

Epilepsy and Neuropsychology

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Neuropsychology

- Specialty area of professional psychology concerned with learning and behaviour in relationship to the brain
- Primary clinical activities include assessment and consultation, occasionally treatment
- Related to but distinct from Clinical and School Psychology specialties

Neuropsychological Assessment

- To evaluate functions and skills associated with thinking and behaviour
- To measure and track abilities and disabilities in people with brain-related illness or injury
- To assist in identifying what part of the brain is affected by the illness or injury
- To assist in planning and evaluating treatments for people who have brain-related illness or injury

Neuropsychological Assessment

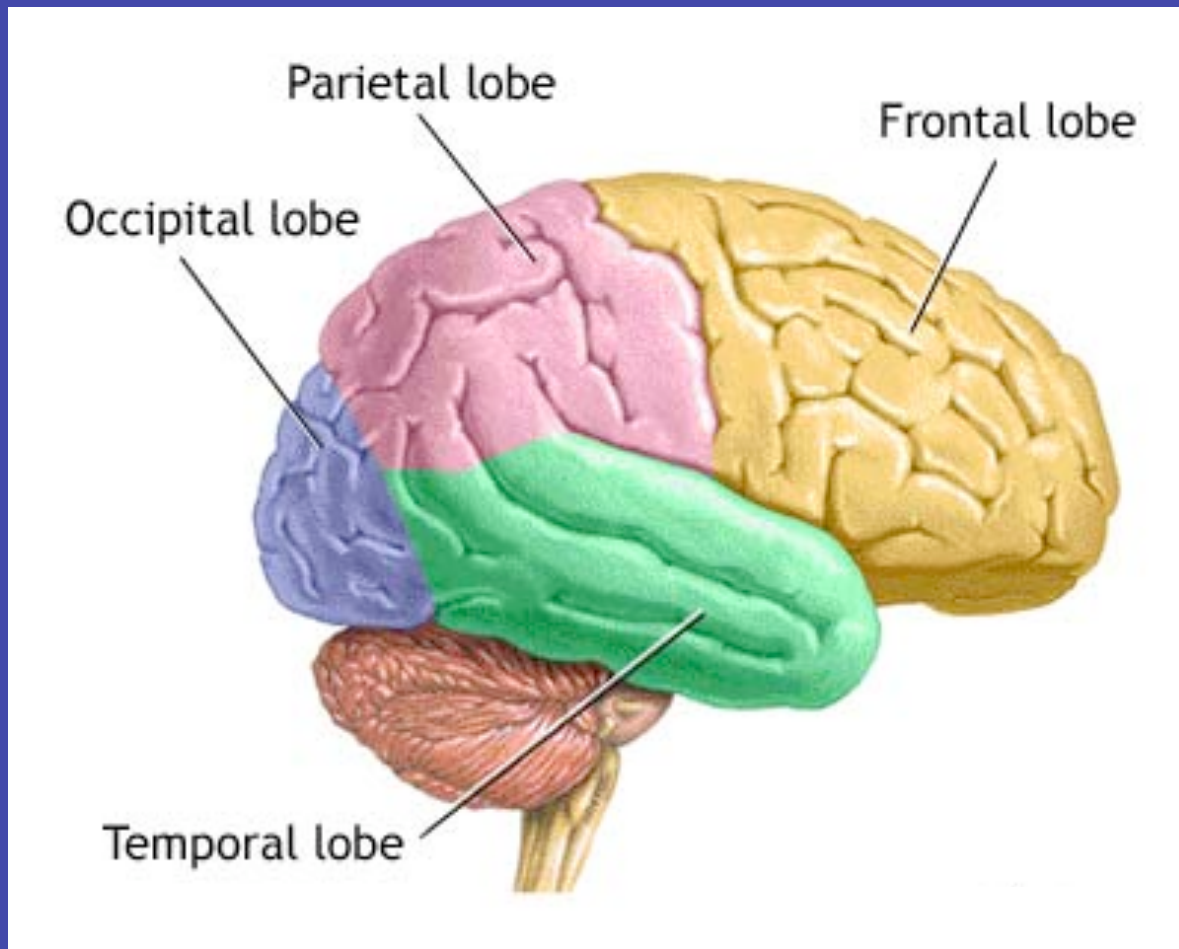
- Intelligence
- Attention
- Executive Function
- Language
- Visual Processing
- Learning and Memory
- Sensorimotor Skills/Fine-motor Skills
- Emotional and Social Behavior

Epilepsy and Thinking Functions

- Type of seizure or epilepsy syndrome
- Location of seizures in the brain
- Frequency and severity of seizures
- Length of illness
- Medication

The best predictor of the type or severity of thinking problems is the underlying cause of the seizures

Brain Areas and Seizures



Types of Thinking Problems Commonly Seen in Epilepsy

- Attention
- Executive Functions
- Learning and Memory
- Speed of Processing and Output
- Information Processing

Attention Problems in Epilepsy

Selective — [Trouble with focus and concentration
Easily distracted
Trouble ignoring "noise"

Sustained — [Prone to day-dreaming
Becomes easily side tracked
Trouble focusing for long periods of time

Divided — [Trouble paying attention to two things at once

Attention Problems in Epilepsy

- May be present in as many 40 - 60% of children with epilepsy
- Prevalence in adults is not well-established
- Problems can be seen in all areas of attention
- Seizures of frontal or temporal lobe origin have a high chance of causing attention problems

Executive Functions

Initiation (starting)

Inhibition (stopping)

Persistence (sustaining)

Sequencing

Organization

Planning

Monitoring

Switching / Shifting

Executive Functions:

Assigns / Delegates

Allocates Resources

Prioritizes

Evaluates

Makes Decisions

Develops Strategy

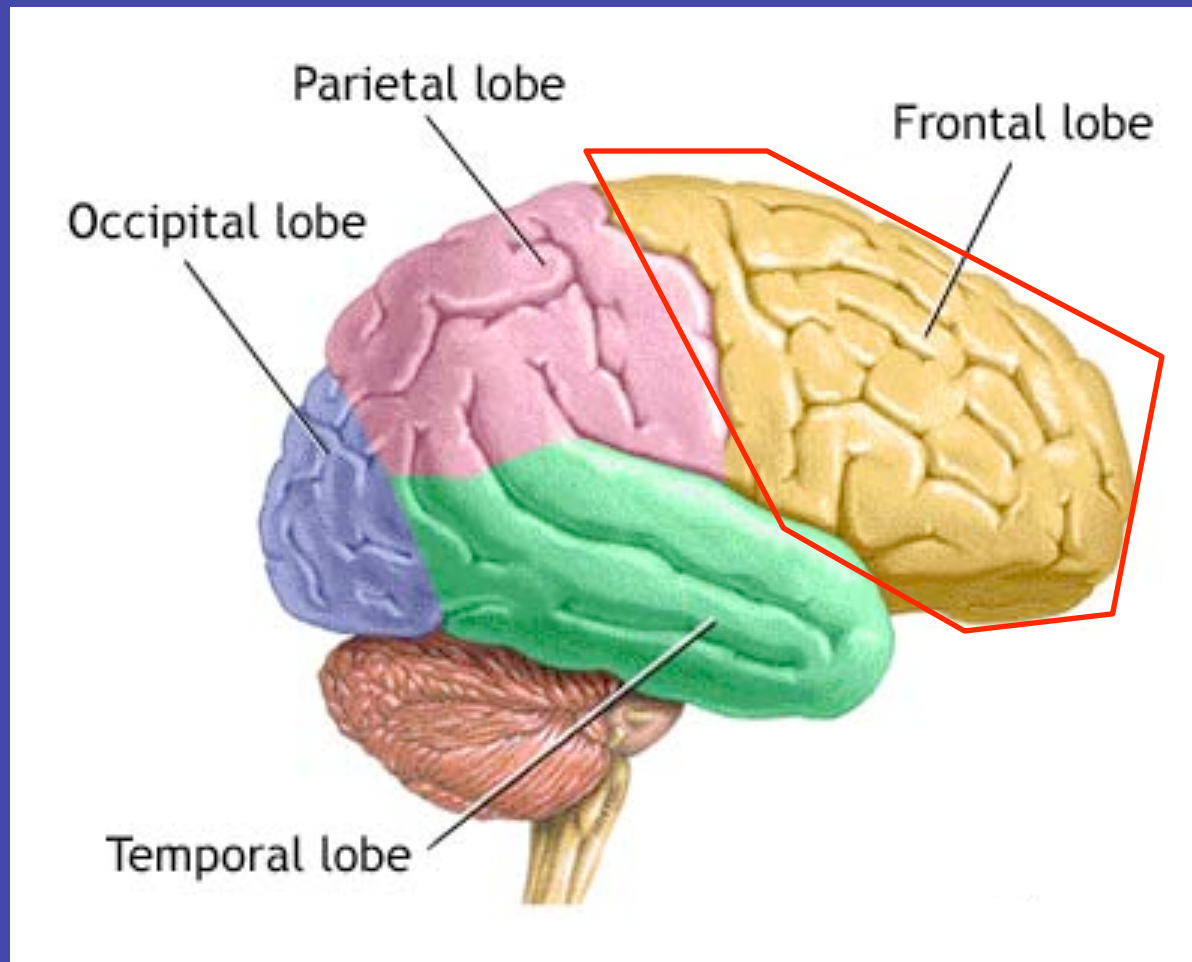


The CEO of the Brain

Executive Thinking Problems

- Difficulty getting started on tasks
- Difficulty finishing projects
- Impulsivity
- Messy
- Losing track of belongings
- Trouble multi-tasking
- Trouble working efficiently
- Procrastination

Attention and EF Are Controlled By the Frontal Lobe



Why are problems with Attention and EF Common in Epilepsy?

- Frontal Lobes are still developing into early adulthood
- Frontal Lobes have a lot of connections with other parts of the brain
- Problems with Attention and EF are also caused by fatigue, medication effects, depression, anxiety

Problems with Attention and EF undermine all other aspects of thinking

Learning and Memory

Types of memory

Procedural: Implicit memory of how to do things

Episodic: Memory for events

Semantic: Memory of general knowledge

Autobiographical: Memory of personal events

Working Memory: Very short-term memory

Learning and Memory

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How A Memory Is Formed

1) Encoding - Creating a new memory

2) Storage - Putting the memory into storage

3) Retrieval - Finding the memory at a later time

Forgetting - Decay of a stored memory over time

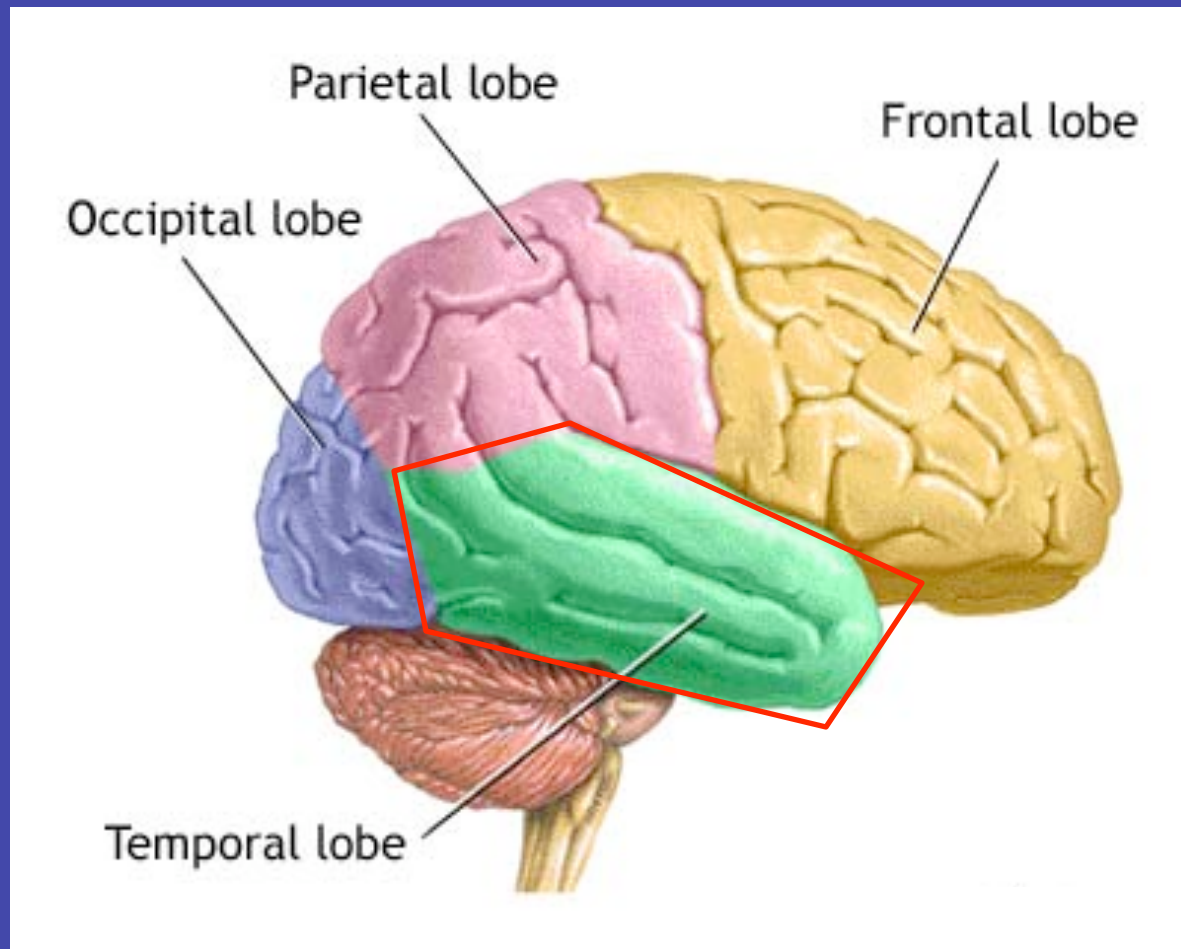
What Influences Encoding?

- Attention and Executive Functions
- Ability to understand the material presented
- The speed at which the information is presented and the amount of information presented
- Fatigue, Depression, Low Motivation

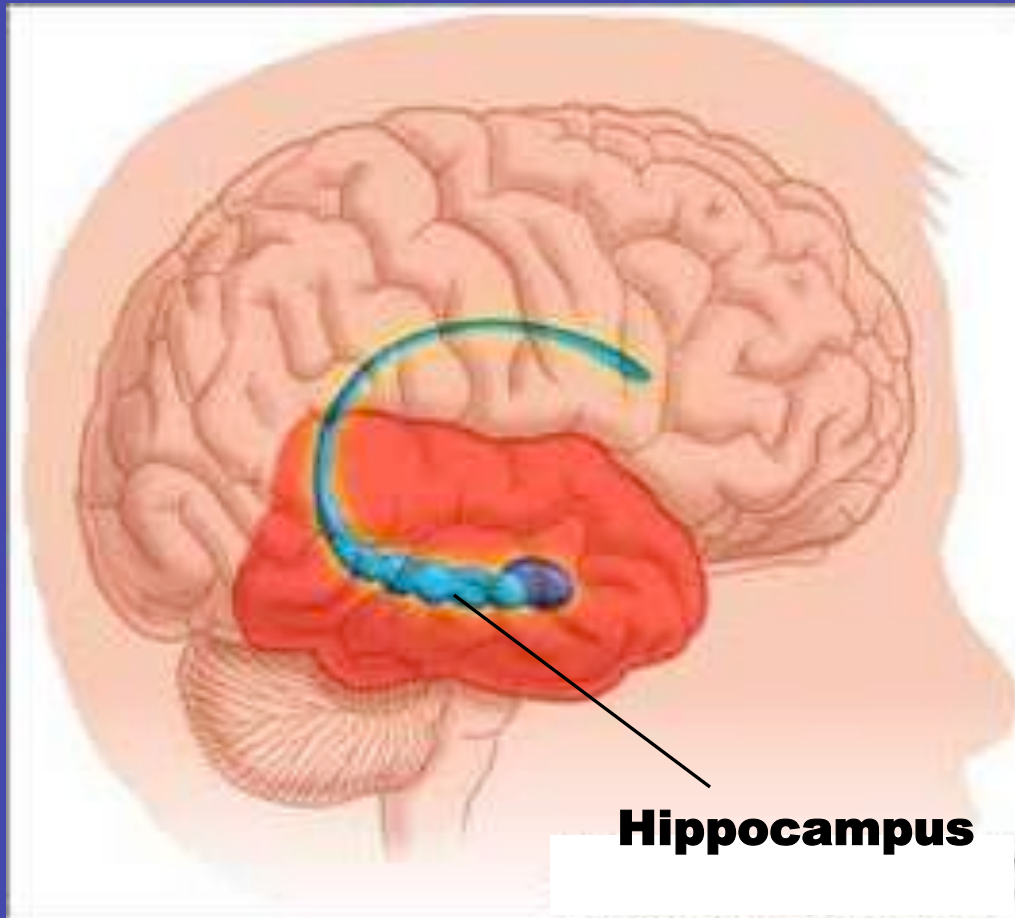
What Influences Storage?

- Sleep
- Seizures
- Hippocampus

Neuroanatomy of Memory



Neuroanatomy of Memory



Material-Specific Memory

LEFT

Hippocampus



Language-based
Memories
(Verbal Memory)

RIGHT

Hippocampus



Picture-based
Memories
(Visual Memory)

What Influences Retrieval?

- Free Recall vs. Recognition
- Attention and Executive Functions
- Context
- Cues

Strategies for Attention and Executive Functions

- Increase structure and follow routines
- Clarify expectations and make sure they are reasonable
- Break big projects down into smaller parts and do a little bit at a time
- Apply organization strategies
- Give yourself extra time to get things done

Strategies for Learning and Memory

- Make it interesting
- Make it contextual: Relate it to something meaningful
- Rehearse, Repeat exposure, Practice
- Use mnemonic cues: rhymes, acronyms
- Visualization
- Pace yourself: Don't try to learn too much at a time
- Be active in your learning; don't assume you'll remember

Memory strategies only work if you use them!!

EF Strategies that Can Help Encoding

- Avoid multi-tasking, Minimize Distractions
- Pace yourself: Don't try to learn too much at once
- Be active in your learning; don't assume you'll remember

EF Strategies that Can Help Retrieval

- Keep a journal or use an electronic organizer
- Keep lists of things to do
- Write down important information in a notebook or use a voice recorder

General Strategies for Optimal Thinking

- Relax; Reduce your stress
- Get a good night's sleep
- Eat nutritiously
- Exercise regularly

The End
Thank You!