



Truth & Memories: just a dangerous illusion of our brain?

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Truth & Memories: just a dangerous illusion of our brain?

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Our Memory

Is it confabulation [memory of something that never happened ()] or reality, or partial reality combined with unconscious invention?*

- Professor Elizabeth Loftus -

Definition of confabulation: In psychology, confabulation is a memory error defined as the production of **fabricated, distorted, or misinterpreted memories** about oneself or the world

„Our memories are constructive, and they are re-constructive. Memory works ... like a Wikipedia page: you can go in there and change it, but so can other people“

- Professor Elizabeth Loftus -



(*) Louis Nahum and cognitive neuroscience colleagues at University of Geneva

Some real cases ...

Case I: Memories from my own Childhood



When I was 3 years old, my mom and I used to

Case II: Memories from the past- Shaking hands with Bugs Bunny at a Disney resort

Kathryn Braun & colleagues at Harvard Business School



Elizabeth Loftus, *Creating False Memories*. *Scientific American*. Vol 277, N° 3, September 1997, S. 70–75.

Case III: The Kenneth Olson Case

In 1986, Nadean Cool, a medical assistant in US state Wisconsin, sought for psychological help in order to understand some traumatic experiences of her daughter. (*)

During her treatments carried out by the American psychiatrist Kenneth C. Olson (amongst others hypnosis and exorcism), she reached to the conclusion to have been part of a satanic circle and started to remember having been abused sexually, eaten babies, experienced sex with animals etc.. She believed to have more than 120 different personalities.

Some years later, when realizing that she had been subject to induced false memories, she started proceedings against her psychiatrist and, after a 5 weeks trial, she got assigned a damage compensation of 2,4 million US dollars.

(*) *Falsche Erinnerungen*. In: *Spektrum der Wissenschaft*. 1, 1998, S. 63ff.

Case IV: The Contract and other real situations

Supplier proposal

INCO terms offered as FAS

[Free Alongside Ship at port of departure]

Customer understanding

INCO terms will be CIF
[Cost Insurance Freight to port of destination]



How do we memorize and remember



- Our brain generally places information into **seemingly appropriate contexts**
- Our brain pieces together information fragments, bits and pieces in a way that **make sense to us**
- Intentionally we might **fill in memory gaps** and **make up details** that have not been experienced
- Memories are made up through **external sources of information**, such as old photographs, parent's or friends' retelling of events, other witness' or newspaper reports
- All these processes happen **automatically**

These made-up memories feel like real memories

Memories at age <3



Some important features to know ... (*)

- Baby brains at 2-4 weeks of age are only about 36% of its final adult volume, 72% at one year, 83% at two years, 95% by age of 9 and at full size by ~13
- Our brains grow very fast, but from late childhood until mid-adolescence, the number of neurons actually decreases again – unnecessary neuronal connections are deleted (optimization of our brain functionalities)
- We can not accurately retrieve memories from our early childhood, because **brain of babies are not yet physiologically capable of forming and storing long-term memories.**
- Childhood memories may be due to **misidentifying the source of information** (source confusion) and **misattributing** it to our own memory or experience

(*) Dr. Julia Shaw: „The Memory Illusion: Remembering, Forgetting, and the Science of False Memory“, 2016

Memories generally: The Bugs Bunny Story

Can we remember things that never happened?



THE QUESTION

Can we cheat our Memory in a way that we even don't realize it? Or, how well can we remember events that actually never happened ...

Process

- Researchers had got real information on participants' past from close friends & family
- Participants were presented falsified adverts on Bugs Bunny at a Disney resort (*Bugs Bunny is a Warner Bros character*)
- Participants were asked first about the true events, than invited to remember other events ...

How it works

- Combining true information with intentionally false accounts (that, however, *could* be realistic and thus is perceived as plausible)
- Exercise to imagine the event happening, people and objects involved & talking loud about it to other people
- Repeat this exercise during various interview sessions

Experiment settings:

- Official topic of the experiment: *"how well can we remember early Childhood experiences"*
- Adult participants who had been to a Disney resort as a child
- Conducted by Memory Scientist Kathryn Braun & colleagues at Harvard Business School, 2002

Memories generally: The Bugs Bunny Story

Can we remember things that never happened?



THE QUESTION

Can we cheat our memory in a way that we even don't realize it? Or, how well can we remember events that actually never happened ... ?

Result

Participants remembered vividly to have shaken hands with Bugs Bunny

Conclusion

We can manipulate or confabulate false moments in our life that are linked to real events, using:

- Intentionally falsified information
- Photos of another but similar event, thus plausible for our brain, however not real

And the answer is:

YES, our brain can actually fall into the trap of induced false memory!

Induced false memory: The Kenneth Olson Case

THE QUESTION

Can someone induce false memories in our brain in a way that we even don't realize it? Is there any brain control to protect us against believing what someone else is suggestively telling us ?

Process

- **Hypnotherapy, family constellations, regression** (un)intentional suggestions of therapists ⁽¹⁾ – e.g.: subjects remember having woken up after a hypnosis session due to a strong noise (invention by therapist..

Process

- **Suggestive questioning techniques** ⁽²⁾ - e.g.: “based on your symptoms, it is quite likely that ...
- try to remember what has happened in your childhood ...”

Falsification of memories through therapy or interrogations/eyewitness testimonies

(1) Laurence, Jean-Roch; Perry, Campbell (1983). "Hypnotically Created Memory among Highly Hypnotizable Subjects"

(2) Julia Shaw, Stephen Porter: *Constructing Rich False Memories of Committing Crime*. In: *Psychological Science*. 14. January 2015

Induced false memory: The Kenneth Olson Case

THE QUESTION

Can someone induce false Memories in our brain in a way that we even don't realize it? Is there any brain control to protect us against believing what someone else is suggestively telling us ?

Process

Impact of Language ⁽³⁾ – e.g.: the “broken glass Memory” - participants indicated having seen broken glass in an car accident video after an interviewer’s introduction using the expression “a car *smashed* into another one”

Process

Repeated interviews and questioning technique – e.g. the “lost-in-the-mall” experiment ⁽⁴⁾ - participants were told to have committed a crime in their childhood when visiting a shopping mall with their parents

Falsification of memories through therapy or interrogations/eyewitness testimonies

(3) Loftus, Elizabeth F.; Palmer, John C. (1974). "Reconstruction of automobile destruction"

(4) Loftus, E. and Pickrell J. (2005). "Planting misinformation in the human mind: A 30-year investigation of the malleability of memory".

Induced false memory

Memory rate for true / false (induced) events according to the number of interviews

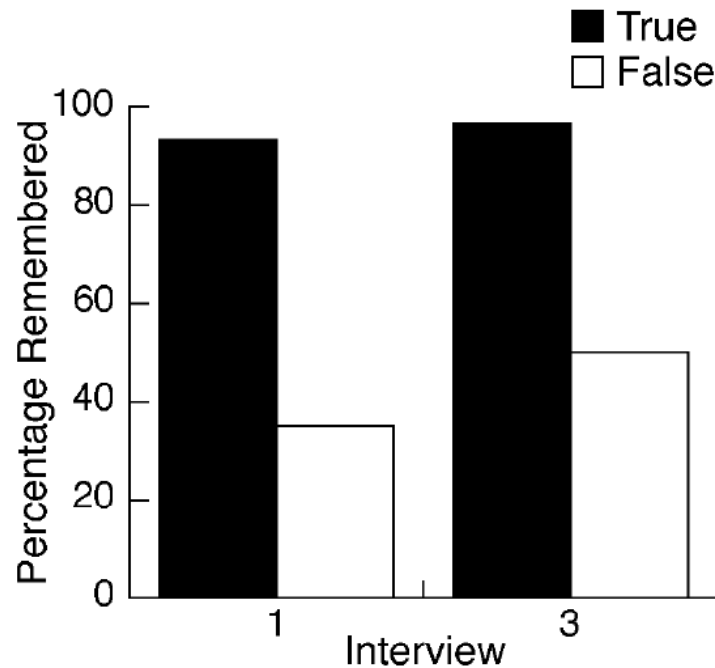


Figure 2. Mean percent of events remembered by event type and interview.

Aus Wade et al. (2002)

Memories over the time



Even memories of a real event change over the time, the more we remember them...

- Every time we recall a memory, this memory information is subject to individual changes, adaptations, corrections, according to
 - what we personally want to remember (modifying an unfavorable past event, making something more attractive to us / to others)
 - what we are expected to remember (improving a work result, over-achieving others' expectations)

e.g. witnesses of 9/11 had been interviewed after 7 and 18 months and provided different descriptions of what they had experienced during 9/11

Some recommendations for the process of remembering ...



- ✓ Verify the information path, compare and double-check with alternative sources of information.
- ✓ Be critical, do a plausibility analysis before starting to “imagine” the event
- ✓ Be careful with specific (e.g. suggestive) interrogation techniques
- ✓ Take notes during the event, get any other proof of evidence (contract negotiation, agreements) during or at least right after the event



Thank you very much
for your attention!