

Amnesia

PSY 200
Greg Francis
Lecture 20

What is wrong with my wife?

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Fundamental fact

- There is no method other than object physical evidence to verify the accuracy of a memory
- Memory is a cognitive *experience*
 - ♦ Confidence in the memory is another cognitive *experience*
 - ♦ You can be very confident and still be wrong
- Of course, we must be correct fairly often, or our lives would be a total mess!

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Amnesia

- Loss of memory or memory abilities
 - ♦ retrograde: forgetting events prior to the injury
 - ♦ anterograde: forgetting events after the injury
- In most cases amnesia is limited in scope and duration
 - ♦ like when my brother Joe slipped while playing frisbee

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Amnesia

- Scope and duration
- Retrograde amnesia for one patient

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What's wrong with my wife?

- Nothing!

- But she cannot remember anything before her senior year in high school
 - ♦ motor cycle accident
 - ♦ complete *retrograde* amnesia

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An unusual case

- Side issues
 - ♦ Sense of smell
 - ♦ Mild anomia
 - ♦ Odd aphasia (language deficit)
- She *is* able to learn and remember new information
- Remarkably unaffected by the loss of memories
 - ♦ Personality
 - ♦ Parents
 - ♦ college
 - ♦ makes study of retrograde amnesia difficult

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What is lost?

- How can someone who loses their childhood memories go to college the next year?
 - ♦ memories cannot be “wiped clean”
 - ♦ perhaps they are just not directly accessible
 - ♦ forgetting = recall problem?

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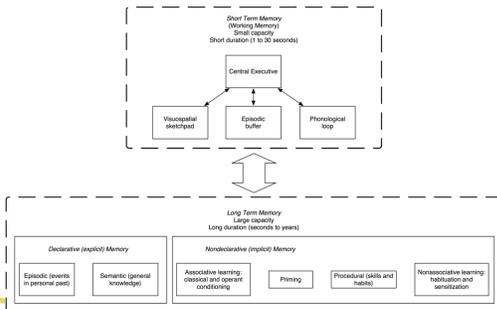
What is lost?

- More generally,
 - ♦ while patients with retrograde amnesia forget their names, parents, addresses,...
 - ♦ they do **not** generally forget how to walk, talk, solve problems
 - » Although they may have problems...
 - ♦ Different types of memory systems
 - » controversial!

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Memory systems

- There are many different types of memory
- Amnesia seems to affect declarative more than nondeclarative memory



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Anterograde amnesia

- Some patients have amnesia that preserves past memories but prevents formation of *new* memories
 - ♦ many are long-time alcoholics who did not eat properly
 - » which leads to a thiamine deficiency
 - » which leads to Korsakoff’s syndrome
- Leonard in *Memento*



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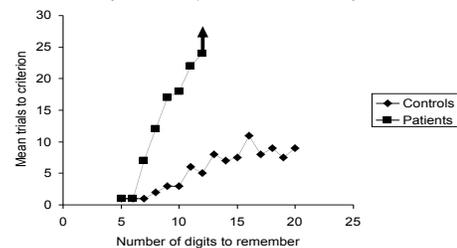
Patient HM

- Surgery on hippocampus (to control epilepsy)
- anterograde amnesia
 - ♦ unable to learn anything new
- Thought it was 1953
 - ♦ shocked by age of face in his mirror
 - ♦ Could not stand to read newspapers
 - ♦ reintroduced himself to doctors, nurses,...
- *Could* carry on a conversation!

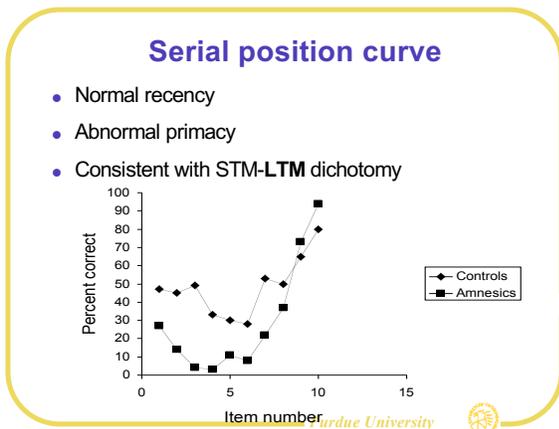
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Anterograde amnesics

- Fairly normal STM digit span (~7 items)
- But very difficult to extend digit span
 - ♦ how many trials to repeat back list correctly?



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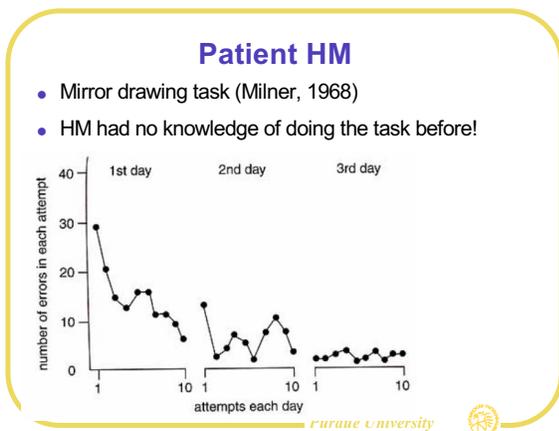


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Patient HM

- Could learn some things!
 - E.g., location of hospital cafeteria
 - E.g. mirror drawing task

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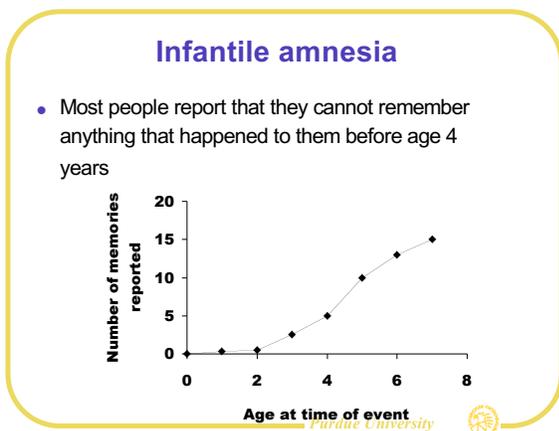


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Amnesia-like memory

- Some aspects of memory seem very much like amnesia
 - infantile “amnesia”
 - repressed memories
- Careful studies are difficult to come by because the memories (and absence thereof) must be verified
 - remember the “fundamental fact” at the start of today’s lecture

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Infantile amnesia

- Reason is unknown, but the best theory goes like this...
 - children younger than 4-years-old view the world differently from adults
 - by encoding specificity, one needs to be in a similar state as study to best recall something
 - adults are very different from children, and this prevents recall of early memories

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Repression

- Psychotherapists (e.g. Freud) suggested that infantile amnesia occurred because much of childhood is filled with painful events and memory of the pain is prevented by psychological defense mechanisms (repression)
- This is very unlikely
 - ♦ people do remember painful events well
 - ♦ laboratory studies find no evidence of repressed memories

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Repression

- In a laboratory, showing evidence of repression requires
 - ♦ being unable to remember something
 - ♦ being able to recover the memory through therapy
 - ♦ proving that the recovered memory is accurate

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Repression

- In therapy, clinicians often claim evidence of repression with
 - ♦ dream interpretation
 - ♦ patterns in symptoms
 - ♦ recovering a memory through hypnosis
- None of these techniques demonstrate a verified memory
- Among carefully controlled memory research, there is no evidence of repression!

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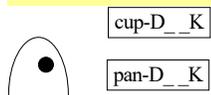
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Discovered memories

- However, it is possible for information that was once known to be forgotten and then (re)discovered
- CogLab's Forgot it all along experiment demonstrates this property
- Phases I and II are like an encoding specificity experiment

Study with cue

Test with same or different cue

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Discovered memories

- Phase III: judge your memory for an item in phase II
- We only care about the items that you correctly recalled in Phase II

Did you recall the upper case word?
(same or different cue)



cup-DESK

pan-DESK

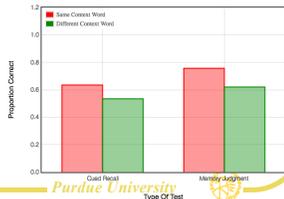
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Discovered memories

- Results:
- Phase II (cued recall): encoding specificity effect
- Phase III (memory judgment): remembering recall is also affected by cue type
- Thus, it is possible to forget that you remembered, and a change of cue would allow you to "recover" a forgotten memory

Class data
172 participants



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Conclusions

- Retrograde amnesia
- Anterograde amnesia
- Learning in anterograde amnesics
- Infantile amnesia
- Repression

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Next time

- Encoding specificity
- Levels of processing (CogLab due!)
- Judgments of learning
- Practice testing
- Learning styles
- *How to improve your memory without spending \$20.*

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