

## More memory systems

- Amnesia: Memory and the brain
- Amnesia and episodic memory
- Procedural vs. declarative memory
- Implicit vs. Explicit memory

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## What is amnesia?

- TV movie of the week amnesia
  - A person suffers a head injury
  - They cannot remember who they are.
- This is called retrograde amnesia
  - Loss of information from before trauma
  - Very rare

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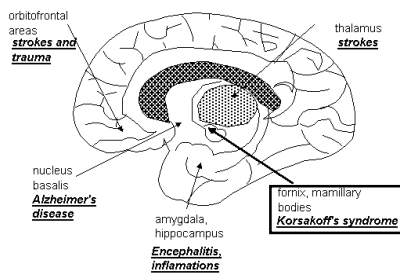
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## Where is retrograde amnesia?

- Korsakoff's syndrome
  - Severe retrograde amnesia



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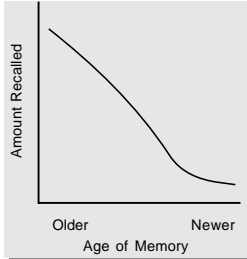
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## Characteristics

- Retrograde amnesia is graded
  - Most loss for newest items
  - Older memories are better preserved.



- Tests
  - Famous faces
  - Famous 1 season TV shows
  - Words as a function of age first learned.
    - Last in-First out

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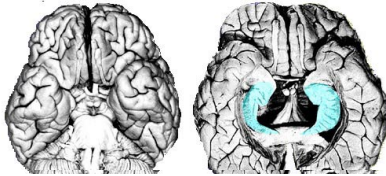
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## Anterograde amnesia

- The most common kind of amnesia
- Loss of ability to acquire new information.
- The famous HM
  - Bilateral lesions of the hippocampus
  - Inability to learn new information.



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## What is lost?

- Not all memory abilities are lost equally.
- Retrograde amnesia
  - Profound episodic memory deficits
  - Some semantic memory deficits
- Anterograde amnesia
  - Patients have difficulty acquiring both new episodic and semantic information

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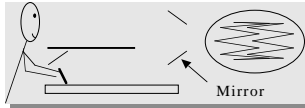
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## Is all learning lost?

- HM does show some kinds of learning
  - Mirror tracing
  - Would insist he had never done the task before.



How do these two kinds of knowledge differ?

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## Procedural vs Declarative memory

- Most of what we have described so far is declarative memory
  - Memory for information
- Much of what we think of as knowledge
- Can learn things in only a few trials
  - Events are experienced only once
- Both semantic and episodic memory are declarative.

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## Procedural memory

- Memory for skills
- Effortful to learn
  - Playing an instrument
  - Filling out a stack of forms
- Skills are carried out without awareness
  - If you are skilled at playing an instrument, are you aware of telling your hands what to do?
  - Article in the *New Yorker* on “choking” in sports
    - Starting to use declarative memory in skill performance
- Memories are long lasting

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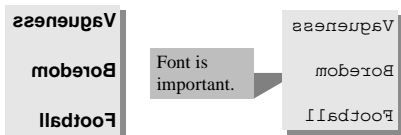
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## More examples

- Mirror recognition
  - Performance improves with practice.
  - Improvement is specific to the words studied.



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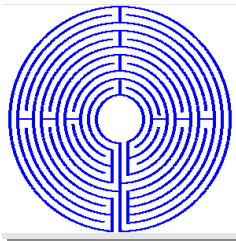
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## Motor actions

- Not every motor action involves procedural memory.
  - HM could not learn to solve particular mazes.



- Presumably, he would have to remember the specific maze
  - Would then link actions to the episodic memory.

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## Implicit and Explicit Memory

- Procedural and declarative memories differ in the level of conscious awareness
  - Procedural: Largely unconscious
  - Declarative: Largely conscious
- Memory with conscious awareness
  - *Explicit memory*
- Memory without conscious awareness
  - *Implicit memory*

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## Declarative and implicit?

- Can there be a declarative memory that is implicit?
- Study a list of words.

Victory  
Gracious  
Assassin  
Permission  
Weather  
Calamity

Normally, we would expect a recall task.

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## Stem completion

- Could instead be given a different test
- Fill in the stem with the first word that comes to mind:

GRA \_\_\_\_\_

CAL \_\_\_\_\_

- Words tend to be from the previous list  
Amnesics show the same effect.

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## Becoming famous

- Jacoby et al.
- People read list of nonfamous names
- The next day, they saw a list of names
  - Had to mark them as famous
  - Were told names from list were nonfamous
- If a name was explicitly remembered, it would be marked as nonfamous
- Many names from list were marked famous
  - Suggests an influence of implicit memory

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## Summary

- Retrograde amnesia
- Anterograde amnesia
- Procedural vs. Declarative memory
- Implicit vs. Explicit memory
  - More to come on this distinction.

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