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Mental Status Exams, Neuropsychological Testing, and the Med/Psych Report

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Why Use Mental Status Examination (MSE) Screening Tests?

- MSEs are familiar and even expected
- They are short and simple
- They assist with tracking over time
- They do not often require formalized training
- The scores are theoretically transferable across professions (MD, PhD, RN, MSW, etc.) and time.
- Very abnormal scores are commonly associated with judicial decisions of incapacity
- Very abnormal scores may simply tell us what we already know, and preclude the need to put the AIP through expensive, exhausting, and sometimes humiliating formal testing

Problems with MSEs

- Normal and mildly abnormal scores are the tricky part, as the tests can produce false negative errors (a test not showing a disease or condition when one actually exists) with respect to both diagnosis and decisional capacity.
- MSEs do not assess areas most important to ADL competency (i.e., executive functioning).
- Timing of the exams is important, especially when considering acute illness and recoveries.
- Those administered MSE's come from wide ranges of backgrounds and professions, such as psychologists, physicians, nurses, social workers, medical assistants, and even lawyers. Not all of these people are well trained in standardized testing procedures, accurate scoring, and ethics of assessment. Most MSEs are not complicated, but the testing context and how careful a test is given with respect to adhering to strict and standardized instructions make a difference in a person's score. Too many people giving a test in their own way greatly reduces the test's reliability and ability to compare test results from one administrator to another.

What Do They Actually Tell Us?

- A quick and dirty snapshot of overall cognitive performance
- A crude way of categorizing severity of impairment
- Whether or not more in-depth evaluation might be needed
- Not much else

Common and Less Common Mental Status Exams

Mini Mental Status Examination

Originally introduced in 1975¹, the Kahn-Folstein Mini Mental State Examination (MMSE) is a 30-point measure used extensively in clinical and research settings to screen for cognitive impairment, most often to determine the need for more extensive testing, but also to track changes over time. The MMSE was not designed to diagnosis dementia or other similar conditions, but has been used for this purpose. Administration of the test takes between 5 and 10 minutes and examines functions including basic orientation, attention, recall, language, ability to follow simple commands, and draw a simple design. The test is a helpful and reasonably valid screening and tracking measure, but is also highly influenced by age and education. It is also poor at detecting mild cognitive impairment, such as discriminating people with mild Alzheimer's disease from normals.

Interpretation of scores traditionally uses the following guidelines:

0 - 15	SEVERELY IMPAIRED
16 - 20	MODERATELY IMPAIRED
21 - 25	MILDLY IMPAIRED
26 - 30	NO IMPAIRMENT

Saint Louis University Mental Status Examination

The SLUMS is a more recently developed mental status screening tool. Similar to the traditional Folstein Mini-Mental Status Examination, the SLUMS is a 30-point measure assessing several areas of cognitive performance similar to the MMSE, but supplements with additional measures of attention, calculation, recall, digit span, clock- drawing, and immediate recall. The SLUMS appears to be more effective than the MMSE in diagnosing mild neurocognitive disorder. Scores between 27 and 30 represent normal functioning among educated examinees. Scores between 21 and 26 indicate mild cognitive impairment, and scores below 21 suggest dementia. Persons with less than a high school education are given slight lower cutting scores.

Draw a Clock

The Draw-a-Clock Test (sometimes referred to as the Clock-Drawing Test) has a long history of use as a screening tool for cognitive impairment in the elderly. Traditional administration of the task requires the examinee to reproduce the round face of a clock, correctly place each numeral, and to place the hands to read a defined time (i.e., ten minutes past eleven). The task typically places few demands on cognitively and visually intact individuals with adequate pencil manipulation capacity. The test requires basic skills in eye-hand coordination, but also places demands on executive functions related to planning, organization, problem-solving, and execution of instructions. Since executive dysfunction can precede the memory disturbances of dementia, the test appears useful in identifying people with executive dysfunction who may have an otherwise normal MMSE scores. Poor clock drawing is associated with increased risk of mortality from any cause, and remains a valuable screening tool for moderate/severe cognitive impairment in the elderly despite being relatively poor at detecting milder cognitive impairment.

¹ Folstein MF, Folstein SE, McHugh PR: "Mini-mental state: A practical method for grading the cognitive state of patients for the clinician." J Psychiatr Res 1975;12:189-198.

The Montreal Cognitive Assessment

The MoCA is a 30-point cognitive screening measure similar in nature to a broad variety of similar mental status testing tools, including the Mini-Mental Status Examination, St. Louis University Mental Status Examination, etc. As with most screening measures of this type, the examinee is presented with various brief tasks involving orientation, memory, drawing, object naming, etc. Healthy persons rarely score below 26 on the measure. In contrast, persons with well-documented dementia typically achieve scores between 11 and 21. The MoCA is well-accepted in the clinical and scientific literature as a robust and sensitive screening tool for detecting cognitive impairment.

Short Blessed Test

The SBT is a 28-point test similar to the MMSE, but primarily assessing orientation, concentration, and short-term memory. The SBT does not require motor output such as drawing figures or copying actions, and thus is a good choice for people with dexterity deficits, such as not being able to use their arms or hands. It appears sensitive to early cognitive changes associated with Alzheimer's disease. In contrast to the MMSE, only errors are counted. Thus, low scores are better. Scores 0–4 are considered normal, 5-10 represents mild problems deserving further assessment, and scores over 10 suggesting a degree of impairment consistent with dementia and a clear need for additional testing.

Addenbrooke's Cognitive Examination

Developed in 2000 and subject to two revisions since, the Addenbrooke's Cognitive Examination (ACE, ACE-R, and ACE-III) is a brief neuropsychological assessment of cognitive functioning incorporating and expanding on the MMSE. It was initially developed to help discriminate between various forms of dementia, specifically Alzheimer's disease and Frontotemporal Dementia. The ACE is a 100-point screening battery that assesses various cognitive domains, including language, memory, visuospatial skills, orientation, and verbal fluency. It requires about 15-20 minutes to administer. In clinical study, cut-off values for the ACE composite score of 88/ or 83/100 were found to be reasonably effective at discriminating dementia from normalcy. The ACE appears mostly unaffected by depression, and is better than the MMSE at reliably detecting many types of dementia, likely based on the fact that it is longer and more diverse in content. The measure demonstrates good psychometric properties with respect to internal consistency, validity, and sensitivity. Weaknesses include relatively limited assessment of executive functions, and—as developed in England—contains culturally specific questions that may be confusing to patients outside of the United Kingdom (i.e., using English postal address systems, asking for the name of the prime minister, etc.).

Allen Cognitive Level Screen

The ACLS is a series of assessment tools employed almost exclusively by occupational therapists. The screening tools are designed to provide an initial estimate of cognitive function and validated by further observations of performance. There are six levels ranging from Coma (0.8) to "Normal" (6.0). Each level has three components: Attention, Motor Control, and Verbal Performance. The measure is commonly used when anticipated discharge to a less supervised or restrictive environment, and can assist in judging appropriate levels of care needs following discharge. The ACLS aids persons with cognitive disability and their caregivers about what care level will likely be needed.

Formal Neuropsychological Testing

Once the relationship between behavior and brain injury and disease was clearly recognized, various tasks were developed to observe and measure a psychological functions known to be linked to a particular brain region. The hallmark of a solid science is developing accurate tools of measurement and rigorous commitment to the scientific method, even when the object of study may be highly complex and unpredictable. Psychology was formed on the basis of scientific measurement of human behavior and mental processes. Neuropsychology later developed as a specialty field within psychology focusing directly on brain-behavior relationships.

Hundreds of tests have been developed--from very simple to very complex--to measure brain functioning. Most of these were developed in clinical and research settings to diagnose cognitive disorders and to study normal and abnormal brain functioning. For example, it was observed that people with specific kinds of brain injuries suddenly lost their ability to recall and speak the names of common objects. This condition is

Since brain functioning also has direct implications to some types of legal issues (i.e., litigation regarding brain injury, ability to stand trial, disability determination, decisional capacity in dementia and other neuropsychiatric conditions, etc.), neuropsychologists have often been asked to address these issue by using their testing expertise. This can provide more “objective” and data-based picture of the examinee’s performance than simply relying on judgment or impression.

Neuropsychological assessment is a performance-based method to assess brain functioning. This has an advantage over subjective self-report (“My memory’s fine, leave me alone!”) or the reports or descriptions of involved parties who often have their own biases toward predetermined outcomes. The neuropsychological method is used to examine the cognitive consequences of brain damage, brain disease, and severe mental illness. There are a range of uses for clinical neuropsychological assessment, including collection of diagnostic information, differential diagnostic information, assessment of treatment response, and prediction of functional potential and functional recovery.

Neuropsychological tests and their interpretation are based either on:

- 1) a relatively crude cutting score that meets some predefined threshold (e.g., Scores on the SLUMS below 20 indicate dementia; 19 on the MMSE is in the “moderately impaired” range; or more than 40 errors on the 208-item Category Test is “abnormal” and indicative of brain damage), or
- 2) on traditional psychometric theory and probability statistics.

While the former is simple convenient, neuropsychologists generally prefer the latter. Using careful test construction and statistical analysis, a person’s “raw” score on a test (i.e., 35 out of 50 correct on the Boston Naming Test) is compared to normative sample, usually consisting of healthy persons ideally matched for age, gender, ethnicity, and educational level. These factors have been shown by research to impact performance on a particular test. See [Understanding Neuropsychological Test Scores](#) for more details of how scores are described and interpreted. The advantage of this method is greater precision, but the trade-off is less convenience in making simple “yes-no” decisions.

Neuropsychological testing remains an inexact science. It is well known that people with sometimes significant brain changes can produce relatively normal cognitive test profiles, and that individuals with no clear brain injury can have substantial cognitive and functional limitations. The process nonetheless remains the best available technique to answer questions about a person's cognitive abilities, and is continually evolving based on latest brain science and imaging techniques.

Neuropsychological Exam Components:

1. Review of medical and/or legal records.
2. Interview and history taking of the examinee, often assisted by another person who knows them well.
3. Administration of tests that directly measure the examinee's cognitive abilities and emotional functioning.
 - a. Systematic administration of clearly defined procedures in a formal environment marked by a single person working with an examiner in a quiet non-distracting space to provide an estimate of a person's peak level of cognitive performance
4. Crafting a comprehensive report that summarizes relevant medical history, evaluation results, and recommendations for treatment and/or the legal issue at hand.

What Skills and Abilities do Neuropsychological Tests Measure?

Depending on the questions at hand, the evaluation may focus on some abilities more than others. Most neuropsychologists are trained to write reports that address some or all of the following areas:

- General Intelligence
- Problem Solving
- Planning and Abstract Thinking
- Attention and Concentration
- Learning and Memory
- Language
- Visual and Spatial Perception
- Motor and Sensory Skills
- Academic Skills
- Mood and personality functioning
- Activities of Daily Living

These areas can be measured by formalized test batteries (i.e., RBANS, WAIS, etc.) or stand-alone measures of the area in question (Trail Making, California Verbal Learning Test, Wisconsin Card Sorting Test, etc.).

Among These Areas, What Matters Most in Decisional Capacity?

With respect to overall decisional capacity, three primary domains emerge as most important and potentially predictive of functional competency and vulnerability enhancement:

1. **Insight:** Usually not directly measurable, but an aspect of observation and the degree to which self-report conforms to real observation and establish patterns of behavior. The neurological

symptom of *anosognosia* (Ah-nosag-no-zha, literally translated as “without disease knowledge”) describes a condition in which a person suffering a certain disorder seems unaware of the existence of his or her deficits or disability. Anosognosia is a ubiquitous feature among many types of psychiatric disorders, especially bipolar, delusional, substance abuse, and some anxiety (i.e., variants of OCD) and personality disorders.

2. **Memory:** The ability to acquire and retain basic facts and information.
3. **Executive Functioning:** A broad category impacting focused attention, discriminating facts from fiction, problem solving, planning, initiative, abstract thinking, and acting on what you know is right. This is extremely complex, unaddressed by most all screening measures, and requires considerable expertise to adequately assess.

Summary Points

1. There is no neuropsychological “capacimeter.” We do the best we can with the technology available, and every job should be considered a custom job. If you see the same person giving the same battery of tests in every situation, something’s usually wrong.
2. There are published tests of medical and financial competency. However, these are rarely published in commercial form, are mostly used in research and with little testamentary backing, and almost always rely on others filling out a rating scale. The informants in our cases are rarely objective in their opinions.
3. NP test instruments do not purport to assess competency as a whole, but rather sample the cognitive functions serving as the foundation for effective action, most of which are executive in nature.
4. Although capacity is not perfectly predicted by NP tests, there is a clear relationship between iADL competence and the presence, type, and extent of cognitive impairment.
 - a. The MMSE (Karlavish et al, 2005) demonstrates this, as do tests specifically addressing memory and executive function (Marson et al, 1995; Marson et al, 1996; Cahn-Weiner et al, 2007).
 - b. A clear and positive association between iADL competence and disease awareness (insight) has also been reported (Cairns et al, 2005).
5. You have to find someone with enough experience in medicolegal cases and testing expertise to make sure the data and report you are getting is credible, useful, and able to stand up to court scrutiny. Most psychologists actually don’t know how to conduct these assessments. The term “neuropsychologist” is rather loose, and most strictly describes persons holding board certification by one of the two primary boards in the U.S. (ABN or ABCN). Otherwise, professionals must be able to demonstrate they have the academic training and at least two years of supervised experience doing these assessments.

6. Assessment of premorbid abilities is a key component to any exam where decline in functioning is being considered. There are established methods for estimating this. Also, degree of effort must be considered.
7. While really bad NP performances are almost always a clear threat to iADLs, occasionally we assess people with basically normal cognitive profiles who clearly cannot or do not make good choices. NP scores are just one piece of the puzzle, and established patterns of behavior continue to be the best predictor of the future.
8. NP testing requires extensive training, judgment, flexibility, adaptability, and broad repertoire of evaluations tools to meaningfully assess the AIP while still maintaining technical and scientific rigor to produce valid and helpful results. Don't do NP testing at home, kids.
9. The use of trained technicians (psychometrists) to administer tests under direction of the neuropsychologist is common and professionally sanctioned. The neuropsychologist is responsible for test data integrity, and providing assurance the technician was competent to give the tests in the same manner as the neuropsychologist would have done, themselves.
10. Neuropsychological tests are considered "secured" tests and rely on examinee naiveté to the content and tasks within the measure. Professional ethics and publisher requirements prevent us from letting you know just exactly what's in a test. We have to keep the content secret for them to work, and respect the need of the test publisher for return on their investment in developing these measures.
11. Psychologists tend to be wary of lawyers, a few of whom have been known to "advocate" for their clients by coaching them prior to testing with the actual tests in question. This produces invalid test results, is ethically indefensible, and hurts our feelings.
12. Third-party observation of formal testing is not allowed by professional ethics.
 - a. This is not how the tests were meant to be given, nor the basis of how they were normed. Giving a test as close to the same manner and conditions as they were developed helps ensure integrity and validity.
 - b. Research shows that observers actually change the examinee's scores.
 - c. Observation violates tests security by exposing the test content to nonprofessional parties.
 - d. This rule includes audio- and video-recording of testing.
 - e. This rule also applies to providing you (the non-NP public) with copies of testing materials used in the assessment. Neuropsychologists are ethically accountable for making sure test data are not used to misrepresent and harm an examinee via misinterpretation or misuse by others. We can only provide copies of these materials to other neuropsychologists, who—presumably—are capable of interpreting them and keeping them secure.