Amnesia

PSY 200
Greg Francis
Lecture 20

What is wrong with my wife?

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!

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

Amnesia

- Scope and duration
  - Retrograde amnesia for one patient

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

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
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?

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?
  
  ![Graph showing trials to criterion for anterograde amnesics]
Serial position curve

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

Patient HM

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

Infantile amnesia

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

Patient HM

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

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

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
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

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

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!

Discovered memories

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

Study with cue
- cup-DESK

Test with same or different cue
- cup-D_ _K
- pan-D_ _K

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

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

Global data
~13,800 participants
Conclusions

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

Next time

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