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# COGNITION

## Chapter 6: MEMORY DISTORTIONS

**Fundamentals of Cognitive Psychology**  
*(Kellogg)*

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# RECONSTRUCTIVE RETRIEVAL

- *Schema-guided construction of episodic memories that interpret, embellish, integrate, and alter encoded memory representations*
- Brewer and Treyens (1981)
- Bartlett (1932)

# Schema (Schemata, Scripts)



## OFFICE SCHEMA

- a closely connected set of ideas that are related to a specific event or object.
- thought to be relatively stable entities that are developed through a person's experience with objects, people, and events in the world (Anderson, 1977).
- Schema about events are often called **scripts** (Ormrod, 2004).
- May contain generic or abstract knowledge and can be formed without an individual's conscious knowledge (Stein & Trabasso, 1982).
- Schemata that share ideas can be interconnected

# Brewer & Tryens (1981)



30 students were placed in the office seen to the right for a short time (35 seconds) and then moved to another room ...

... They were then asked to recall the objects in the office (a surprise recall task)

# Brewer & Tryens (1981)



30 students were placed in the office seen to the right for a short time, then moved to another room and then asked to recall the objects in the office, **9 students remembered seeing books, despite the fact that no books had been in the office. Students also tended to not remember objects that they typically would not find in an office, such as a skull or a tennis racket.**

# War of the Ghosts

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. There were five men in the canoe, and they said: "*What do you think? We wish to take you along. We are going up the river to make war on the people.*" 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.*" So one of the young men went, but the other returned home. And the warriors went on up the river to a town on the other side of Kalama. The people came down to the water and they began to fight, and many were killed. But presently the young man heard one of the warriors say, "*Quick, let us go home: that Indian has been hit.*" Now he thought: "*Oh, they are ghosts.*" He did not feel sick, but they said he had been shot. 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.*" 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.

## War of the Ghosts

As replicated by Bergman & Roediger (1999), the subjects (participants) forgot the story over delays and introduced rationalization and distortion into their accounts of the story, with increases in the proportion of material distorted with increased retention intervals. Subjects also imported new propositions at long delays, further confirming Bartlett's empirical observations and conclusions.

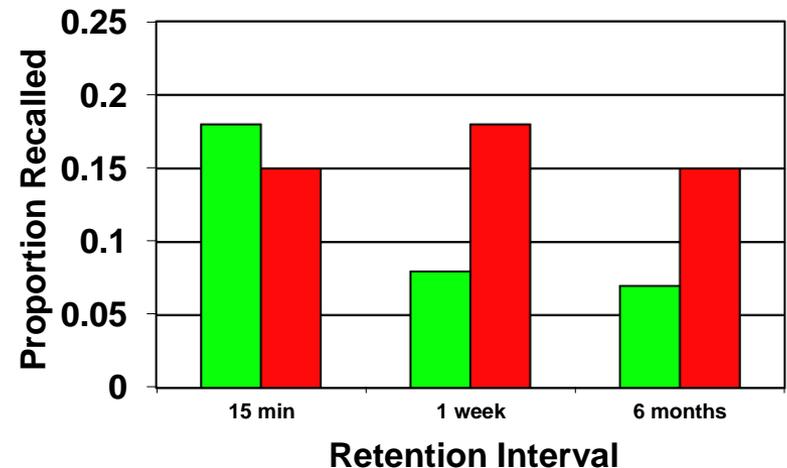
■ accurate ■ major distortion

## Memory is Reconstructive

*Leveling* (loss of detail)

*Assimilation* (rationalized/normalized)

*Sharpening* (inference: new detail [Adams])



## Bartlett:

### RECONSTRUCTIVE (normalizations, omissions)

#### → leveling, assimilation, sharpening

- John Adams vs. Thomas Jefferson on the authorship of the declaration of independence (Adams memory demonstrably suggested his perception of having an increasing role across time)
- John Dean & Richard Nixon (re: “Watergate” discussions)

Leveling: refers to a loss of details (e.g., ~~Kalama~~)

Assimilation: refers to the recollection being ‘rationalized’ or ‘normalized’ to fit with preconceived notions (e.g., “*fishing*”)

Sharpening: refers to remembering details that were not actually mentioned but that could be inferred from general knowledge (e.g., Indian was hit with an *arrow*)

## Bartlett:

RECONSTRUCTIVE (normalizations, omissions)

→ leveling, assimilation, sharpening

## Kintch:

RECONSTRUCTIVE

REPRODUCTIVE

CONSTRUCTIVE (!)

## Selection

- what do you attend to?
- Without schema it can be difficult to organize input
  - “arranging items” example (page 162)

## Interpretation

- inference and suppositions are made based on prior knowledge

## Integration

- content vs. technical accuracy
- we encode the ‘gist’ rather than the details

# Bransford & Franks (1971) (Kellogg, c.6, p.165)

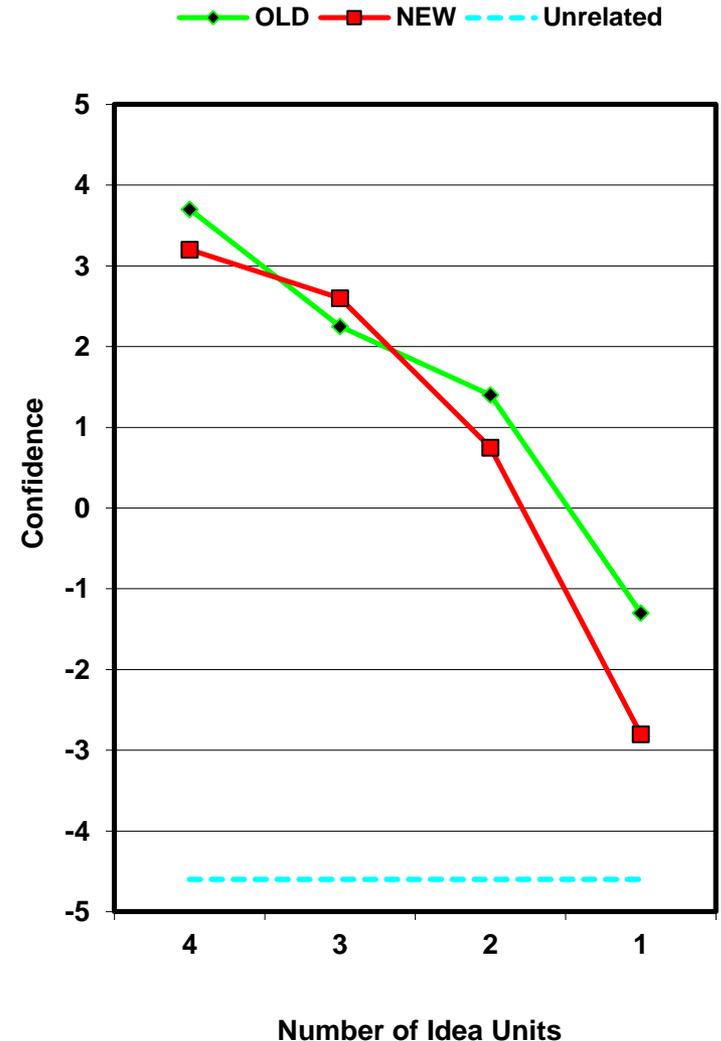
nonconsecutive but semantically related sentences were spontaneously integrated into holistic, semantic ideas

- each of which encompassed more information than any acquisition sentence.

Subjects could not reliably distinguish “old” from “new” sentences if they captured the integrated semantic content

Ss were most confident of recognizing sentences that express all semantic relations of a complete idea.

- Often such sentences expressed more information than was communicated by any single sentence during acquisition.
- Ss become less confident of hearing particular sentences as a "function of the degree to which a sentence fails to exhaust all the semantic relations characteristic of a complete idea" (abstract).



## Deese-Roediger-McDermott [DRM] Paradigm

### LIST 1

- Bed, rest, awake, tired, dream, wake, Snooze, blanket, doze, slumber, snore, nap, peace, yawn drowsy

### LIST 2

- Steal robber crook burglar, money, cop, bad, rob, jail, gun, villain, crime, bank, bandit, criminal

### LIST 3

- Table, sit, legs, seat, couch, desk, recliner, sofa, wood, cushion, swivel, stool, sitting, rocking, bench

# False memories

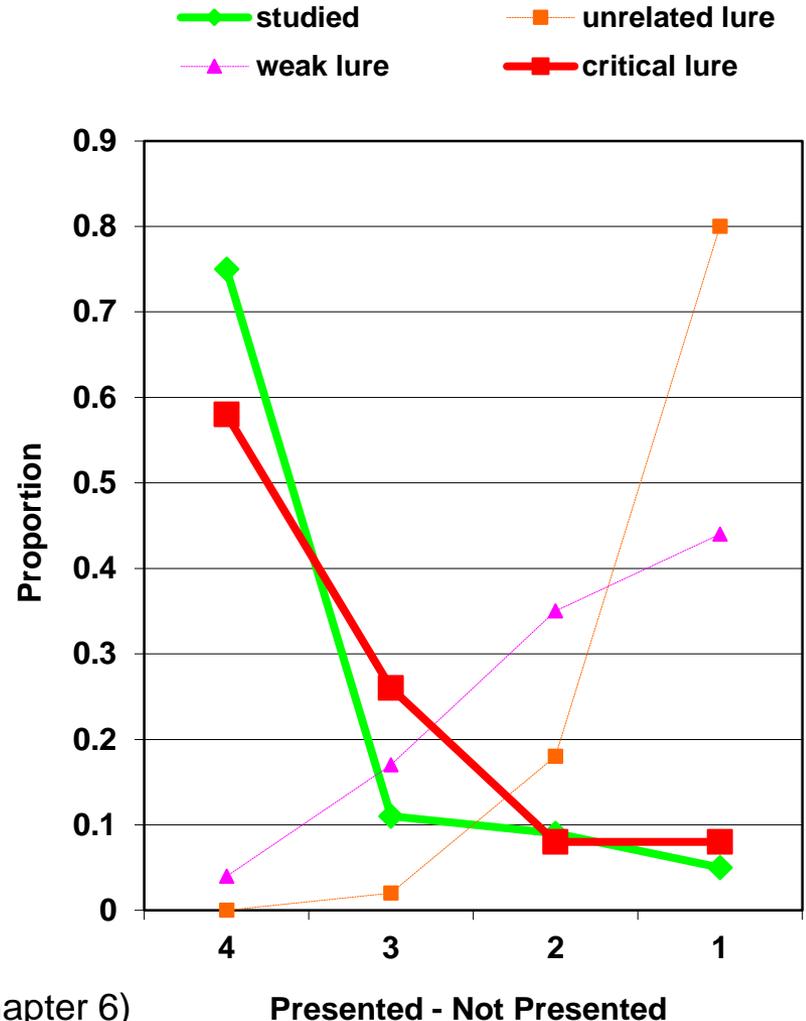
(Roediger & McDermott, 1995)

## DRM Paradigm

- |             |             |
|-------------|-------------|
| 1) Dream    | 11) Radio   |
| 2) Fork     | 12) Jail    |
| 3) Weather  | 13) Sleep   |
| 4) Bracelet | 14) Sand    |
| 5) Chair    | 15) Blanket |
| 6) Robber   | 16) Thief   |
| 7) Stool    | 17) Bed     |
| 8) Traffic  | 18) Boy     |
| 9) Snooze   | 19) Skin    |
| 10) Couch   | 20) cushion |

Cognition

Van Selst (Kellogg Chapter 6)



## Deese-Roediger-McDermott [DRM] Paradigm

- Demonstrates Semantic Priming
- Seeing pictures with the words reduces the false memory effect
- Reading the words (vs. hearing them only) reduces the false memory effect
- Deficits in prefrontal functioning are associated with increased 'conjunction' errors ("buckle" + "fiction" → failure to see 'fickle' as a new word)

# False Verbal Memories (DRM procedure)

## MEMORY ILLUSIONS

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

Now slowly count backwards from 60...

→ Serial position curve  
+ False Verbal Memory

# MEMORY BIAS

## Loftus & Palmer (1974)

Loftus: Studied false memories / memory bias / “the misinformation effect”.

***Memories are not like a storage chest into which some things get lost... rather, memories are constructed from the evidence available at the time of recollection (Loftus, 1980).***

### Loftus & Palmer (1974)

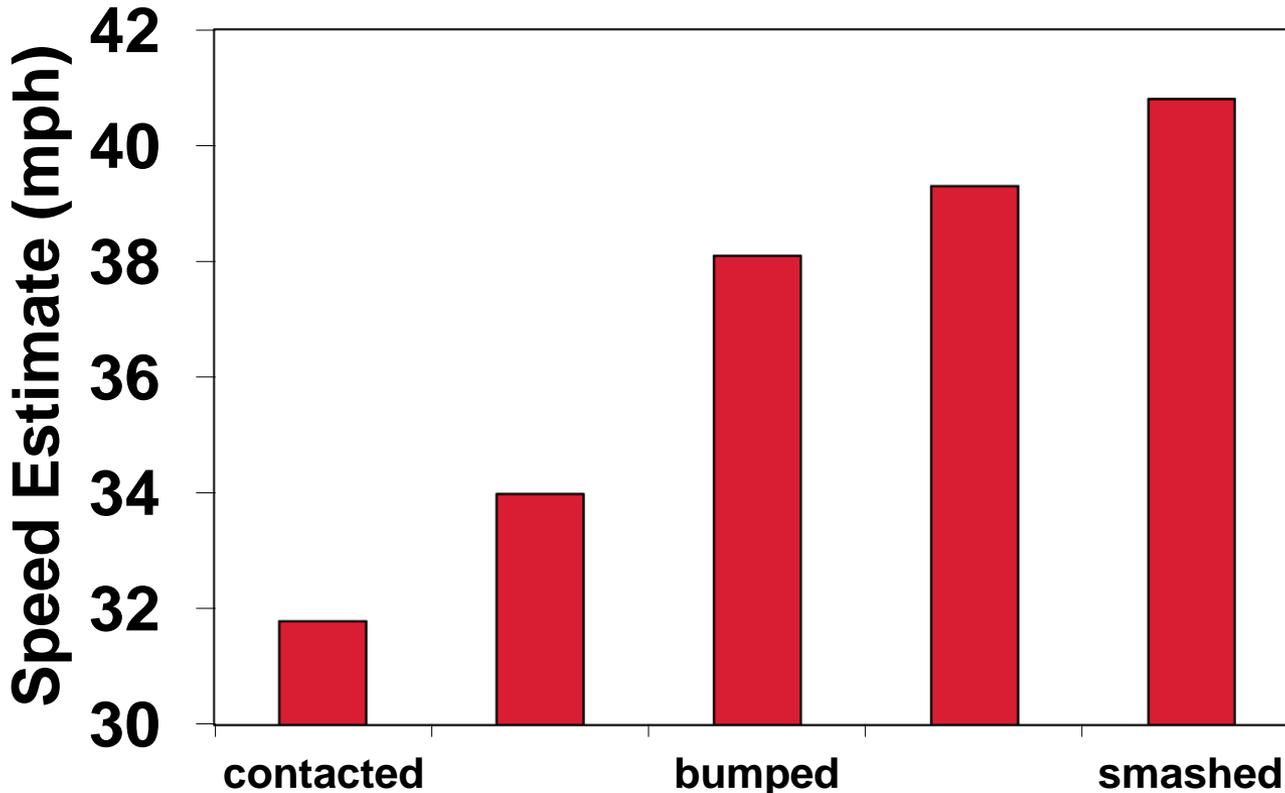
Suggest that memory is even more reconstructive than Bartlett suggested. Demonstrated that what happens AFTER an event can affect memory for the event

In the classic study, subjects were shown films of an accident and then asked to estimate the speed of the cars when they either smashed, collided, bumped, hit, or contacted each other.

The REALLY cool part happened a week later.... *but first, the “immediate” results....*

# Loftus & Palmer (1974)

*immediate influence*



**How fast were the cars going when they  
\_\_\_\_\_ each other?**

# Loftus & Palmer (1974) *a week later...*

• “Did you see any broken glass?” ( /50)

(note: there was no broken glass in the video)

	<b>Smashed</b>	<b>Hit</b>	<b>Control</b>
<b>YES</b>	<b>16</b>	<b>7</b>	<b>6</b>
<b>NO</b>	<b>34</b>	<b>43</b>	<b>44</b>

- Misinformation may occur intentionally or unintentionally (Bank Teller Example)
- **MEMORY IMPLANTATION** refers to “*an individual creating a false memory in the mind of another person by means of suggestions and questions about the imagined event*”
- **SOURCE AMNESIA** refers to evaluative processes that attribute mental experiences to either external sources (i.e., perceived events) or to internal sources (i.e., dreams, thoughts, or fantasies).

**Loftus and Pickrell (1995) told adults about three true events from their past plus one false event (e.g., getting lost in the shopping mall at age 6).**

## **Stronger Memory Biases:**

- Repetition of misinformation: misinformation effects increase with exposure & frequency of "recall" of the misinformation (both recall & confidence) (*Zargona & Mitchell, 1996*)
- Repeated questioning can lead to enhanced recall of some information and loss of other information, even when no information is present (*Shaw, Bjork, & Handal, 1995*)
- Imagining that something happened increases later memory reports that it actually did happen.
- Misinformation effects persist despite warnings that misinformation might be present
- Children are particularly susceptible

## Implanted Memories

Ceci, Crossman, Gilstrap, & Scullin (1998) [and  
Ceci etc. 1993, 1995, ...]

***“There is no event domain that is impervious to the deleterious effects of suggestions, especially when they are repeatedly delivered over long periods of time”***

- re: children’s embarrassing genital touching and painful events at a doctors office, etc.

## Delusional False Memories

- UFO abduction
- Sexualized satanic rituals
- Childhood cannibalism
  
- There exists a strong belief that a bizarre event did occur
  - Culture and social context
  - Tabloid type suggestions
  - Statements of friends
  - Hypnosis

## REPRESSION

Repression refers to a classic psychoanalytic defense mechanism in which the ego (self) is protected from unwanted anxiety generated by unpleasant memories

Repression generally refers to a an inhibitory process of excluding events from retrieval

Therapists argue that trauma-induced psychogenic amnesia is exceptionally rare

- Dissociation is more likely

Traumatic memories are exceptionally hard to suppress (e.g., PTSD)

# Cognitive interview (Geiselman)

Police interview technique devised by Geiselman, Fisher and their associates in a series of papers in the 1980s and 1990s and subsequently investigated by many other researchers in the eyewitness memory area.

The interview comprised four mnemonics

- **reinstate context** (environmental and internal);
- **recall all**, regardless of apparent importance;
- **recall in a variety of orders**;
- **recall from a variety of physical perspectives**.

Most researchers have found the CI (as it is often known) very effective at increasing the amount of information recalled by a witness, without increasing the concomitant level of confabulation (see, e.g., George, 1992). Others have argued that **much of the efficacy of the CI derives from the "reinstate context" mnemonic**, rather than from any of the others. In later papers, Geiselman and Fisher added further techniques to the original interview, and this later formulation became known as the Enhanced Cognitive Interview (or ECI).

## Important Terminology

- Reconstructive recall
- Leveling
- Assimilation
- Sharpening
- Selection
- Interpretation
- Integration
- Source monitoring
- DRM paradigm
- False memory
- Conjunction error
- Confabulation
- Misinformation effect
- Delusional false memory
- Repression
- Ecological validity
- Trauma-induced amnesia

## Important People

- Bartlett
- Bransford & Franks
- Brewer & Tryens
- Kintch
- Loftus
- Roediger & McDermott

**GOAL:** To have you demonstrate your grasp of problems of recovered memories or false memories.

**REQUIREMENT:** Based on COGNITIVE PRINCIPLES (include the definitions) and RESEARCH FINDINGS (write a summary of the findings from the article), write a two page report on some aspect of recovered memories and/or false memories. It will be up to you to narrow the topic. This assignment is not an appropriate forum for discussion of personally experienced sexual trauma. Advanced students may consider discussing conscious experience paired with issues such as memory strength and bias in reporting (i.e., signal detection theory). You **MUST** use the SJSU electronic database (e.g., psycinfo) to aid your search and you must include one or more APA-style citations [e.g., the format that is used for the reference section of the Kellogg text] to content-appropriate academic journal articles from peer-reviewed journals. It is ok to check your potential articles with me in the days before the assignment is due.

- Be sure to include a photocopy or printout of the title page of the journal article (not the PsycInfo abstract) with your assignment.
- It is highly suggested that you start work on this assignment well before it is due.
- See Kellogg page 176-180



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