



# Memory Changes with Age: What to do about it?

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# Cognitive Aspects of Aging and Memory

- What kinds of memory are affected by normal aging?
- What cognitive strategies can we engage to improve memory?

# What Kinds of Memory Are Affected by Normal Aging?

- Memory for recent events or new information-- *episodic memory*--but not memory for remote events or general knowledge – *semantic memory*
- Memory for *context* or details but not memory for content or *gist*
- *Recall* but not *recognition*
- Memory that depends on executive control-- *working memory*

# What is working memory?

- Working memory is a system where small amounts of information can be temporarily maintained and manipulated
- It's controlled by a central executive that allocates attention among various components and tasks
- Executive control depends on prefrontal cortex, which declines with age

# Purposes of Working Memory

- To integrate information from different modalities and sources
- To think through problems, reflect on the past, and plan for the future
- To construct and implement encoding and retrieval strategies that will enhance episodic memory

# Encoding & Retrieval

- Encoding: How do you get information into the system?
- Retrieval: How do you get information back out?

# Encoding Processes

- Good encoding requires *attention*
- What is attended enters working memory
- In working memory, new information from various sources may be integrated and combined with pre-existing knowledge

# Retrieval Processes

- Memories are most likely to be retrieved if encoding and retrieval processes overlap
- Re-create as closely as possible the original learning situation
- Everyday example



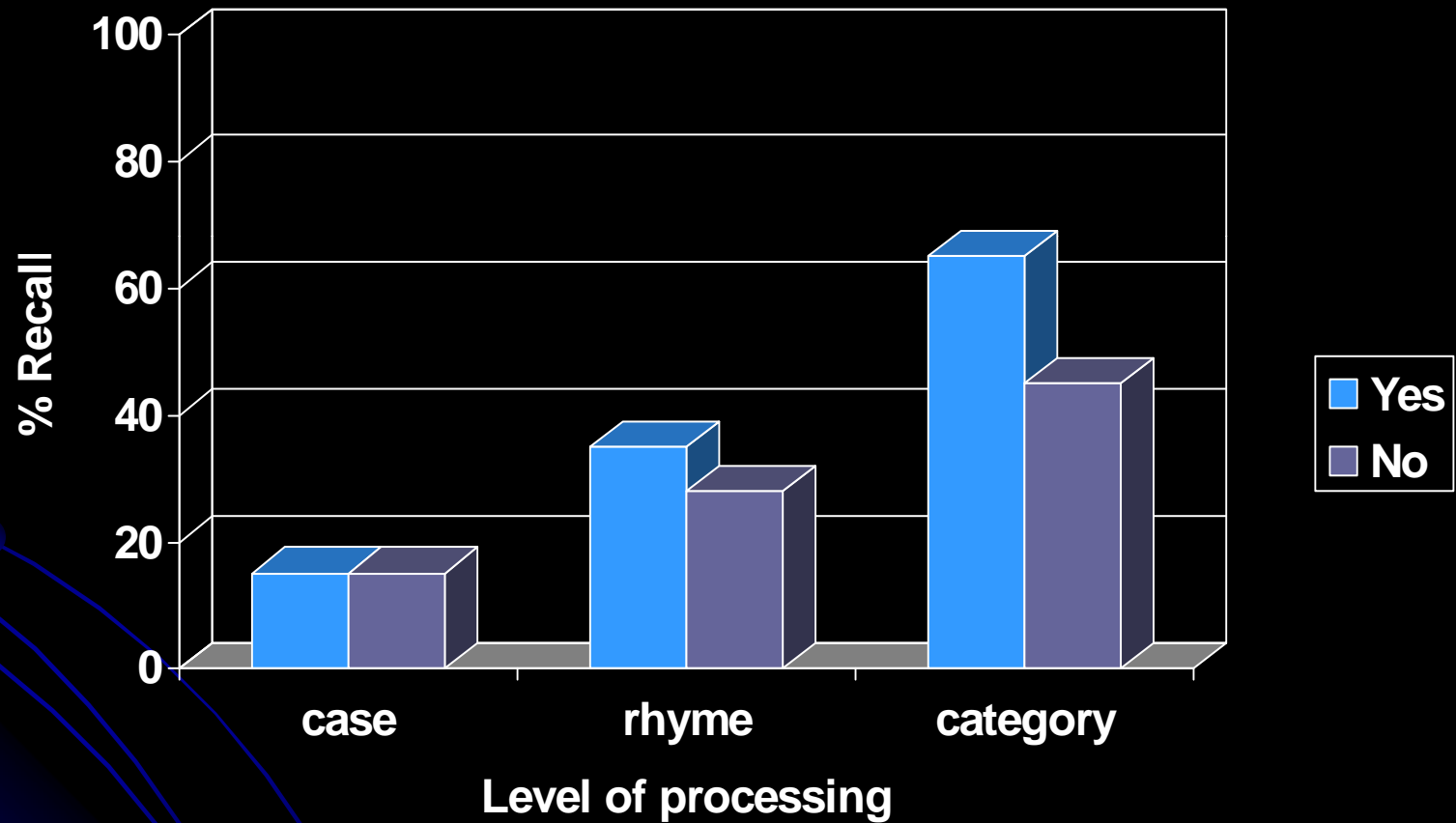
# Encoding Strategies

Think about things meaningfully

- *Levels of Processing*

- Information that is processed deeply or meaningfully will be well-remembered
- Integrating new information with prior knowledge creates a rich encoding that provides many potential routes for retrieval

# Levels of Processing



Based on Craik & Tulving, 1975

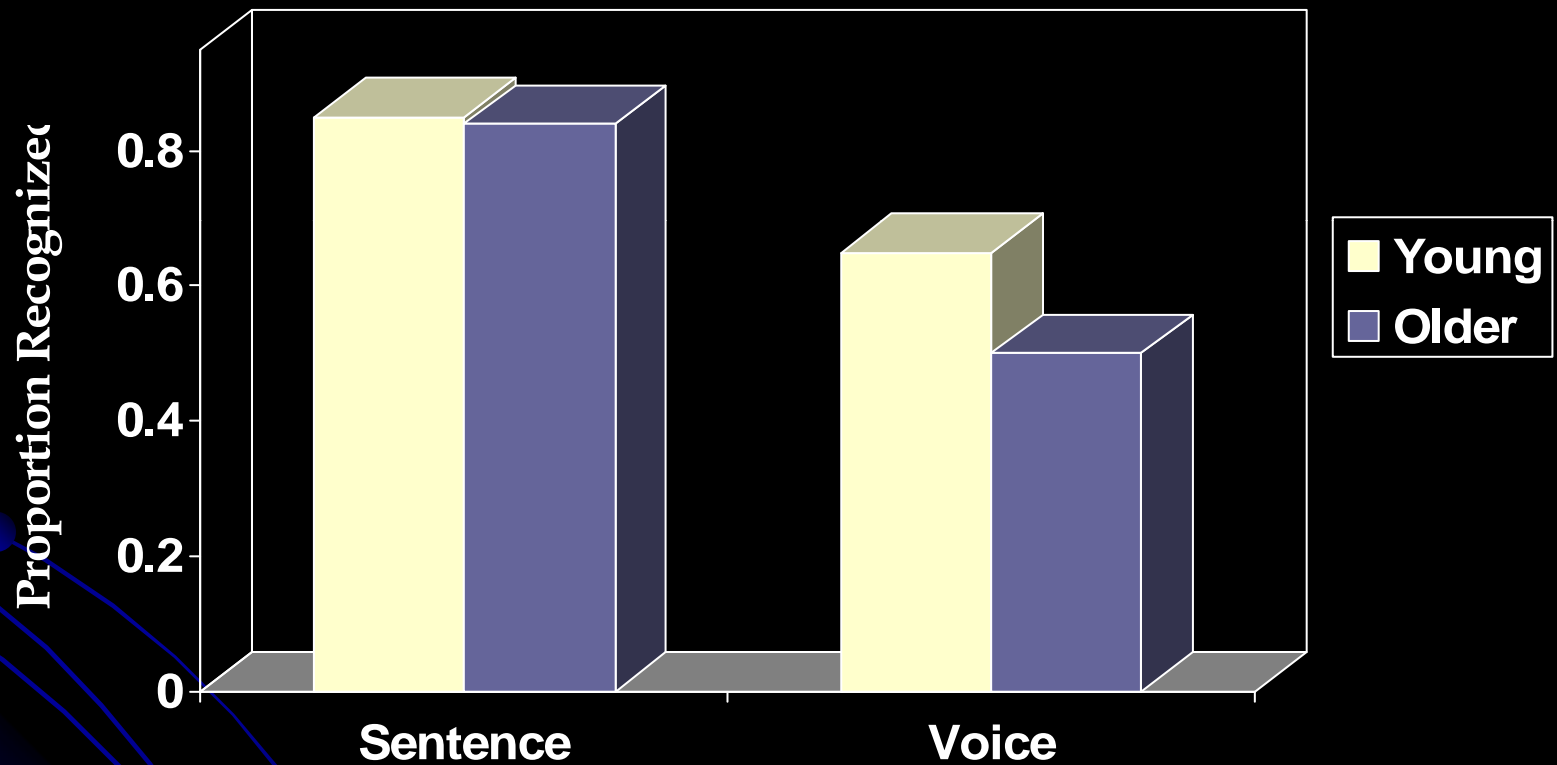
# Encoding Strategies

1. Pay attention
2. Think about things meaningfully
3. Integrate an item with its context

# Two Aspects of Episodic Memory

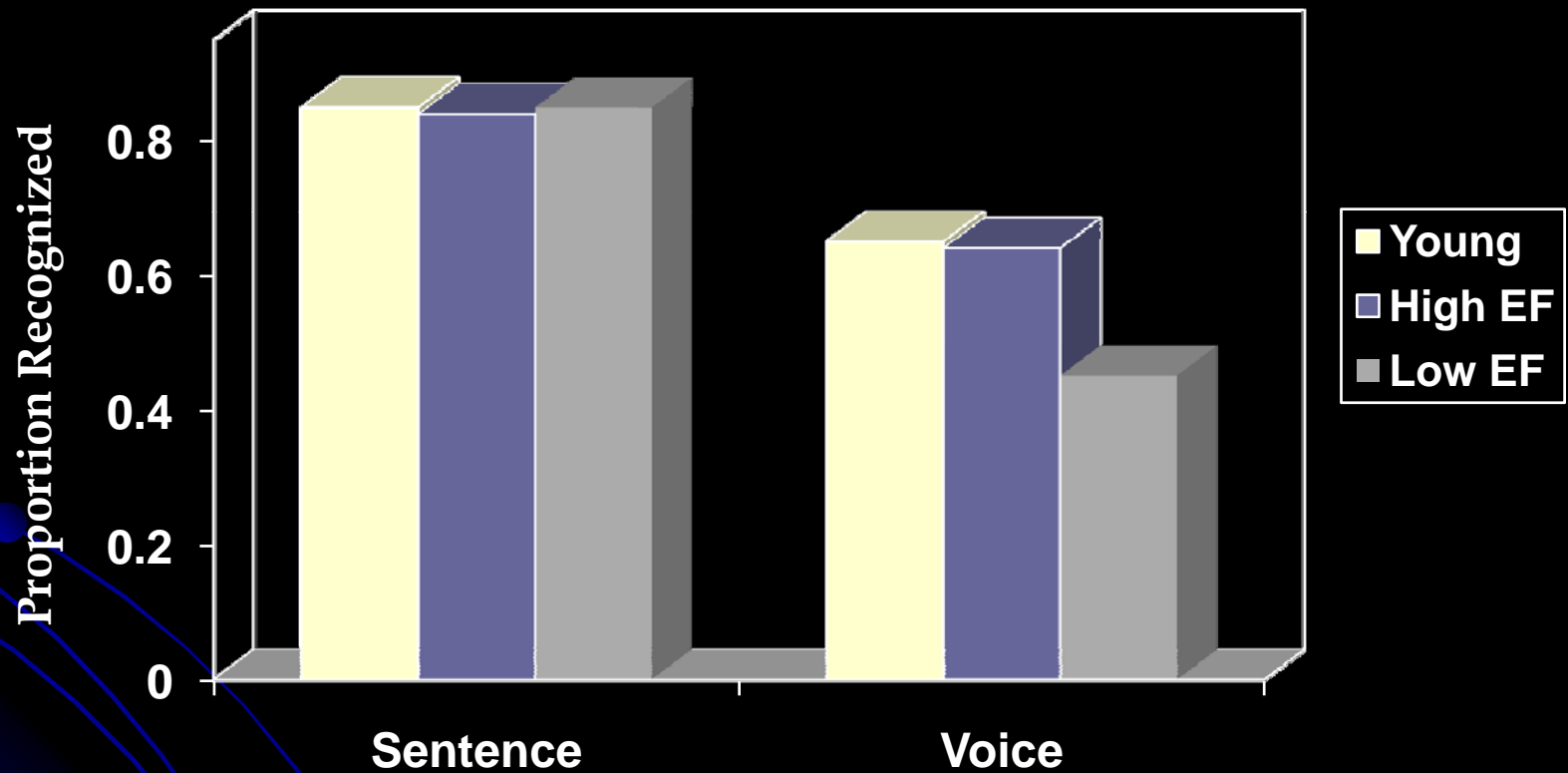
- Item Memory: Memory for the content of an event; what happened
- Source or Context Memory: Memory for the origin of information; “who” told you, “where” and “when you learned something”
  - Older people tend to have more problems with source or context memory than item memory

# Memory for Item and Source



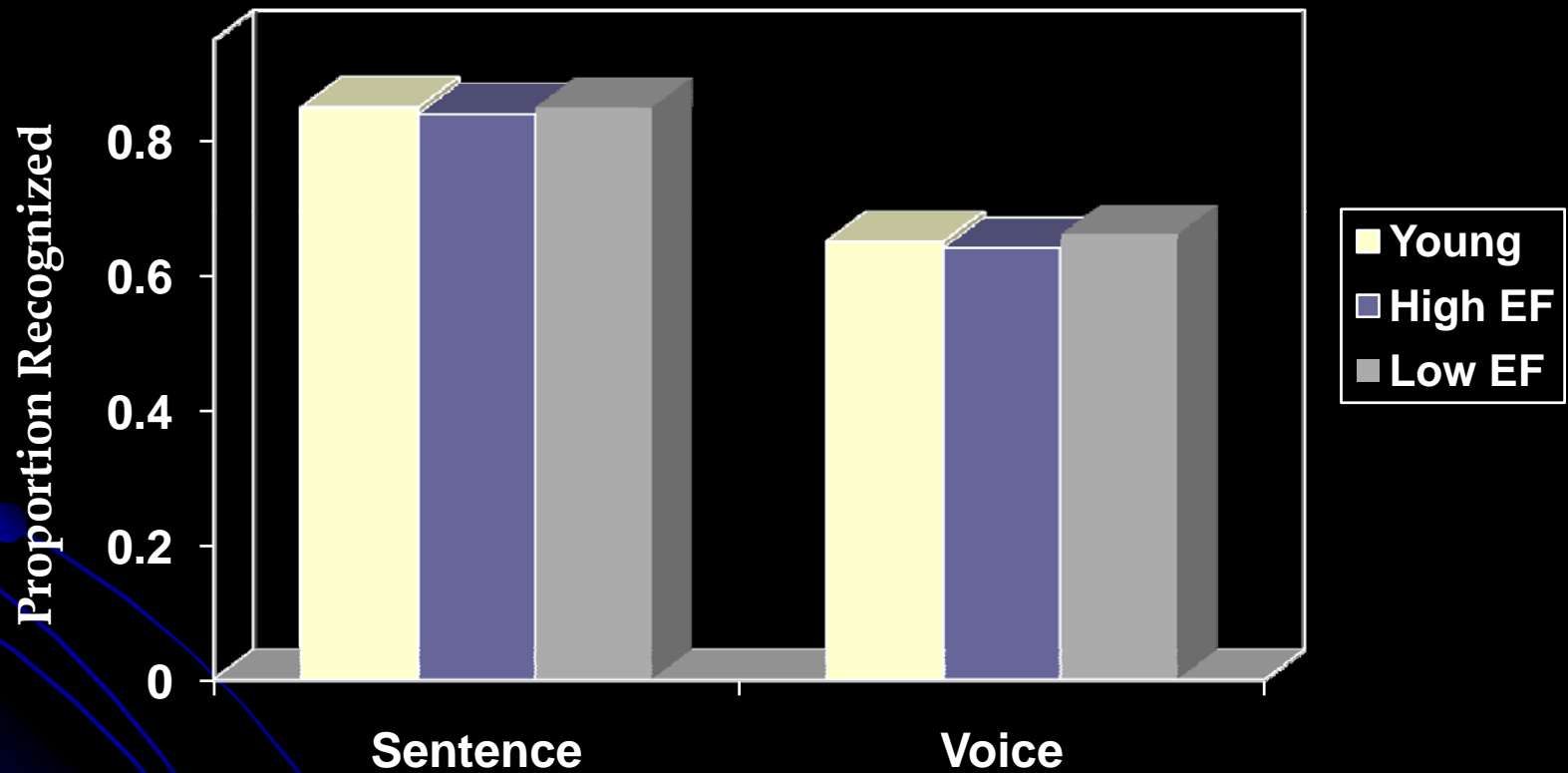
Glisky, Polster & Routhieaux, 1995

# Memory for Item and Source



Glisky, Rubin, & Davidson, 2001

# Memory for Item and Source



Glisky, Rubin, & Davidson, 2001

# Everyday Example

- Where did I park my car?

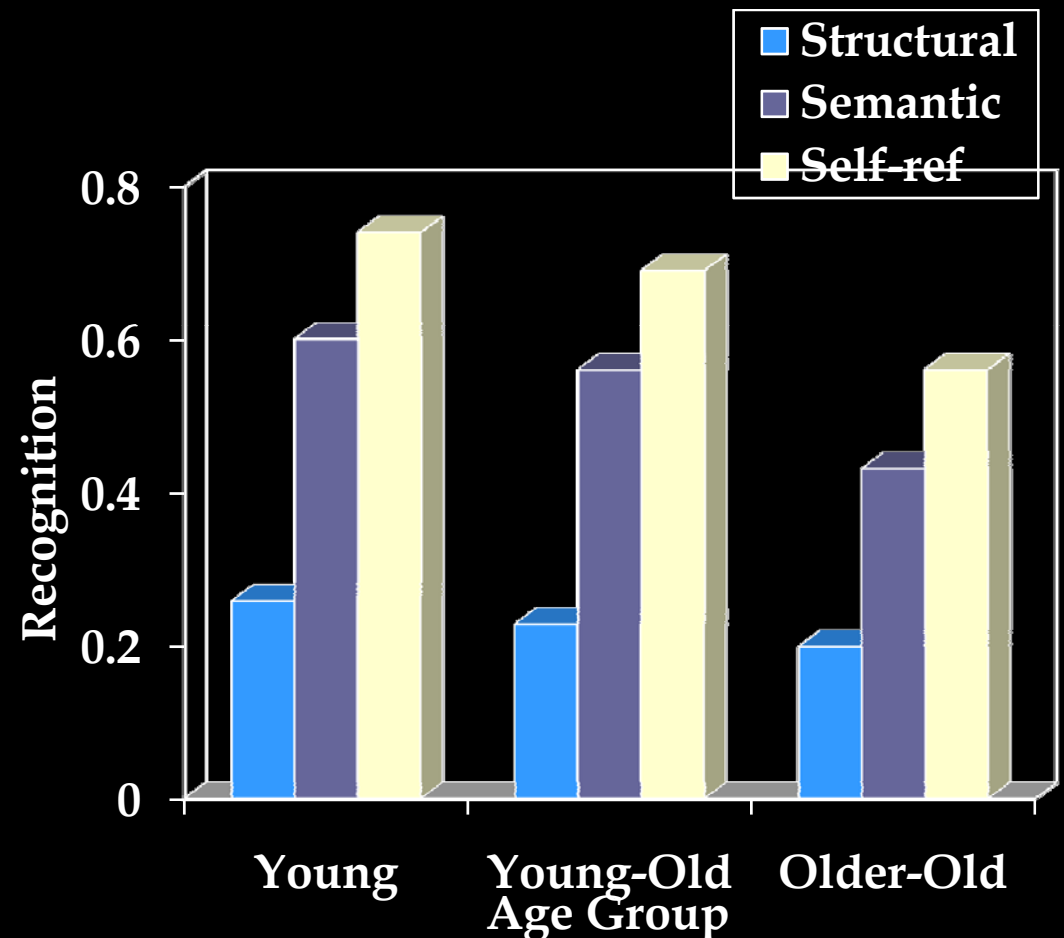


# Encoding Strategies

1. Pay attention
2. Think about things meaningfully
3. Integrate an item with its context
4. Think about information in relation to your self

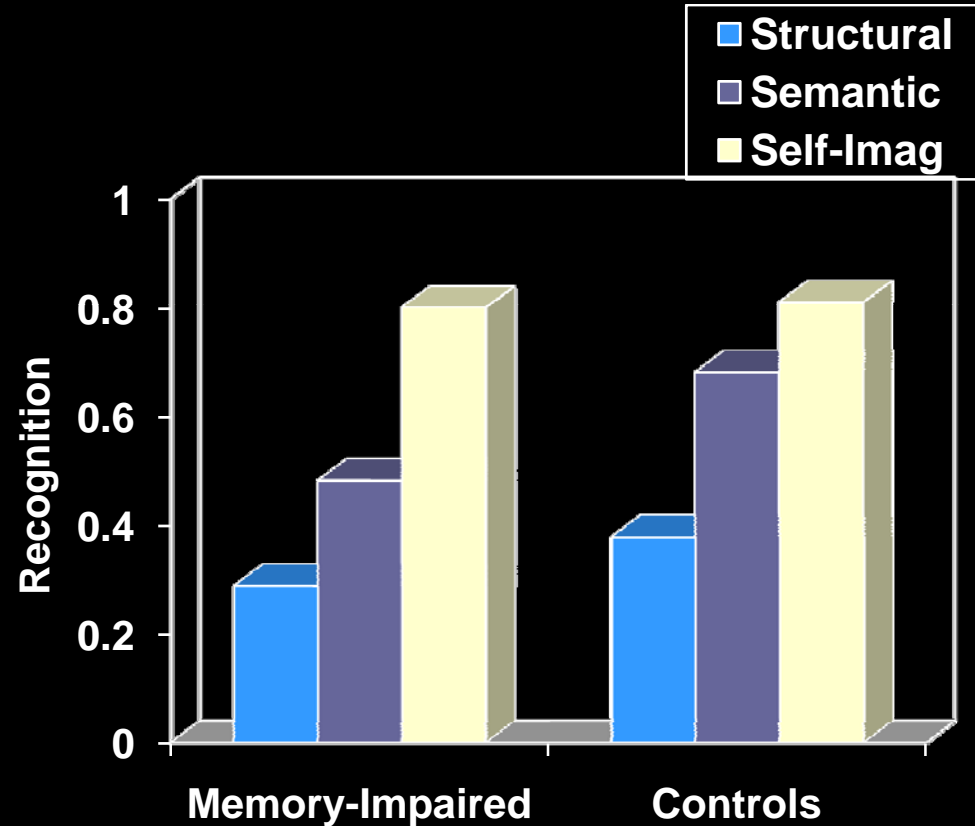
# *Self-Reference Effect*

- Think about how something is relevant to you personally
- For example, does the word “honest” describe you?



# *Self-Imagination Effect*

- Use visual imagery together with self-reference, what we call self-imagination
- Imagine things that you want to remember from a personal perspective

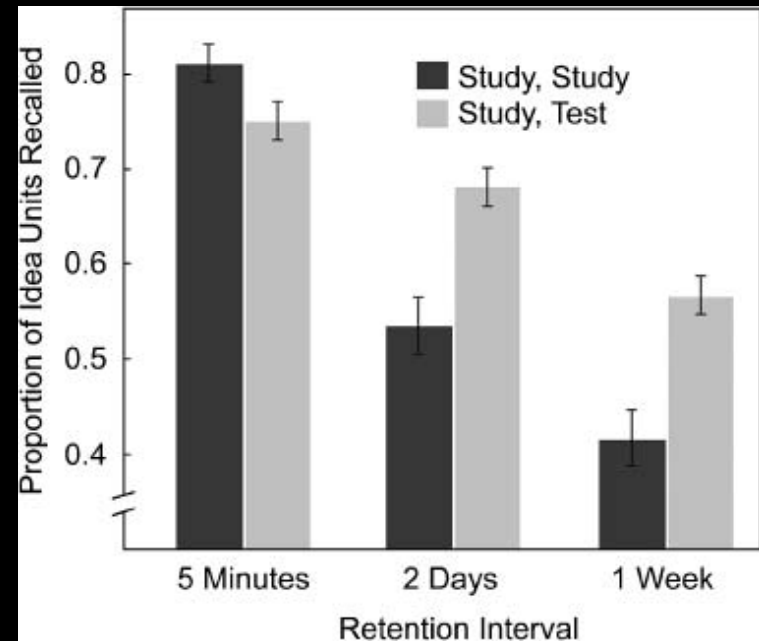


Grilli & Glisky, 2010

# The Testing Effect (Roediger & Karpicke, 2006)

An example of Retrieval Practice

- Study Prose Passages
- Following by further study or by testing without feedback
- Test at 5 mins, 2 days, or 1 week



# *How to Improve Memory*

- Pay careful attention to all aspects of an event or situation when it occurs
- Think about information in a meaningful way and relate it to other things you know or things of personal relevance; try self-imagination
- Integrate an event with its context
- Re-create the context at time of retrieval
- Use retrieval practice

**Stay Active!**  
**Mentally and Physically!**

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