Understanding the Neuropsychological Functioning of a Vulnerable Adult:

Beyond the Psychologist's Report

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What is neuropsychology?

...human mental processes are complex <u>functional systems</u> that are not localized in narrow, circumscribed areas of the brain, but take place through the <u>participation of groups</u> of concertedly working <u>brain structures</u>, each of which makes its own particular contribution to the organization of this functional system." Luria, 1973, p. 43

Units of Functioning

- 3 functional units
- 1. regulating tone or waking
- 2. obtaining, processing and storing information arriving from the outside world
- 3. programming, regulating, and verifying mental activity

The study of brain functioning and how it is manifested in behavior.

Benefits of a Neuropsychological Evaluation

What is the reason for referral?

What places my client at risk?

What is the purpose of this behavior?

Why is it so hard for my client to make different choices?

What are my client's innate problem solving strengths?

What are the different components of a neuropsychological evaluation?

Background Information

• Health & Medication

- Family & Relationships
- Education
- Employment
- Psychiatric History
- Previous Testing

Context

5 Test Battery

- Intelligence
- Academic
- Attention
- Working Memory
- Executive Functioning
- Personality



Attention

"...different <u>capacities</u> or <u>processes</u> that are related to aspects of how the organism becomes receptive to <u>sensory stimuli</u> and how it may begin processing incoming or 'attended to' excitation."

(Lezak, 2004, p. 34)

"...involves the selection of specific information by the organism...it is logical to expect it to be associated with selective facilitatory processing in the brain"

Gaddes & Edgell, 1994, p. 256

...the ability to 'attend to' or to discriminate what needs your attention and what you can 'ignore.'

What gets your attention?

- ∞ The **smell** of smoke coming from your neighbor's house.
- ∞ The **sound** of the ambulance's siren.
- 50 The **sight** of a person' walking down the street wearing a mask.
- ∞ The **feel** of heat against our skin.

The Characteristics of Attention

- ∞ Finite & limited capacity
- ∞ Information processing capability
- ∞ Ability to disengage and shift our attention
- Responsivity to sensory and/or semantic stimuli

The Taxonomy of Attention

Selective/Focused Attention:

the ability to highlight one or two important stimuli (external/internal)

Sustained Attention:

the ability to stay on task in a vigilant manner for a prolonged period of time

Shift Attention:

the ability to reallocate attentional resources in a complex task

Divide Attention:

the ability to respond to more than one task or event simultaneously

The Structural Components of Memory



Sensory Memory



Gaddes & Edgell, 1994

Working Memory

Phonological Loop	 How we store auditory information Limited capacity7 <u>+</u> 2 numbers Grouping information: efficient storage Meaningful information is more easily stored than non-meaningful
Central Executive	 Monitors and coordinates the PL and VSSP Decides the order in which the processes will be performed How much attention goes to each task
Visual- Spatial Sketchpad	 How we rehearse and store visual information Mental blackboard Subvocal speech i.e., requires language Requires efficient visual scanning abilities

Examples of Working Memory

Attend a lecture while taking notes

Remember 3 parts of homework while recording the first two parts

Keeping in mind the point you want to make in a conversation while explaining the first point

Problems with Working Memory



Increases errors, inattention, and distractibility

Impacts ability to acquire more knowledge and learn new skills

Weakness in WM Contributes to the development of depression, anxiety, and low self-esteem

Weiss et al, 2005

Memory Processing

- Perceive Stimuli
- Encode
- Consolidate
- o Store
- Retrieve/Recall

Long Term Memory

Procedural: Skills & Habits

Semantic: General Memory

Episodic: Personal Knowledge

"Back Brain" = Reactive Brain



"Front Brain" = Logical Brain

Pre-Frontal Cortex



Set Shifting Hypothesis Generation **Problem Solving Concept Formation** Abstract Reasoning Planning Organizing Inhibition Self-Monitoring Self-Control Estimation Behavior Regulation Common Sense

Frontal Lobe "Verbs"

Evaluate Determine Reason Plan Assess Hypothesize Compare Contrast Summarize Judge

What is executive functioning?

- 1. Organizing, prioritizing and activating for tasks
- 2. Focusing, sustaining and shifting attention to task
- 3. Regulating alertness, sustaining effort and processing speed
- 4. Managing frustration and modulating emotions
- 5. Utilizing working memory and accessing recall
- 6. Monitoring and self-regulating action

Tom Brown, 2001

Intelligence Testing

Wechsler Adult Intelligence Scale – Fourth Ed (WAIS-IV)



Institute for Brain-Behavior Integration

Academic

Basic Mathematics

Basic Language Arts
 Reading
 Comprehension
 Spelling

Attention

Sustain
Select
Divide
Shift

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