Memory 1

Memory Processes: Overview
Brain Structures and Memory

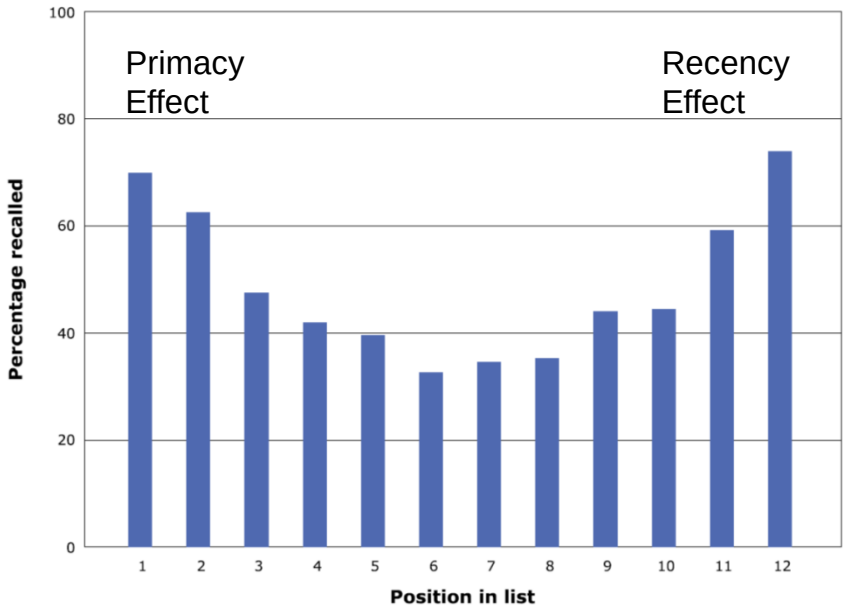
Chapter Test 1

- Results posted on EEE
- Mean raw score was 67.9
  - Mean score after the curve was 78.6
- Make-up exams today and Monday
- Monday morning, I will post feedback including an answer key and question descriptions
- ScanTron forms will be available in your Discussion Sections

Memory Processes and Problems

Processes	Problems
Acquisition	
↓	← Failure to attend (Absent Mindedness)
Storage	
↓	← Transience
Recall	
↓ He said …	← Blocking

Serial Position Task Results



- Looking at serial position effects in free recall, the items reflected in the *primacy* effect are stored primarily in _____ memory, while those reflected in the *recency* effect are stored primarily in _____ memory.

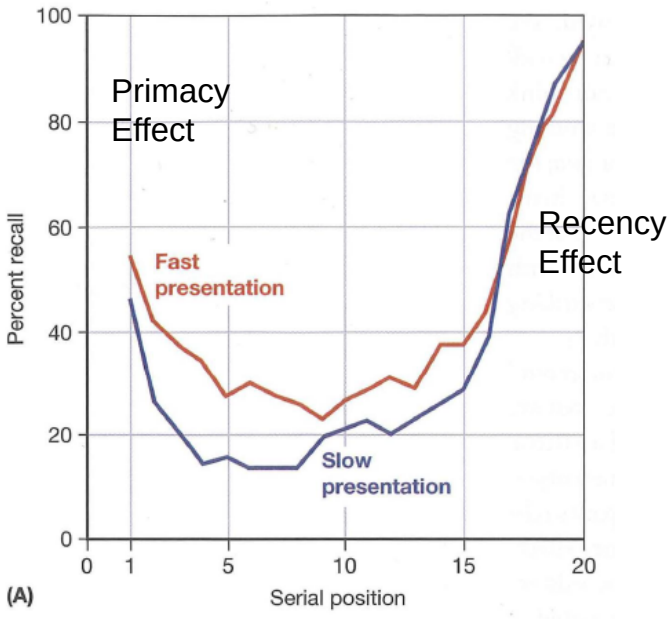
A. working / recognition
B. working / long-term
C. long-term / working
D. long-term / recognition

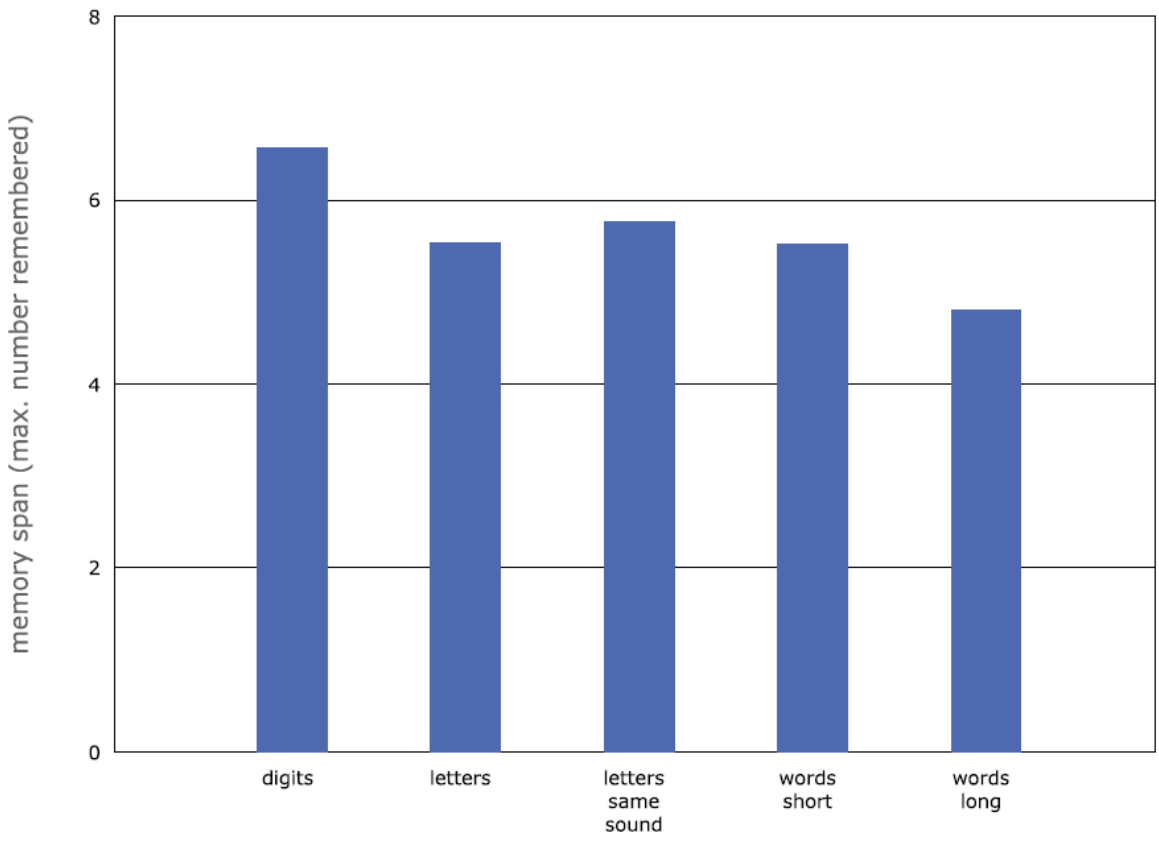
- Increasing the presentation rate (less time per item) should have what effect?

A. Increase the primacy effect
B. Decrease the primacy effect
C. Increase the recency effect
D. Decrease the recency effect
E. Have no effect

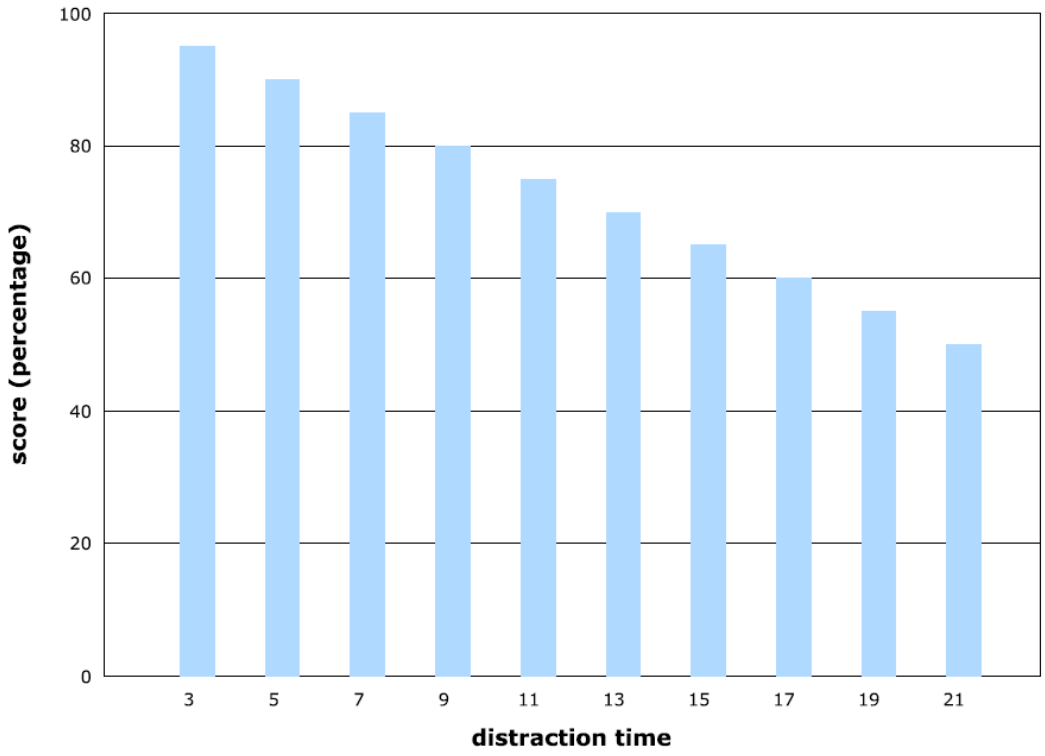
So What's Wrong with this Figure?

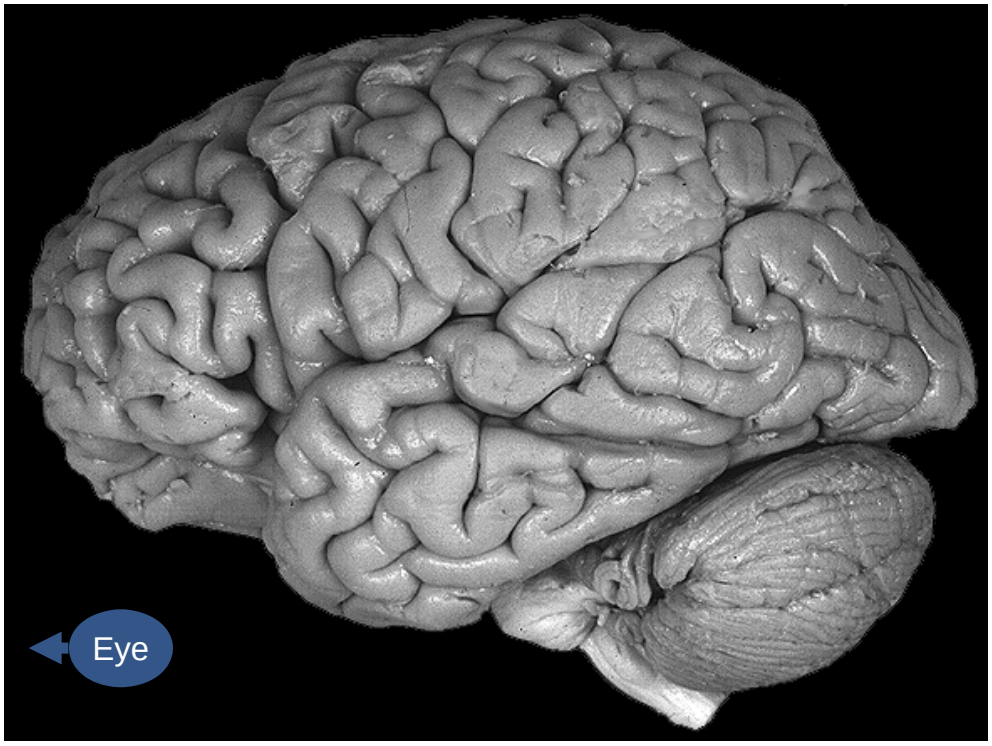
- Figure 8.4a
  Text page 305
- The labels showing presentation speed are reversed!




memory span (max. number remembered)
8
6
4
2
0
digits
letters
letters same sound
words short
words long

Brown – Peterson Task Results





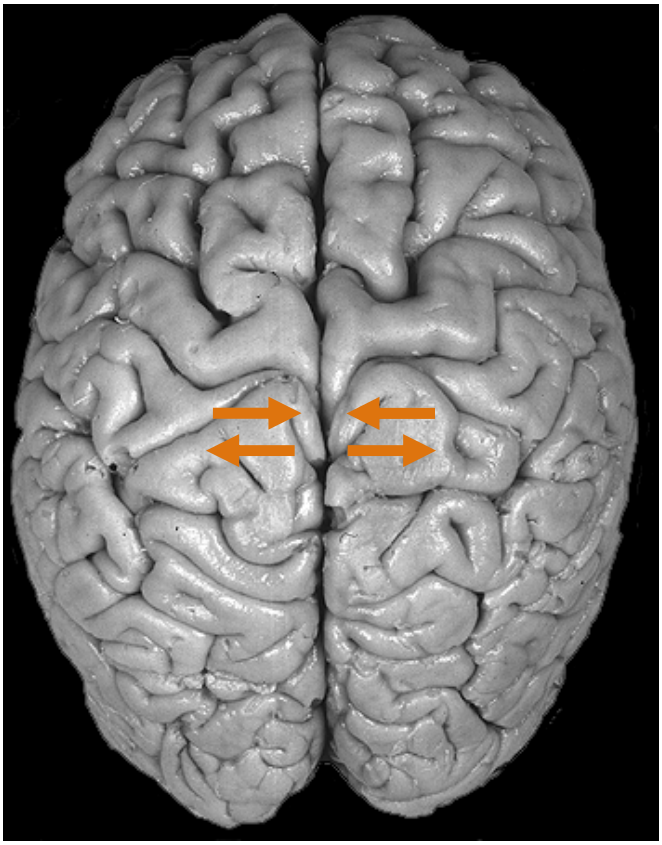
Superior
or
Dorsal

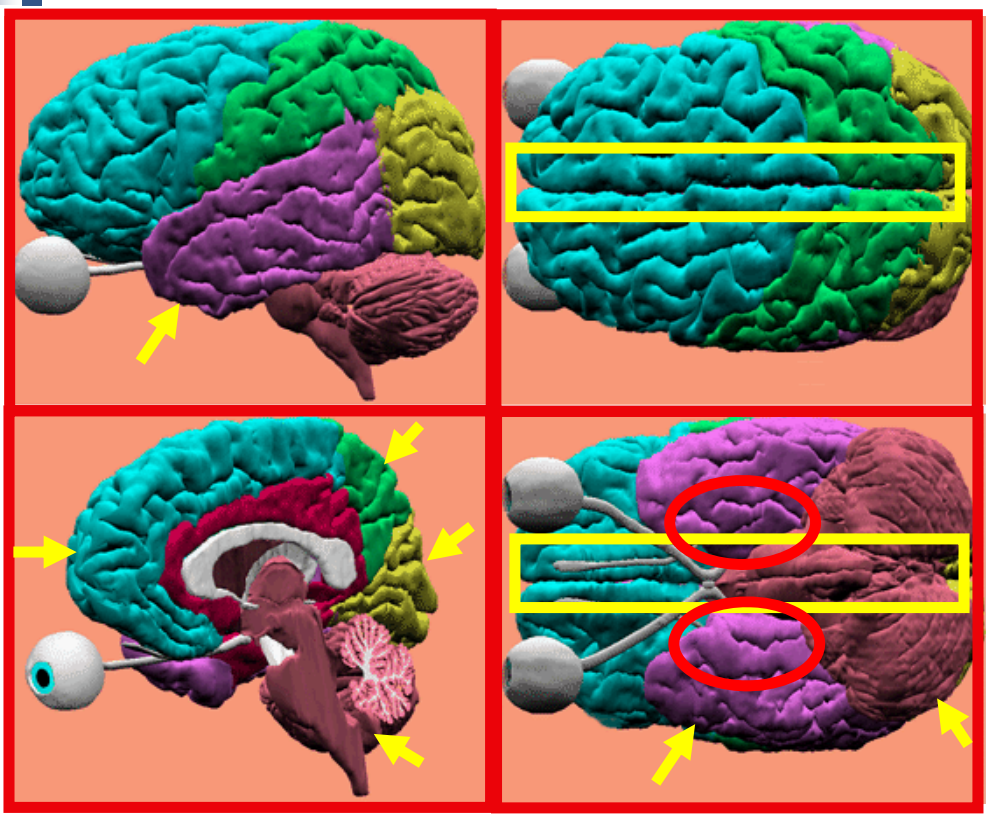
Inferior
or
Ventral

Anterior Posterior

Medial:
Toward the middle

Lateral:
Toward the side





Frontal

Parietal

Occipital

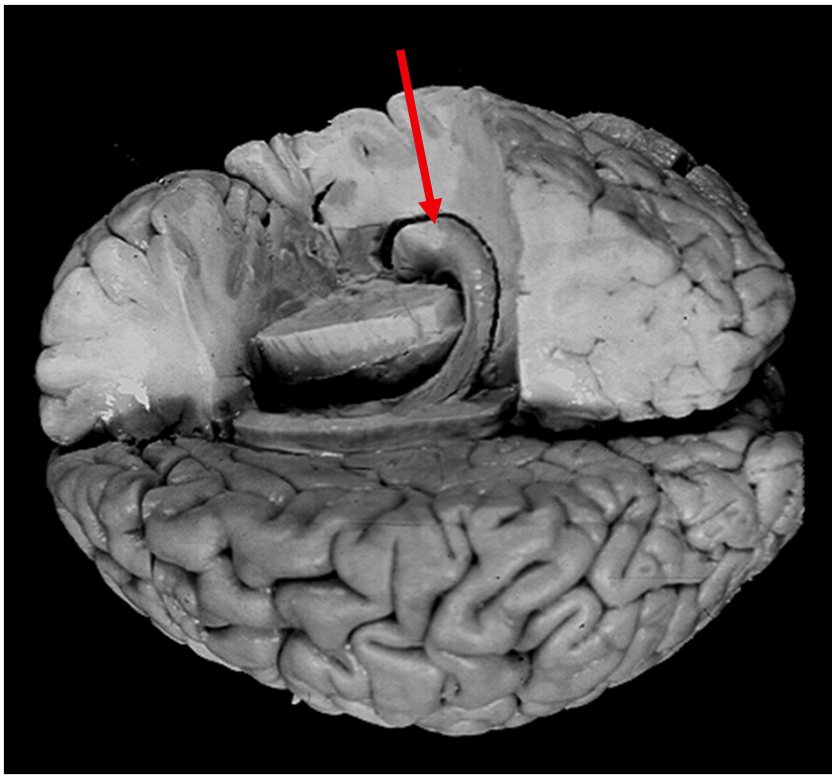
Temporal

Brain Stem
Cerebellum

- A friend has just had a stroke. You observe that, although he can hold a conversation and can recall events you shared in the past, when you leave and return the next day, he does not remember your previous visit. Most likely the damage from the stroke was primarily in which area of the brain?

A. Frontal lobe
B. Parietal lobe
C. Occipital lobe
D. Temporal lobe
E. Brain stem

Uncovering the Role of the Hippocampus: HM



Similar case: Clive Wearing
http://www.youtube.com/watch?v=Vwigmktix2Y

Hypotheses about Memory Based HM (& other similar cases)

- Summary of HM's memory status
  - His long-term memory storage and retrieval were unharmed
  - His working memory was unaffected
  - His deficit involves converting information in working memory into permanent storage
- Inferences about memory systems
  - Short-term memories are biologically different from long-term memories
  - Long-term memories are stored throughout the brain, or at least not in the hippocampus
  - The hippocampus is critical for information to reach long-term storage
  - Once a memory is permanent the hippocampus is no longer required to reinstate it **This turns out to be wrong!**

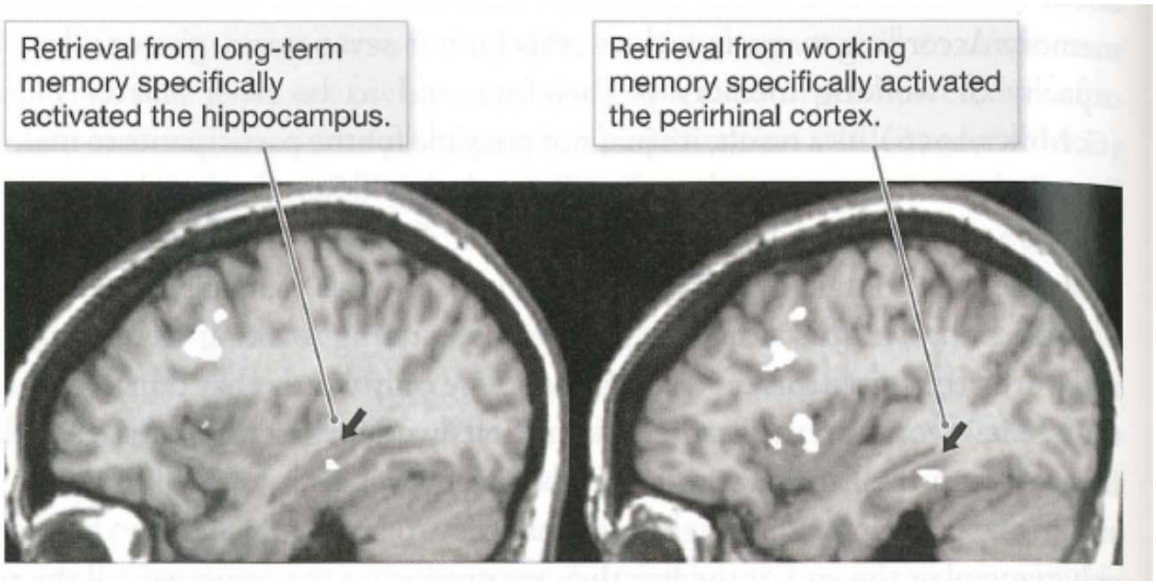
Role of the Hippocampus

- Hippocampus functions to bind and connect representations stored in other cortical locations
- Gary Lynch at UCI
  - http://www.latimes.com/nation/la-na-memoryfirst19aug19-htmlstory.html
  - His lab developed a procedure to visualize LTP - the strengthening of synaptic connections - in hippocampal slices (of rats)
- Results
  - Strengthening is initiated by a specific pattern of neural stimulation
  - Can be disrupted by subsequent stimulation in a 15-20 minute period
  - Once stabilized, increased activity at this site calls back the pattern encoded in other parts of cortex

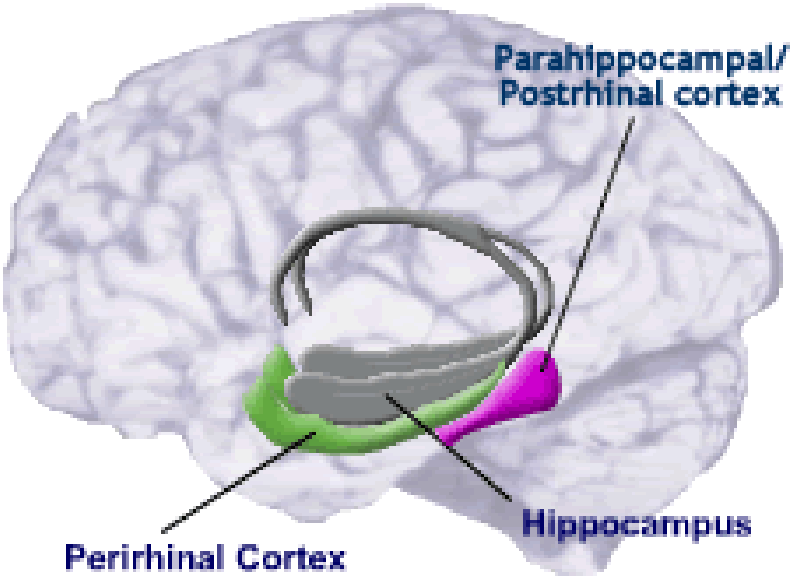
Summary: Hippocampus, LTM and WM

- Long-term and working memory use different brain mechanisms
- The different parts of the hippocampus are important for
  - Long-term memory formation
  - Retrieving long-term memories
- The hippocampus is not
  - The location of the activity that constitutes a long-term memory
  - Involved in working memory (but other nearby areas are)

Looking back at a Confusing Figure in the Text



Locations of the Hippocampus and Perirhinal Cortex



Looking Ahead

- For *next* Monday
  - Gleitman: Ch. 8, pp. 313-317
  - Zap #5: Lexical decision
  - Zap #6: Sentence verification
- Coffee at Phoenix Grill anyone?