


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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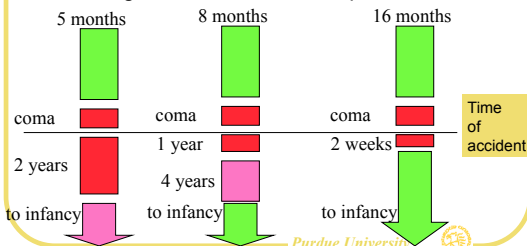
Amnesia


- 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?

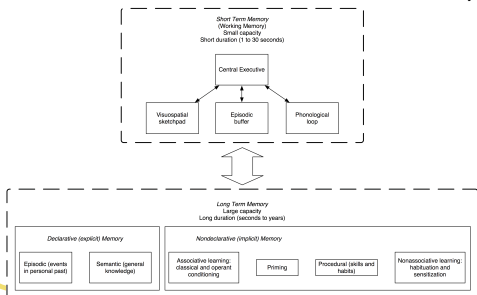
- How can someone who loses their childhood memories go to college the next year?
 - ♦ memories cannot be “wiped clean”
 - ♦ perhaps they are just not directly accessible
 - ♦ forgetting = recall problem?

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!

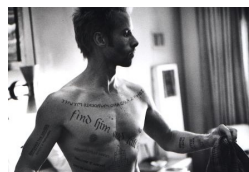
Memory systems

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



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*

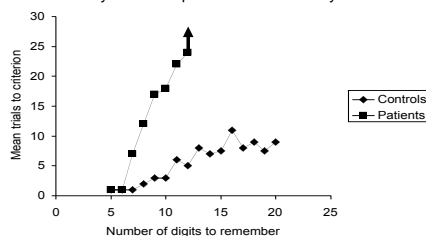


Patient HM

- 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!

Anterograde amnesics

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



Serial position curve

- Normal recency
- Abnormal primacy
- Consistent with STM-LTM dichotomy

Item number	Controls (%)	Amnesics (%)
1	45	25
2	50	15
3	45	10
4	35	10
5	30	10
6	35	15
7	55	25
8	50	35
9	65	55
10	85	75
11	95	90

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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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Patient HM

- Mirror drawing task (Milner, 1968)
- HM had no knowledge of doing the task before!

Day	Attempt	Number of errors
1st	1	30
1st	2	20
1st	3	15
1st	4	12
1st	5	16
1st	6	15
1st	7	12
1st	8	10
1st	9	8
1st	10	6
2nd	1	14
2nd	2	5
2nd	3	10
2nd	4	12
2nd	5	3
2nd	6	10
2nd	7	5
2nd	8	4
2nd	9	3
2nd	10	3
3rd	1	3
3rd	2	3
3rd	3	3
3rd	4	3
3rd	5	3
3rd	6	3
3rd	7	3
3rd	8	3
3rd	9	3
3rd	10	3

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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

- Most people report that they cannot remember anything that happened to them before age 4 years

Age at time of event	Number of memories reported
0	0
1	0
2	0
3	2
4	5
5	10
6	13
7	15

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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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Conclusions

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

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Next time

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

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