Understanding the Neuropsychological Functioning of a Vulnerable Adult:

Beyond the Psychologist’s Report
...human mental processes are complex functional systems that are not localized in narrow, circumscribed areas of the brain, but take place through the participation of groups of concertedly working brain structures, each of which makes its own particular contribution to the organization of this functional system.” Luria, 1973, p. 43
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.
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

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

Context

Data

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“...different capacities or processes that are related to aspects of how the organism becomes receptive to sensory stimuli 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.’
The **smell** of smoke coming from your neighbor’s house.

The **sound** of the ambulance’s siren.

The **sight** of a person’ walking down the street wearing a mask.

The **feel** of heat against our skin.

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The Characteristics of Attention

- Finite & limited capacity
- Information processing capability
- Ability to disengage and shift our attention
- Responsivity to sensory and/or semantic stimuli
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
- Audition & Vision
- 3-5 seconds

Working Memory
- Phonological Loop
- Visual-Spatial Sketchpad

Long Term Memory
- Procedural
- Declarative

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Sensory Memory

Information stored is thought to be a copy of the original stimulus

3-5 seconds

Mental echo
Icon
Unanalyzed sensory information that the sensory receptors provide.

Audition & Vision

Gaddes & Edgell, 1994

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Working Memory

**Phonological Loop**
- How we store auditory information
- Limited capacity—7 ± 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

Gaddes & Edgell, 1994
Examples of Working Memory

1. Attend a lecture while taking notes.
2. Remember 3 parts of homework while recording the first two parts.
3. Keeping in mind the point you want to make in a conversation while explaining the first point.

Weiss et al., 2005
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Weakness in WM

- Makes processing more complex information more time consuming and taxes mental energy
- Increases errors, inattention, and distractibility
- Impacts ability to acquire more knowledge and learn new skills
- Contributes to the development of depression, anxiety, and low self-esteem

Weiss et al, 2005

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Memory Processing

- Perceive Stimuli
- Encode
- Consolidate
- Store
- Retrieve/Recall
Long Term Memory

- Procedural: Skills & Habits
- Semantic: General Memory
- Episodic: Personal Knowledge

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“Back Brain” = Reactive Brain

I THINK RATIONALLY
(way over here)

LIMBIC SYSTEM
(I feel here)

SPINAL CORD
(enters brain here)

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“Front Brain” = Logical Brain

Pre-Frontal Cortex

Sub-Domains of Executive Functioning

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

Baron, 2004

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

**Higher Order Thinking**
- Verbal Comprehension Index
  - Vocabulary
  - Similarities
  - Information

**FSIQ**

**Lower Order Skills**
- Working Memory Index
  - Digit Span
  - Arithmetic

**Processing Speed Index**
- Perceptual Reasoning Index
  - Block Design
  - Matrix Reasoning
  - Visual Puzzles

- Coding
  - Symbol Search

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o Basic Mathematics

o Basic Language Arts
  Reading
  Comprehension
  Spelling
Attention

 Sustain
 Select
 Divide
 Shift

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