

E-411 PRMA

LECTURE 20 NEUROPSYCHOLOGICAL ASSESSMENTS

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NEUROPSYCHOLOGY

- Explores relationship between behavior and brain functioning
- Includes:
 - Pediatric
 - Geriatric
 - Forensic
 - School
- More of function on biochemistry, **behavioral neurology**
- **Neuropsychological assessment** - concerned with evaluating the functioning of the brain and nervous system as it relates to behavior

DAMAGE AND ORGANICITY

Understanding about the function of the brain and brain-behavior relationship arose from examining patients with neurological damage

organicity, linking a mental disorder to a biological cause
(e.g. brain lesion)

Lots of plasticity in brain functioning/recovery and the link between organicity and damage is not one-to-one (page 534 for some examples of problems with organicity)

CONDITIONS PROMPTING NEUROPSYCHOLOGICAL EVALUATION

- Referrals from medical doctor or psychologist
- Medical referral: no clear medical basis for impairment
- Psychological screen could involve **perceptual-motor/memory test**, intelligence test, and a personality tests
- Based for suspicious symptoms (e.g., hand tremors only at work) or a recent event (e.g., a stroke) (table 15-3)
- Examine **hard** (definite deficit) vs. **soft** (potential deficit) signs for determining referral

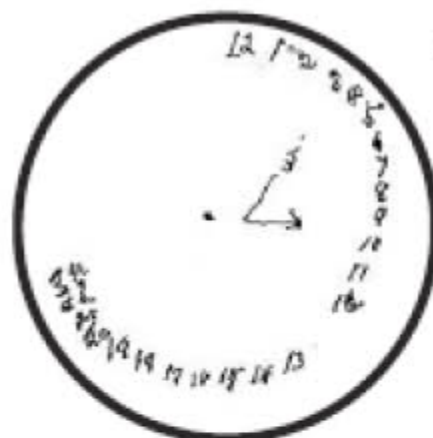
**DRAW A CLOCK FACE, LABEL IT, AND DRAW
THE HANDS SO THAT THE TIME IS SET TO
11:15**

Scores

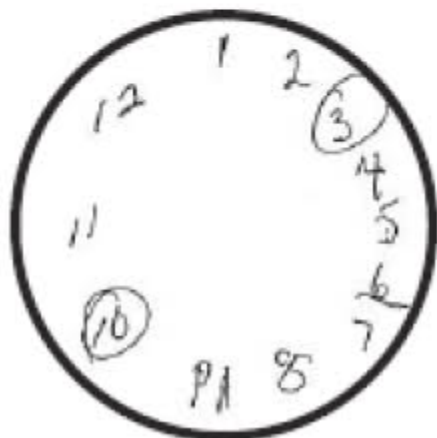
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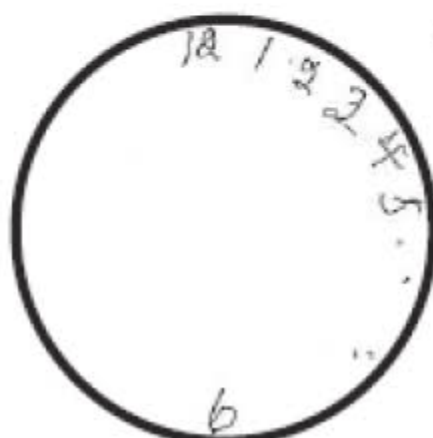
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NEUROPSYCHOLOGICAL ASSESSMENT

Assessment Video

NEUROPSYCHOLOGICAL EVALUATION

Purpose - to make inferences about the structural and functional characteristics of the brain by evaluating an patient's behavior in defined stimulus-response situations

Case history of patient very important

Initially test a myriad of things: visual, auditory, perceptual, problem solving, cognitive processing, sensory, based on patient's needs to assess treatment options

Timing of assessment may be critical to validity

methods - similar to other fields but including imaging

Imperative to have a strong understanding of biology, medicine, and neurological functioning

HISTORY AND CASE STUDY

- Medical history of patient and their family
- For children, have they reached **developmental milestones**
- Psychosocial history (e.g. academic achievement, intelligence, personality, thought processes, etc)
- Type, severity, and history of issues (e.g. is it progressing, stable, new?)
- Good history imperative to knowing cause of symptoms!
- Other case study information may be very important

INTERVIEW AND MENTAL STATUS EXAM

Unlike counseling/clinical, interviews here are more structured

Typically involve rating forms

Formal exam would be used to screen for impairments and/or disease but not diagnosis

Would administer a mental status exam for general understanding of the mental state of the examinee

MENTAL STATUS EXAM

- Appearance, behavior
- Orientation
- Memory
- State of senses and psychomotor abilities
- State of consciousness, affect, mood, personality
- Thought content & processes
- Intelligence, insight, judgment
- Focus on neuropsychological functioning

GENERAL INTELLIGENCE TESTS

Weschler tests very commonly used in neuropathology

Patterns of scores often indicative of a deficit

Focus on interpreting pattern of subtest scores (**pattern analysis, also profile analysis**)

Scores from intelligence tests devised to assess extent of brain damage (e.g. quotients or ratio scores) - questionable validity

Depending on focus of assessment, practitioners may deviate from prescribed testing procedure

ABSTRACT THINKING

- Inability to think in abstract manner indicative of neuropsychological deficit (such as frontal lobe functioning)
- Tests elicit abstract thinking in testee administered
 - Weschler similarities test
 - Proverbs test
 - Sorting tests

MARSHMELLOW TEST

EXECUTIVE FUNCTIONING

"Air Traffic Control System" of the brain - need to manage lots of information and lots of distractions

Involves working memory, inhibitory control, mental flexibility

EF involves various regions of the brain

It is plastic and trainable and develops rapidly in children

PEG TAPPING

PERCEPTUAL AND MOTOR TEST

- **perceptual** - measure sensory functioning
- **motor** - measure motor skills
- includes tests of color, smell, dexterity, speed, ability, etc.

BENDER VISUAL-MOTOR GESTALT TEST

- Visual-motor test
- Screener for neuropsychological impairment
- Copy the card as best as they can
- No time limit
- Testing observations include physical demeanor, drawing technique, test-taking behavior, and attitude
- Includes a recall phase and supplemental motor and perceptual tests
- Scoring based on judgment not a rubric, why might this be an issue?

TESTS OF VERBAL FUNCTIONING

verbal fluency may be associated with brain injuries or diseases (e.g. dementia)

- **Controlled Word Association Test** - examiners says a letter and examinee says as many words as they can in a minute
- Has been used with dementia patients (but can not readily identify people with dementia)

Is someone able to express themselves with language
(**aphasia**)

Reitan-Aphasia Screening Tests used to detect aphasia -
naming common objects and writing familiar words

Unidimensional? Culturally sensitive?

TESTS OF MEMORY

- Many models of memory (like intelligence)
- Memory models include short and long-term memory
- Book's undefinitive model (Figure 15-7)
- Something perceived may move into short-term memory, back to being aware, back to short-term memory (and so on), and either to long-term memory or could be lost
- Types of LTM: procedural (doing something); declarative (factual) -> semantic (facts, in general) & episodic (contextual facts)

TESTS OF MEMORY

- **California Verbal Learning Test-II**
 - Obtain the most comprehensive and detailed assessment of verbal learning and memory available for older adolescents and adults
 - Examinees are read a list of words, selected after careful study of their frequency of use across multiple demographic variables, and asked to recall them across a series of trials
- **Wechsler Memory Scale**
 - An extremely comprehensive memory test

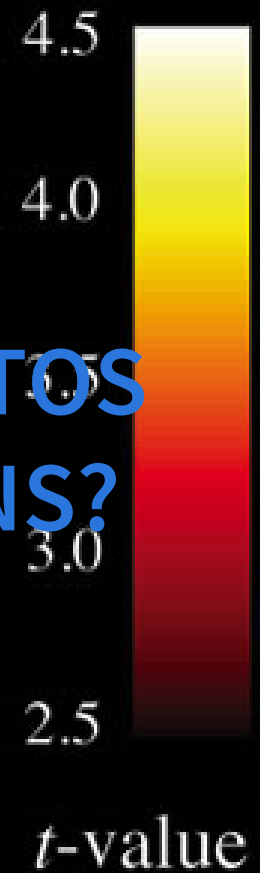
NEUROPSYCHOLOGICAL BATTERIES

- Could be a fixed or a flexible battery
- Flexible battery would involve the test administrator to score and interpret the battery
- Flexible allows careful tailoring based on MS and physical exam
- Several widely used fixed batteries of which Halstead-Reitan is most popular
 - Inferring nature, location, and extent of intact and impaired brain functions
 - Consist of 10 tests
 - Shown to discriminate normal controls from patients with brain damage with considerable accuracy

FMRI

- Produces images of the brain, non-invasively, that allow us to monitor the flow of blood (i.e. study function)
- Use fMRI to see how our brain responds to different stimuli
- Diverse uses including studies of mindfulness, prevent disabilities, treating disorders and addictions, studying autism, studying criminals, examining racism, decision-making, memory, and much more

DEAD SALMON REACTS TO PHOTOS
SHOWING DIFFERENT EMOTIONS?



ISSUES WITH FMRI

Often done with small sample sizes, low statistical power,
and lots of statistical testing!

Non-independent statistical tests and corrections are
needed, otherwise dead salmon

Be mindful of practical significance and understand how it
differs from statistical significance