

# **CAROLINA NEUROPSYCHOLOGICAL SERVICE, INC.**

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## **Memory and Executive Functioning**

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### **I. Memory Complaints**

#### **A. Common complaints**

1. Problems remembering NAMES, DATES, PHONE NUMBERS, APPTS.
2. Loosing train of thought in conversation
3. Problems multi-tasking
4. Can't find a specific word or name of an object

#### **B. Serious complaints**

1. Not being able to follow directions
2. Getting lost in familiar places
3. Missing appointments repeatedly
4. Forgetting to bathe
5. Forgetting entire conversations

### **II. Stages of Memory**

- A. Sensory – very brief storage long enough to attend to information Iconic and Echoic images, (few seconds)
- B. Primary – Working Memory/STM, holds about 7 units (+/-2), last for 20-30 seconds
- C. Secondary – Storage/LTM, consolidation of newly learned material after rehearsal
- D. Tertiary – long term memory store of information. Remote, across the lifespan

### **III. Types of Memory**

- A. Episodic – memories with a specific time and place focus
- B. Semantic/Categorical – accumulation of ideas and concepts
- C. Procedural – how to perform activities, e.g. riding a bicycle
- D. Declarative – knowledge about how to perform an activity
- E. Implicit – unconscious memory, sensory based
- F. Explicit – conscious, articulate memory
- G. Anterograde (post accident) versus Retrograde (pre accident)
- H. Prospective – 1.) memory for an event which has not yet occurred, or  
2). strategic aspects of learning and memory that facilitate encoding and retrieval, e.g. planning and organization

### **IV. Neuroanatomy of Memory**

- A. Medial temporal lobe (hippocampus)
- B. Diencephalic midline (thalamus and mammillary nuclei)  
(above are disorders of new learning)
- C. Frontal lobes

MEMORY AND COGNITIVE DISORDERS  
THAT OCCUR IN PATIENTS WITH FRONTAL LOBE LESIONS

Memory Disorders ("prospective" memory deficits)	Cognitive Disorders ("dysexecutive" syndrome)
Short-term memory	Planning
Free Recall	Problem Solving
Metamemory	Initiation
Memory for temporal order	Perseveration
Source memory	Fluency
	Cognitive estimation
	Disinhibition

V. Memory Dysfunction by Diagnosis

- A. Milds – attention, concentration and retrieval (diffuse)
- B. Moderates – above, some encoding deficits
- C. Severe – encoding and storage deficits (medial temporal)
- D. Mild Cognitive Impairment – Memory complaints greater than expected but intact ADLs

VI. Depression and Memory

- A. Symptoms of depression
  1. Feelings of sadness and hopelessness for 2-3 weeks constant (not due to grieving)
  2. Low energy or fatigue
  3. Loss of enjoyment and interest in usual activities and social life (anhedonia)
  4. Changes in appetite and sleep
  5. Difficulty concentrating and remembering
  6. Thoughts of death
- B. Incidence of depression – 10% men and 20% women
- C. Impact on memory – perfect recall for negative life events
- D. Doesn't really show effects until 60+ years for most tests

VII. Medications and Illness Impacting Cognition and Memory

- A. Tranquilizers and sleep medications, Beta blockers
- B. Illnesses impacting brain functioning – HTN and DM; Sleep Apnea or PLMS
- C. Cerebral illness – CVA, TBI, MS, Tumors, etc

VIII. Education about Memory

- A. Forgetting is normal (not Wilder Penfield)-Pathological when:
  1. Rate of forgetting is too fast (greater than 30% over half an hour)
  2. Forget things you want to remember
- B. Memory is not like a videotape recording of an event – (Subjective impressions are what is remembered) *Example: Ask family members to independently recall trivial and important events*
- C. Memory is a dynamic process which changes over time – especially memory for emotional events. Not static

- D. Recall is suggestible – (child sex abuse & accident issues)
- E. Repression of traumatic events is possible. However, not just due to memory, but due to fear, embarrassment, family conflict.....

#### IX. Treatment

- A. Be active in cognitive processing – Use it or Lose it!
- B. Use Strategies:
  1. Categorization – group items into logical categories (e.g. fruits, meat, vegetables) Acronyms
  2. Chunking – combine material, like SSN, phone #s
  3. Method of Loci – remember physical locations in your house and place reminders there (e.g. Kitchen – see phone to remember to pay phone bill)
  4. Novel Interacting Images –
    - a. identify dominant facial feature of a person
    - b. create concrete visual image from person's name
    - c. form visual association of dominant feature and visual image. Need Verbal elaboration (active strategy) for b&c to pair
  5. Active encoding strategies:
    - a. PQRST
    - b. 5 W's and 1 H
    - c. Develop verbal story or visual movie for encoding
  6. Physical reminders:
    - a. Write things down – (Post-its, calendars, Daytimers)
    - b. Place physical objects in prominent place (e.g. Put umbrella in sleeve of coat at restaurant)
    - c. Use established locations – (like hiding XMAS presents in same place)
- C. Aerobic exercise – increases blood flow to brain, reduces stress
- D. Reduction in negative health lifestyle (smoking, alcohol, bad diet)
- E. Reduction in cognition – altering medications
- F. Treatment of depression
- G. Increase activities in social and community life
- H. Computer programs, if directed...www.arrp.org exercises

#### Other things to check:

- 1) Cognitive Labs: Vitamin B-12, Folic Acid, and Vitamin D;
- 2) Thyroid
- 3) Above in addition to CBC and Complete Metabolic Panel

#### Things to Avoid: (If it sounds too good.....)

- 1) “Megamemory” – as advertised on TV. “If it sounds too good to be true”, then it is!
- 2) “Superlearning”
- 3) Computers – unless part of a planned and directed therapy program
- 4) Nutritional supplements advertised on TV or media...

#### Resources:

- 1) The Complete Idiot's Guide to Memory Improvement by Kurland & Lupoff
- 2) The Memory Book by Lorayne and Lucas
- 3) AARP Website
- 4) [WWW.NIA.NIH.Gov/Alzheimer's](http://WWW.NIA.NIH.Gov/Alzheimer's)
- 5) Daily Newspaper