

# Memory Errors

8

---

---

---

---

---

---

## Do you ever question your memory?

- When people recall an event, it is usually treated as accurate.
- When do you ever question your memories? When there is a conflict?
- How do you resolve who's right and who's wrong?
- By confidence? By how much detail you can recall?
- Can memory errors happen for very important events?

9

---

---

---

---

---

---

## Repressed/Recovered Memories

- What are repressed and recovered memories?
- Are they reliable?
- The power of repeated suggestions.
- The George Franklin case



George Franklin



Eileen Franklin-Lipsker

12

---

---

---

---

---

---

Impossible to tell on a case-by-case basis...  
unless the perpetrator confesses?

14

---

---

---

---

---

---

## The Paul Ingram Case

Ingram's daughter accused Ingram of sexual abuse and involvement in satanic cult activities -- including the sacrifice of babies.

Ingram first denied all charges but later confessed to all accusations.

Ingram was sentenced to 20 years in prison -- he was eventually released in 2003. He spent 15 years in prison.



16

---

---

---

---

---

---

---

## Memory is Reconstructive

Critical of Ebbinghaus' use of nonsense syllables. Instead used real world materials (passages like "War of the Ghosts").

Interested in errors that people made

Reconstructive nature of memory

The "The War of the Ghost" Experiment



Sir Frederic Bartlett

22

---

---

---

---

---

---

---

One night two young men from Egulac went down to the river to hunt seals and while they were there it became foggy and calm. Then they heard war-cries, and they thought: "Maybe this is a war-party." They escaped to the shore, and hid behind a log. Now canoes came up, and they heard the noise of paddles, and saw one canoe coming up to them...

23

---

---

---

---

---

---

---

One of the young men said, "I have no arrows."

"Arrows are in the canoe," they said.

"I will not go along. I might be killed. My relatives do not know where I have gone. But you," he said, turning to the other, "may go with them."

24

---

---

---

---

---

---

---

So the canoes went back to Egulac and the young man went ashore to his house and made a fire. And he told everybody and said: "Behold I accompanied the ghosts, and we went to fight. Many of our fellows were killed, and many of those who attacked us were killed. They said I was hit, and I did not feel sick."

25

---

---

---

---

---

---

---

He told it all, and then he became quiet. When the sun rose he fell down. Something black came out of his mouth. His face became contorted. The people jumped up and cried.

He was dead.

26

---

---

---

---

---

---

---

- Personal interests and experiences play a part in retelling stories from memory
- Bartlett's readers made the story more orderly and coherent within their own cultural framework
- "Something black came from his mouth" became "he frothed at the mouth" or "he vomited."
- "Hunting seals" became "fishing."
- "Canoe" become "boat."

27

---

---

---

---

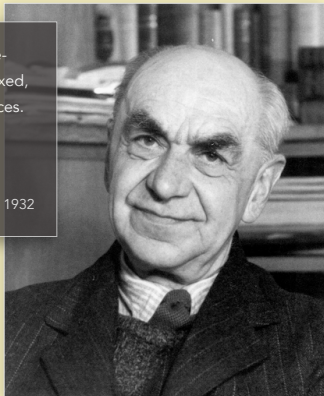
---

---

---

"Remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction..."

- Bartlett, 1932



28

---

---

---

---

---

---

---

## Schema Affects Memories

- Schema: Knowledge structures about what usually happens can guide and influence what we remember.
  - Academic offices
  - A visit to the doctor
  - Eating at a restaurant
- Memory errors are often consistent with schema that are activated by the event.

30

---

---

---

---

---

---

---

## Gerald Martin's Seizure of Power

Gerald Martin strove to undermine the existing government to satisfy his political ambitions. Many of the people of his country supported his efforts. Current political problems made it relatively easy for Martin to take over. Certain groups remained loyal to the old government and caused Martin trouble. He confronted these groups directly and so silenced them. He became a ruthless, uncontrollable dictator. The ultimate effect of his rule was the downfall of his country.

31

---

---

---

---

---

---

---

## Adolf Hitler's Seizure of Power

Adolf Hitler strove to undermine the existing government to satisfy his political ambitions. Many of the people of his country supported his efforts. Current political problems made it relatively easy for Hitler to take over. Certain groups remained loyal to the old government and caused Hitler trouble. He confronted these groups directly and so silenced them. He became a ruthless, uncontrollable dictator. The ultimate effect of his rule was the downfall of his country.

32

---

---

---

---

---

---

---

## Sulin and Dooling (1974)

Subjects read the passage with either the name **Adolf Hitler** or **Gerald Martin**.

One week later, subjects took a recognition test for sentences from the passage or **new sentences related to the schema of Hitler**:

Low: He was intelligent, but had no sense of human kindness.

High: He hated the Jews particularly and so persecuted them.

33

---

---

---

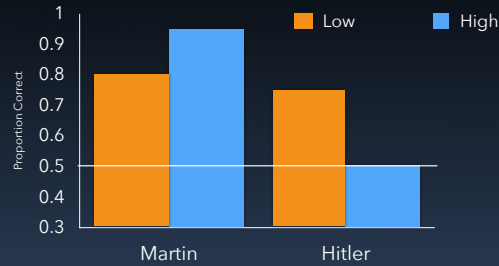
---

---

---

---

## Sulin and Dooling (1974)



34

---

---

---

---

---

---

---

"This result is consistent with Bartlett's (1932) theory that subjects store a passage in schematic form, relying on their pre-experimental knowledge of the topic as part of the remembering process. Because of schematic storage, a high-thematic key sentence presents subjects with a more difficult discrimination on the recognition test."

- Sulin & Dooling, 1974

35

---

---

---

---

---

---

---

## The Science of Erroneous Memories

37

---

---

---

---

---

---

---

## The Power of a Photograph

Subjects' parents provided two true childhood events about each subject.

Experimenter created a false event.

Subjects read narratives of all events and were asked to recall each event in more detail.

Subjects were encouraged to think about the false event over a 1-week retention interval. Subjects then returned to report on what they remember about the events.

38

---

---

---

---

---

---

---

"I remember when Jane was in Grade 1, and like all kids back then, Jane had one of those revolting Slime toys that kids used to play with. I remember her telling me one day that she had taken the Slime to school and slid it into the teacher's desk before she arrived. Jane claimed it wasn't her idea and that her friend decided they should do it. I think the teacher, Mrs. Smollett, wasn't very happy and made Jane and the friend sit with their arms folded and legs crossed, facing a wall for the next half hour."

39

---

---

---

---

---

---

---

During the first session, some subjects were given an old photograph...

40

---

---

---

---

---

---

---



41

---

---

---

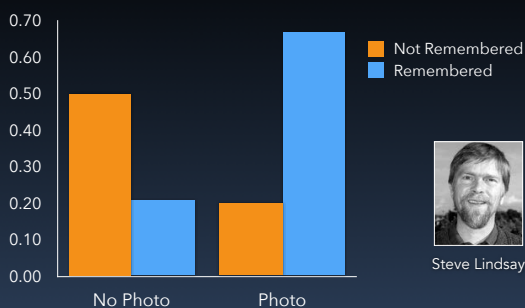
---

---

---

---

### Lindsay et al., 2004



42

Subjects were told of three childhood memories, two being given to the researchers by the subjects' parents and one being made up by the researchers. All subjects said they did not recall the erroneous event, but were given a week to sit on the event and to recall more details of the event. After the week, 20% of subjects who did not see a photo from their childhood remembered the false event. 80% of the subjects shown a photo from their childhood remembered the erroneous event.

## Interaction between language and memory

Door  
Glass  
Pane  
Shade  
Ledge  
Sill  
House  
Open  
Curtain  
Frame  
View  
Breeze  
Sash  
Screen  
Shutter

Window?

Nose  
Breathe  
Sniff  
Aroma  
Hear  
See  
Nostril  
Whiff  
Scent  
Reek  
Stench  
Fragrance  
Perfume  
Salts  
Rose

Smell?

44

---

---

---

---

---

---

---

## Deese-Roediger-McDermott (DRM)

- Subjects study lists that are associated with a non-presented **critical word**.
- People often falsely recall and falsely recognize the critical word even if they were tested immediately.



Roddy  
Roediger



Kathleen  
McDermott

45

When presented a list of information that all relates to a particular subject or thing, people often falsely recall and falsely recognize an associated 'critical word', even if they were tested immediately.

---

---

---

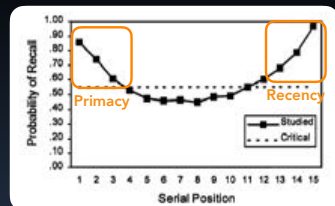
---

---

## Roediger & McDermott (1995)

Very high levels of false memories.

Subjects show high confidence for the false memories.



This DRM procedure demonstrates the reconstructive nature of memory in the simplest possible procedure.

46

This study showed very high levels of false memories.

Additionally, subjects showed high confidence for the false memories.

---

---

---

"This DRM procedure demonstrates the reconstructive nature of memory in the simplest possible form."

---

---

Does everyday false memories tell us anything about recovered memories?

47

---

---

---

---

---

---

---

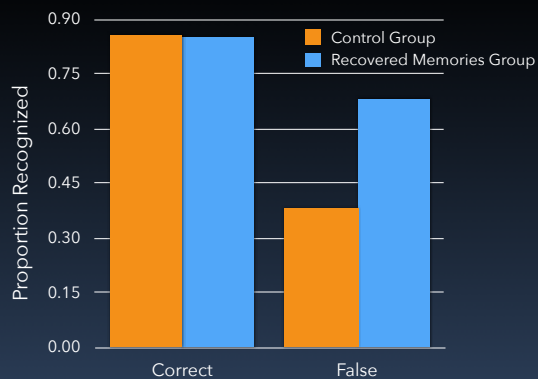
## Clancy et al. (2000)

People who reported recovered memories (of childhood sexual abuse) and matched control subjects were asked to remember the DRM word lists.

Are individuals with recovered memories more prone to false remembering?

48

Are people who have reported recovering memories (memories that have been forgotten or hidden away from trauma) more prone to false remembering?



49

Individuals who report recovered memories were found to be more prone to false remembering / recognition.

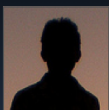
## Clancy et al. (2002)

But having recovered memories doesn't mean having false memories.

What if we can be reasonably certain that the recovered memory is false?

50

CONTROL

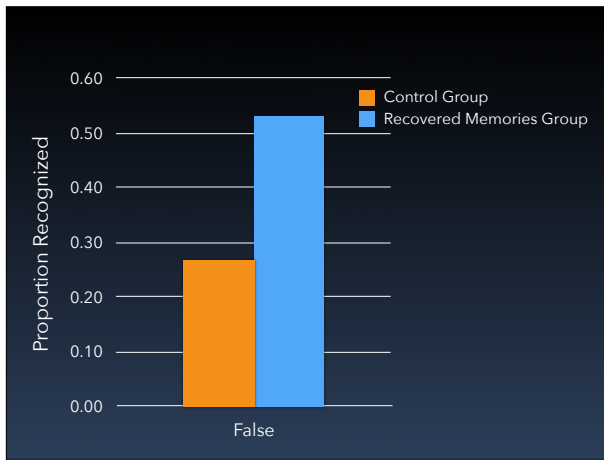


RECOVERED MEMORY



51





52

---

---

---

---

---

---

---

---

## Eyewitness Memory

54

---

---

---

---

---

---


---

---

### Elizabeth Loftus

Can eyewitness memory be altered by misleading suggestions?

What are the consequences of suggestive questioning?



55

---

---

---

---

---

---


---


---

## Loftus & Palmer (1974)

Subjects watched a video of a traffic accident and then answered questions about the accident.

Example: One question involved making speed estimates about the accident.

  
 Elizabeth Loftus

  
 John Palmer

56

Loftus and Palmer: Subjects watched a video of a traffic accident and then answered questions about the accident.

However, questions were constructed differently to try and push subjects towards a more or less severe answer. This is called suggestive questioning.

---

---

---

## Loftus & Palmer (1974)

Different subjects were asked different versions of the question.

- "How fast was the car going when it contacted the other car?"
- "How fast was the car going when it hit the other car?"
- "How fast was the car going when it bumped the other car?"
- "How fast was the car going when it collided with the other car?"
- "How fast was the car going when it smashed into the other car?"

57

---

---

---

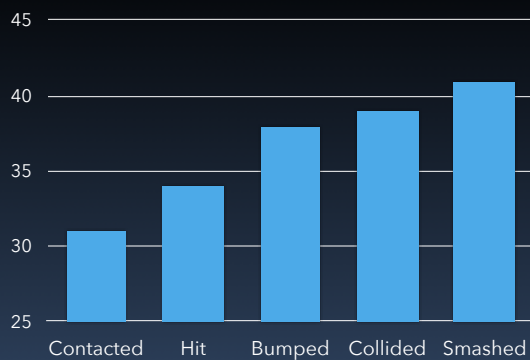
---

---

---

---

## Speed Judgment (mph)



58

---

---

---

---

---

---

---

One day later, subjects were asked...

59

---

---

---

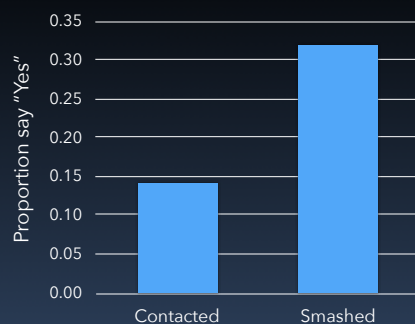
---

---

---

---

## Did you see any broken glass?



60

There was no broken glass in the video.

---

---

---

---

---

---

---

# Another Study...

61

---

---

---

---

---

---

## Loftus, Miller, & Burns (1978): The Misinformation Effect

Subjects saw slides of an auto accident.

They were then questioned about the accident, just as they might by a police officer.

The questions were either consistent with details of the accident or they introduced misleading information about the accident.

62

The Misinformation Effect: Loftus, Miller, & Burns (1978):

Subjects were shown slides of an auto accident, and then

questioned about the accident. However, the questions were

either consistent with the information from the slideshows

or introduced misleading information about the accident.

---



65

---

---

---

---

---

---

Subjects then answered some questions about the slideshow. For example...

Did another car pass the sports car while it was at the yield sign?

or

Consistent

Did another car pass the sports car while it was at the stop sign?

Misleading

71

---

---

---

---

---

---

Which one did you see?



Consistent = 75%  
picked correct slide



Misleading = 41%  
picked correct slide

72

---

---

---

---

---

---

---

Why does the misinformation effect happen?

- ~~Demand characteristics~~
- Destructive updating
- Source monitoring errors

73

---

---

---

---

---

---

---

## Destructive Updating

- Misinformation impairs recall of original memory because it overwrites the original memory.
- The overwritten memory becomes inaccessible.



Elizabeth Loftus

74

Destructive updating - misinformation impairs recall of original memory because it overwrites the original memory.

The overwritten memory then becomes inaccessible.

---

---

---

---

---

## Source Monitoring

- Each event detail is associated with a source.
- Remembering event details isn't the same as remembering the source.
- Information for source and event details can be disconnected due to several factors (e.g., age, retention interval, focused/divided attention).
- People can remember both the witnessed and misleading information but misremember their sources.



Marcia Johnson



Steve Lindsay

75

Source monitoring errors - the confusion / swapping of the source in which some new information was learned. "I think I heard from a news clip that...". Young kids and the elderly are very prone to these mistakes.

However, there are many other possible factors: retention interval, focused / divided attention, etc.

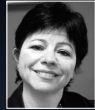
---

---

---

## Testing the Updating Hypothesis

Is destructive updating correct? Do the original memories get replaced by misinformation? Do memories get updated or do we lay down multiple traces?



Maria Zaragoza

Zaragoza and McCloskey provided evidence against the destructive updating account.



Michael McCloskey

76

Zaragoza and McCloskey found that the cause of the misinformation effect was more likely caused by source monitoring errors than destructive updating.

## Regular Recognition Test

- Study phase: Hammer
- Postevent phase: Screwdriver or no Misinformation
- Test

What was John holding in the workshop?

(A) Hammer

(B) Screwdriver

77

## Modified Recognition Test

- Study phase: Hammer
- Postevent phase: Screwdriver or no Misinformation
- Test

What was John holding in the workshop?

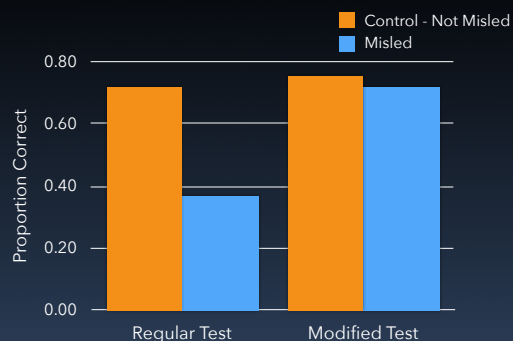
(A) Hammer

(B) Wrench

78

An entirely new item was introduced as one of the options.

## McCloskey & Zaragoza (1985)



80

If restructive updating is correct, then hammer would be gone from the subjects memory of the worker. Clearly, that is not the case.

If source monitoring errors is correct, then the subjects remember both the screwdriver and the hammer, they are just confused as to which item they saw from the video. Thus, when given the option of hammer or wrench, they should all choose hammer.

## Conclusions from the Modified Test

Memory for the original event detail was preserved despite exposure to misinformation.

Destructive updating is incorrect.

The misinformation effect is likely contributed by a number of factors, including source monitoring errors.

81

The study proved that memory of the original event detail was preserved despite exposure to misinformation. Thus, destructive updating was proven to be incorrect. The misinformation effect is likely contributed by a number of factors, including source monitoring errors.

pg 208 - 225, 232 - 239