While the hemispheres look the same, they actually have many functional differences. Each hemisphere can be further divided into four functional areas, or “lobes.” These include the occipital, parietal, temporal, and frontal lobes. The cerebellum is another unique structure of the brain, but will not be a subject in this talk.

C. BEHAVIORAL STUDIES OF BRAIN INJURY

What we know about the purpose and function of these lobes is primarily derived from studying the effects of damage to these areas. Damage to the brain can cause three possible outcomes, including:

1. Loss of function
2. Release of function, or
3. Disorganization of function
 - a. Illustrative examples of each

D. LOCATION AND FUNCTION OF BRAIN LOBES

1. Occipital Lobe: Primary visual processing.
2. Parietal Lobe: Integration of sensory input
3. Temporal Lobe: Multiple functions related to emotional processing, memory, sexual behavior, language, and visual perception and facial recognition.
 - a. Hippocampus and memory
4. Frontal Lobe: Processing incoming information from all sources.
 - a. Dorsolateral damage and associated behavioral impact
 - b. Medial damage and associated behavioral impact
 - c. Orbital damage and associated behavioral impact

III. DOMAINS OF COGNITIVE FUNCTIONING

Loosely defined, occasionally arbitrary, and inter-correlated, those interested in brain-behavior relationships have attempted to classify how the brain supports the abilities we need to survive and thrive. Below are proposed domains of ability.

- A. ORIENTATION AND WORKING MEMORY
- B. PERCEPTION
- C. MEMORY
- D. VERBAL COMPREHENSION AND LANGUAGE SKILLS
- E. VISUAL PERCEPTION AND CONSTRUCTIONAL PRAXIS
- F. CONCEPT FORMATION AND REASONING
- G. PROCESSING SPEED
- H. MOTOR SKILLS
- I. EXECUTIVE FUNCTIONS
- J. MOTIVATION/EFFORT
- H. PERSONALITY/EMOTIONAL FUNCTIONING

IV. NEUROPSYCHOLOGICAL SYNDROMES OF DEMENTIA

Although some healthy aging persons maintain very high cognitive performance levels, most aging people will experience a decline in certain cognitive abilities. These changes parallel a number of common decreases in physiological function that occur in conjunction with normal developmental processes.

Some older persons show declines that go beyond what may be considered "normal" and are relentlessly progressive, robbing them of their memories, intellect, and eventually their abilities to recognize spouses or children, maintain basic personal hygiene, or effectively communicate. These more malignant forms of cognitive deterioration are caused by a variety of neuropathological conditions and dementing diseases.

A. DEMENTIA DEFINED

1. The Diagnostic and Statistics Manual (DSM-IV)²
 - a. Memory impairment and at least one of the following:
 - i) Aphasia (problems of speaking and/or understanding speech)
 - ii) Apraxia (problems of coordinated movement)
 - iii) Agnosia (problems of recognizing and naming objects)
 - iv) Disturbances in executive functioning (problems of organization, problem-solving, and self-regulation)
 - b. Significant impairment in social or occupational functioning, along with significant decline from a previous level of functioning, gradual onset and continuing cognitive decline.
2. National Institute for Neurological and Communicative Disorders and Stroke-Alzheimer's Disease and Related Disorder Association
 - a. **Definite** Alzheimer's disease
 - i) Meets the criteria for probable Alzheimer's disease and has evidence of diseased nerve cells via autopsy or biopsy
 - b. **Probable** Alzheimer's disease
 - i) Dementia established by clinical and neuropsychological examination and involves progressive deficits in two or more areas of cognition, including memory,
 - ii) onset between the ages of 40 and 90 years, and absence of systemic or other brain diseases capable of producing a dementia syndrome, including delirium
 - c. **Possible** Alzheimer's disease
 - i) A dementia syndrome with an atypical onset, presentation, or progression and without a known etiology.
 - ii) Any co-morbid diseases capable of producing dementia are not believed to be the cause
 - d. **Unlikely** Alzheimer's disease
 - i) A dementia syndrome with any of the following: sudden onset, focal neurologic signs, or seizures or gait disturbance early in the course of the illness

B. DEMENTIA AS A MATTER OF DEGREE

1. Normal Memory
2. Age Associated Memory Impairment (AAMI)
3. Mild Cognitive Impairment (MCI)
4. Dementia

² American Psychiatric Association, 1994, pages 133-143

C. MILD COGNITIVE IMPAIRMENT

1. People develop memory loss in the absence of other cognitive deficits, or less often, show cognitive deficits other than memory loss. These are referred to in the literature as Amnesic MCI and Non-amnesic MCI.
2. The reason for the memory loss is often unclear
3. These people are not demented
4. About 50% of persons with MCI go on to develop true dementia
5. MCI may represent early dementia or a static state
6. There is no clear treatment for MCI

D. SUBTYPES OF DEMENTIA

Alzheimer's Disease is likely the most common cause, accounting for about 50% of all dementias. The various types of dementia can roughly be divided in to the brain regions most clearly affected.

1. Usually Cortical Dementias
 - a. Alzheimer's Disease
 - b. Dementia with Lewy Bodies (Lewy Body Disease)
 - c. Pick's Disease/Frontotemporal Dementia
2. Cortical and/or Sub-Cortical Dementias
 - a. Vascular Dementia (Multi-Infarct Dementia)
3. Usually Sub-Cortical Dementias
 - a. Parkinson's Disease
 - b. Huntington's Disease
 - c. Creutzfeldt-Jakob Disease
 - d. Progressive Supranuclear Palsy

E. UNIQUE COGNITIVE PATTERNS OF COMMON DEMENTIAS

1. Alzheimer's Disease
 - a. Memory storage and retrieval failure
 - b. General disorganization of behavior
 - c. Symptom denial is common
 - d. Naming and visual-spatial difficulties
 - e. Attention is usually preserved
2. Lewy-Body Dementia
 - a. Often lacks the obvious memory impairment of AD
 - b. Deficits in attention, executive function, and visuospatial abilities.
 - c. Fluctuating cognition with pronounced variations in attention and alertness
 - d. Recurrent and complex visual hallucinations
 - e. Parkinsonian movement problems

3. Frontotemporal Dementia
 - a. Often normal memory and constructional skills
 - b. Marked frontal lobe dysfunction, including apathy, impoverished speech, lack of insight.
 - c. Often striking changes in personality and impulse control.

4. Parkinson's Disease
 - a. Higher cognitive functions are usually spared
 - b. Infiltration of the frontal lobes begins to create subtle executive deficits such as perseveration and difficulties in complex attention
 - c. Full dementia syndromes occur late in the disorder as the damage creeps upward to the cortex

VI. TOOLS OF THE NEUROPSYCHOLOGICAL EXAMINATION

A. GENERAL CONSIDERATIONS

Assessment of dementia and age-related cognitive decline in clinical practice is a core activity of the specialty of Clinical Neuropsychology.

In forensic settings, it is not simply the diagnosis but the degree of functional impairment caused by the condition and whether or not the illness is a significant liability to a patient's capacity to manage their affairs; medical and financial. A diagnosis is not sufficient to address these sticky issues, and other medical tests (i.e., MRI, etc.) do not provide the practical data needed to objectively assess functional capacity. This is the unique strength and benefit of the neuropsychological examination.

The practicing neuropsychologist has many tools on which to rely in this task. Some of these are "old standards" that—while not originally devised to diagnosis Alzheimer's—remain popular and widely used. Other tests have been made to assess specific aspects of dementia. In practice, most neuropsychologist have come to rely on certain tests based on experience in training and personal preference informed by the developing research literature on which tests demonstrate strong validity, reliability, and diagnostic utility, especially when trying to diagnosis the condition in its earliest stages.

B. TEST SELECTION

The issue of test selection has long been subject to controversy. There remains no agreement on what constitutes an appropriate battery of dementia tests. One major area of controversy has been whether to use a standard set of tests in every situation (the "fixed battery" approach), or to pick and choose from available tests to address the referral question at hand and tailor the tests to the examinee (the "flexible battery" approach). Both approaches have strengths and liabilities that will not be discussed here. It is my observation that most neuropsychological research and treatment sites rely on fixed batteries of tests in order to achieve unity and allow direct comparison between large populations of patients. In contrast, neuropsychologists in the trenches of private practice typically rely on flexible batteries.

Another line of division is whether the test is designed to address a broad spectrum of cognitive abilities, or if the test is very focused in what it is trying to measure. Furthermore,

some tests are designed to be screening instruments, while others provide great depth in examining one or more areas of mental capacity.

C. COMMON MULTIPLE-DOMAIN TESTS OF MENTAL FUNCTIONING

1. Mini-Mental Status Examination
 - a. 30-point easily repeatable device measuring simple orientation, memory, attention, language, and constructional skills.
 - b. Scores below 26 are usually considered to represent impairment. However, this must be adjusted downward when considering advanced age.
 - c. The MMSE is useful in quantitatively estimating the severity of cognitive impairment and documenting cognitive change.
 - d. Standardized administration is critical, and this is not always observed.
2. Short Blessed Test
 - a. 37-point test similar to the MMSE, primarily assessing orientation and memory.
3. Alzheimer's Disease Assessment Scale – Cognitive Portion (ADAS-Cog)
 - a. Widely used in drug treatment trials, but rarely in clinic practice
 - b. Assesses memory, language, construction, and orientation
 - c. Total scores ranging from 0 to 70
4. Mattis Dementia Rating Scale - II
 - a. 144-point test with five subscales, including attention, executive functioning, construction, abstract reasoning, and memory.
 - b. Includes an overall summary measure useful for severity rating.
 - c. Normative data up to 105 years old
 - d. The DRS Total Score tends to be a significant predictor of institutionalization and mortality outcomes
5. Neuropsychological Battery of the Consortium to Establish a Registry for Alzheimer's Disease (CERAD)
 - a. Seven subtests along with the MMSE and portions of the ADAS-Cog
 - b. Lacks an overall summary measure
6. Wechsler Adult Intelligence Scale (WAIS-IV)
 - a. Most-used IQ measure, with indices of verbal comprehension, perceptual organization, working memory, and processing speed.
 - b. Normed up to age 89
 - c. Rarely used as a whole in AD assessments, but specific subtests commonly used
 - d. Too long, and does not cover critical cognitive domains such as memory.

D. COMMON SINGLE-DOMAIN TESTS OF MENTAL FUNCTIONING

1. Memory
 - a. Wechsler Memory Scale – III and IV
 - b. Rey Auditory Verbal Learning Test
 - c. California Verbal Learning Test-II
2. Language
 - a. Boston Naming Test
 - b. WAIS-III Vocabulary Subtest
3. Attention
 - a. WAIS-III Digit Span
 - b. WMS-III Spatial Span
4. Executive Functioning (there are many)
 - a. Wisconsin Card Sorting Test
 - b. Category Test
 - c. Various verbal fluency tests
 - d. Trail Making B
 - e. Tower of London
 - f. Stroop Test
5. Reasoning
 - a. WAIS Similarities, Comprehension, and Matrix Reasoning subtests
6. Construction/Visual-Motor Integration
 - a. WAIS Block Design
 - b. Draw a Clock Test
 - c. Benton Line Orientation Test
 - d. Various figure copy, drawing, and object assembly tasks

VII. NEUROPSYCHOLOGICAL ISSUES RELATED TO DECISION-MAKING CAPACITY IN THE ELDERLY

A. GENERAL CONSIDERATIONS

Decision-making capacity is a complex construct. It relates to: (1) possession of a set of values and goals; (2) the ability to communicate and to understand information; (3) the ability to reason and to deliberate about one's choices. The four functional abilities underlying these concerns are: (1) expressing a choice; (2) understanding information required for the decision; (3) appreciating how the information given pertains to the person's own life; (4) logical reasoning using the information. Capacity is also decision-specific. It is an error to view incapacity as global rather than decision-specific.

B. ISSUES IN MEASUREMENT

There is no "capacimeter," or a magical one-test-fits-all tool of measurement. A major issue facing neuropsychologists is whether or not to use a specific decision-making capacity instrument. The empirical investigation of decision-making capacity has yielded substantial information about the occurrence of impairment in clinical populations and in older persons with and without dementing illness.

Test construction is made difficult based on lack of consensus on exactly *what* constructs or abilities we are trying to measure, and *how* to best to measure them. Examples of attempts at this include:

1. MacArthur Competence Tool for Treatment (MacCAT-T)
2. Capacity to Consent to Treatment Instrument (CCTI)
3. Hopemont Capacity Assessment Instrument (HCAI)
4. Financial Capacity Instrument (FCI)
5. Measure of Awareness of Financial Skills (MAFS)
6. Hopkins Competency Assessment Test (HCAI)

In a 1995 study using the CCTI, five legal standards for capacity to consent to medical treatment were investigated.³ These include: (1) knowing that a decision is to be made; (2) making a reasonable decision; (3) understanding the personal and future impact of the choice selected; (4) demonstrating logical reasoning in the decision-making process; (5) comprehension of the treatment context and choices. Healthy persons and those with mild dementia perform similarly under the first two least difficult standards. Performances of persons with Alzheimer's disease was significantly lower than that of a group of healthy persons on the last three of the five standards, with most healthy individuals performing well in all five areas.

In a 2001 study also using the CCTI, declines in simple executive functioning and, to a lesser extent, memory appeared to be particularly important in judging competencies.⁴ Similarly, assessment using various other measures including the MacArthur Confidence Tool for Treatment also shows that the dementia group performed worse than the control group for understanding, although those with very mild Dementia did not tend to demonstrate impairment.

In clinical practice, any individual referred with a "high risk" diagnosis may have preserved capacity to weigh and communicate decisions. There is currently no consensus protocol for the evaluation of cognition, mental health status, or specific capacity questions when decisional capacity is at issue for a particular patient. It remains very important to evaluate the patient's ability to use clearly presented medical information to weigh a decision. Even when there is a significant memory disorder, the patient may be able to self-monitor and use reminders including information about the choices that can be written out for ready reference. Typically, referrals for evaluation of a patient's decision-making capacity will be triggered by the patient's disagreement with the clinical recommendation such as course of treatment or increased supervision for safety. It is also important to assess how transient the reduced capacity might be.

³ Marson, et al., (1995). Assessing the competency of patients with Alzheimer's Disease under different legal standards: A prototype instrument. *Archives of Neurology*, 52, 949-954.

⁴ Dymek, et al. (2001). Competency to consent for medical treatment in cognitively impaired patients with Parkinson's disease. *Neurology*, 56, 17-24.

C. NEUROPSYCHOLOGICAL ASSESSMENT OF CAPACITY

Available neuropsychological test instruments do not purport to assess competency as a whole, but rather the cognitive functions that provide the foundation for effective living and decision making.

Studies including the above-mentioned tests as well as a broad range of neuropsychological measures reveal some important findings. For example, one study using the CCTI showed that only semantic and phonemic word list generation tasks significantly predicted the status of capacity with respect to providing rational reasons, both pro and con, for a treatment choice. Notably, measures of verbal reasoning and memory were not related to CCTI measures.

In a follow-up study, the investigators found that simple auditory comprehension was associated with the capacity to evidence a treatment of choice; whereas, phonemic word list generation (COWAT) predicted the capacity to appreciate the consequences of a treatment choice. The Conceptualization subtest (basic reasoning skills) from the Dementia Rating Scale as well as the Boston Naming Test (BNT) together predicted the patient's ability to understand the treatment situation and choices, which is the most stringent standard. In fact, the authors found that the best predictor of knowing that a treatment choice needed to be made was confrontational naming (as measured by the BNT), while Trail Making A best predicted appreciating the practical and anticipated consequences of a treatment choice and understanding the treatment situation and risks and benefits.

In a 1999 study, Trail Making A again as well as a word list recall test were significantly correlated with competency measures. Trail Making A predicted over 85% of the variance in this matter. These findings suggest that consent capacity in the demented population is a multidimensional construct represented by neurocognitive factors of verbal reasoning and verbal memory.

In general, it is helpful to think of the capacity evaluation as consisting of both clinical and neuropsychological testing components. That is, a thoughtful and comprehensive capacity evaluation should include both structured clinical interview scales designed to test capacity as well as objective neuropsychological measures that have been shown to be sensitive to decisional abilities in populations at risk for impaired decisional capacity.

D. ETHICAL ISSUES

1. Core Ethical Values: Autonomy, Nonmaleficence, Beneficence, and Justice

Respect for autonomy refers to valuing the right to self-determination based on sufficient understanding of the circumstances of one's life.

Nonmaleficence refers to causing no harm through one's professional choices or actions. **Beneficence** refers to contributing to the welfare of others through the performance of positive acts, rather than nearly by refraining from harmful acts.

Justice in this context refers to distributive justice; that is, fair opportunity to obtain at least a decent minimum of available healthcare resources.

Practitioners working with geriatric clients advocate for an ethic for elderly that respects their dignity but also afford them the protection they deserve. Geriatric neuropsychologists consider the fit between their own beliefs and values

and the settings in which they work, striving to anticipate potential ethical challenges and to address them as clearly and directly as possible.

2. Competence

Professional competence is the basis of ethical practice and is based on the general principal of nonmaleficence. Geriatric neuropsychologists must have adequate education, training, and experience in neuropsychology. Although competence in neuropsychology is a beginning, additional education and training is needed. Familiarity with the more common medical disorders experienced by older adults and the potential neuropsychological side effects of the medications used to treat them is essential. They must also possess a good understanding of neuropathology and psychopathology of older adults. Competence is not a static trait, requiring ongoing education and refinement of knowledge base and assessment techniques.

3. Informed Consent

For individuals with questionable capacity to provide consent or for those mandated for services, information about the nature and purpose of the proposed services should still be provided, and it is generally appropriate to seek the individual's assent. Presenting the limitations of confidentiality and the implications of failure to participate may be of particular value to the examinee. The surrogate decision-maker should be fully informed and determine whether or not services proceed. At all times, the neuropsychologist must keep the rights and welfare of the examinee or patient at the forefront of professional decision making. The consent/assent process, whether oral or written, should be documented.

4. Symptom Validity

There may be many reasons why information or test data may not be a valid representation of the examinee's actual neuropsychological status. These can include sensory deficits, fatigue, medication side effects, physical illness, frailty, discomfort or disability, poor motivation, financial disincentives, depression, anxiety, undue influence, poor comprehension of test instructions, or general lack of interest. Malingering is relatively uncommon. However, the assumption that symptom validity assessment outside of forensic context is unnecessary reflects a limited appreciation of the various factors that may compromise the validity of a patient's responses and performance. Neuropsychologists must, in any setting, attempt to assess the sources of error and to limit and control them to the extent that they are able.

VIII. WHAT TO LOOK FOR IN A COMPETENT NEUROPSYCHOLOGICAL EVALUATION OF DEMENTIA⁵

A. OBVIOUS FAMILIARITY WITH DIAGNOSTIC NOMENCLATURE

1. National Institute of Neurological and Communicative Disorders and Stroke and by the Alzheimer's Disease and Related Disorders Association and/or The Diagnostic and Statistical Manual of Mental Disorders: 4th Edition of the American Psychiatric Association.
2. Recognition age-associated memory impairment and mild cognitive impairment

B. PROPER INFORMED CONSENT HAS BEEN OBTAINED

1. Psychologists attempt, when possible, to educate patients regarding the nature of their services, financial arrangements, potential risks inherent in their services, and limits of confidentiality.
2. When patients are clearly not competent to give their informed consent, psychologists attempt to discuss these issues with family members and/or legal guardians, as appropriate.

C. SPECIALIZED COMPETENCE IS NEEDED IN DEMENTIA ASSESSMENT.

1. Special competencies and knowledge are required for such evaluations.
2. Competencies include conducting clinical interviews and administering, scoring, and interpreting psychological and neuropsychological tests are necessary.
3. Furthermore, education, training, experience, and/or supervision in the areas of gerontology, neuropsychology, rehabilitation psychology, neuropathology, psychopharmacology, and psychopathology in older adults may help to prepare the psychologist for performing evaluations of dementia.

D. PSYCHOLOGISTS SEEK AND PROVIDE APPROPRIATE CONSULTATION

1. Psychologists communicate their findings to primary care physicians and/or other referring physicians, with sensitivity to issues of informed consent.
2. Psychologists help to educate health care professionals who may be administering mental status examinations or psychological screening tools regarding the psychometric properties and appropriate use of these instruments

⁵ Adapted from Crook et al., American Psychological Association Presidential Task Force on the Assessment of Age-Related Memory Decline and Dementia.

E. INTERVIEWING IS AN INTEGRAL PART OF THE EVALUATION

1. The client's self-report and subjective impressions regarding changes in memory and cognitive functioning are assessed via thorough interviewing, noting also that self-reported memory problems often do not correspond to actual decreases in memory performance.
2. Many persons with significant cognitive dysfunction are not aware of the problem.
3. A collateral source of information such as family and friends is usually needed.
4. It is important to take a careful history. The time of onset, nature, and rate of the course of the difficulties provide information important to differential diagnosis.
5. Some persons who report severe memory deficits actually have normal or even above-average performance.
6. Depression and other psychological factors can lead to over-reporting of cognitive disturbance, and depressive symptoms often mimic the effects of dementia.
7. It is important to perform a careful assessment for depression when evaluating for dementia and age-related cognitive decline using observation, symptom reports, and formal mood assessment scales.
8. Sociocultural factors may cause some older persons to underreport depressive symptoms. Depression and dementia are not mutually exclusive.

F. STANDARDIZED NEUROPSYCHOLOGICAL TESTS ARE IMPORTANT TOOLS IN THE ASSESSMENT OF DEMENTIA AND AGE-RELATED COGNITIVE DECLINE.

1. Psychometric instruments used to quantify mental impairment and capacity represents the most important and unique contribution of neuropsychologists to the assessment of dementia and age-related cognitive decline.
2. Tests used by psychologists should be standardized, reliable, valid, and have normative data directly referable to the geriatric population.
3. There are many tests and approaches that are useful for these evaluations.
4. Brief mental status examinations and screening instruments are not adequate for diagnosis in most cases.
5. Comprehensive neuropsychological evaluations for dementia include assessments of multiple cognitive domains.
6. Confirmation of profound dementia may not require a comprehensive neuropsychological test battery.
7. Gaps still remain in the normative data for the very old, as well as diverse linguistic and ethnic populations. The psychologists recognizes and accounts for this if using an inadequately-normed test.

G. ESTIMATION OF PREMORBID ABILITIES SHOULD BE ATTEMPTED

1. Assuming no pre-illness testing is on record, it is important to estimate a person's maximum cognitive abilities before they became ill or injured.
2. This is often done by taking into consideration socioeconomic status, educational level, occupational history, and client and family reports.
3. Various statistical techniques have been developed to estimate cognitive abilities prior to the onset of illness.
4. Once a person has been tested, these data can serve as a baseline against which to measure magnitude and rates of cognitive change over time, as well as response to treatment.

H. LIMITS OF NEUROPSYCHOLOGICAL TESTS ARE RECOGNIZED

1. Every test has limitations, including sources of variability and error in psychometric performance.
2. Practice effects can result when tests are re-administered in a repeated manner. The most common example relates to repeated MMSE administrations (*"You're not going to ask me to remember those three silly words again, are you?"*).
3. The use of alternate but equivalent test forms can help attenuate practice effects, but such forms may not be available for many otherwise appropriate tests.
4. Some deficits in day-to-day functional abilities may not be demonstrated on psychometric instruments because of a relative lack of sensitivity of the tests used. Psychometric instruments are effective, but still imperfect, measures of real-life abilities.
5. There are many potential reasons why people may do poorly on tests, including sensory deficits, fatigue, medication side effects, physical illness and frailness, discomfort or disability, poor motivation, financial disincentives, depression, anxiety, not understanding the test instructions, and lack of interest.
6. It is important to assess these sources of error and to limit and control them to the extent possible.

I. PROVIDING CONSTRUCTIVE FEEDBACK AND SUPPORT IS IMPORTANT

1. Patients may benefit from feedback regarding the evaluation in language that they can understand.
2. Providing feedback, education, and support to the family are also important aspects of evaluations and enhance their value and applicability.
3. Knowledge regarding levels of impairment, the expected course, and expected outcomes can help families to make adequate preparations.
4. Families should also be counseled regarding effective and humane methods for managing persons with problematic behaviors.

5. Cognitive rehabilitation and memory training have limited effectiveness for persons with dementia. Caregiver training and environmental restructuring may be useful.
6. Training in cognitive strategies (i.e., use of memory aids, mnemonic techniques, etc.) have proven effectiveness with nondemented persons, including those with age-related cognitive decline or those with focal brain disorders.
7. Clients and families can be educated about these treatments, which can be offered to clients as appropriate.

VIII SUMMARY

- A. Experts in assessment, neuropsychologists are uniquely capable of contributing to the differential diagnosis and quantification of severity of dementia.
- B. Objective neuropsychological test data can be vital in resolving discrepancies of self-reported versus observed functioning, and/or disagreements between parties as to the presence, nature, and severity of presumed cognitive deficiency.
- C. Alzheimer's disease (AD) in the early and middle phases is essentially a neuropsychological disease, with primary diagnostic criteria resting on cognitive and behavioral symptoms.
- D. Memory impairment is the cardinal symptom of AD, presumably associated with damage to the hippocampus, nearby structures, and cholinergic neurotransmitter systems. This results in ineffective storage of new information and rapid forgetting. Common secondary symptoms are executive deficits, naming and fluency errors, and visuospatial difficulties.
- E. Although forgetfulness has substantial impact on independence, the presence of executive deficits bodes even more poorly for independent functioning and results in greatly increased caregiver burden. Memory can be accommodated, while executive deficits are more pernicious, especially when coupled with low symptom awareness. Specialized testing conducted by an expert neuropsychologist is often to only way to assess these complex and subtle issues.
- F. Tests used by neuropsychologists should be standardized, reliable, valid, and have normative data directly referable to the older population.
- G. There is no "capacimeter." There are many tests and approaches that are useful for these evaluations, but no test is perfect. Most all tests used in research are not available commercially, have not undergone sufficient psychometric analysis, and thus are often not appropriate for forensic application.

- H. Brief mental status examinations and screening instruments are **not** adequate for diagnosis in most cases, and certainly not adequate to clarify complex legal issues of competency in early- to mid-stage dementia.
- I. Comprehensive neuropsychological evaluations for dementia include assessments of multiple cognitive domains, with special attention to reasoning, judgment, and perceptual accuracy.
- J. In some cases, preserving a patient's independence may be worth accepting some level of substandard living or some risk of self-harm. However, honoring the wishes of a person without capacity can be considered a form of abandonment.
- K. Paternalism reflects a protective beneficent position that overrides the preferences of another. Paternalism represents a conflict between beneficence and autonomy. *Constraints on autonomy must be supported by strong clinical evidence rather than conjecture. A paternalistic stance should be considered only when neuropsychological evidence of incapacity is clear and convincing.*