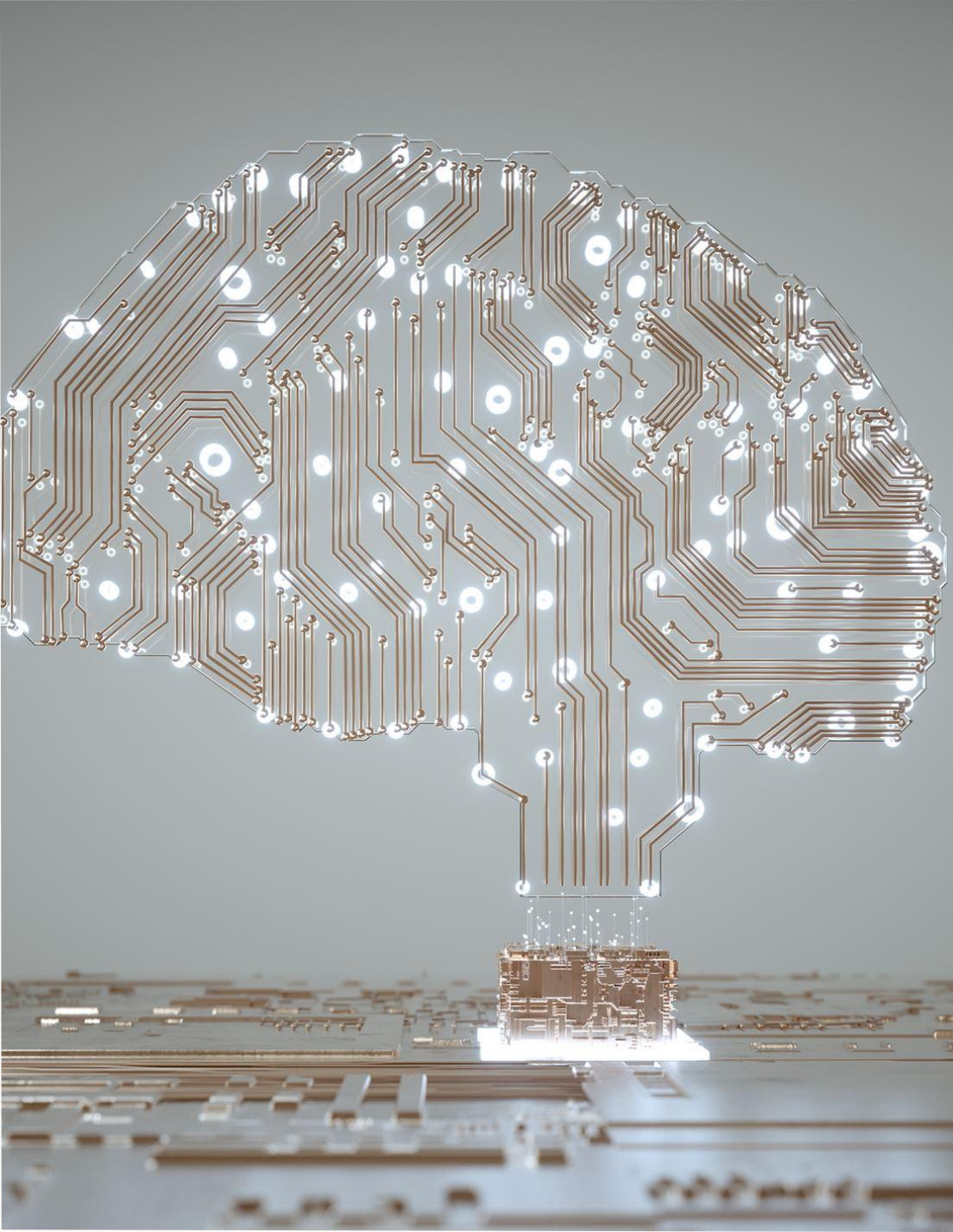




COGNITION IN ACTION

**Eyewitness
Memory:**

**Science, Accuracy,
and Real-World
Implications**

WHAT IS EYEWITNESS MEMORY?

**Memory for
events
witnessed
first-hand**

**Critical in
policing and
courts**

**Accuracy
varies widely**

**What can affect
eyewitness
memory?**

Estimator Variables

Uncontrollable factors - Environment/witness characteristics
Wells (1978)

LIGHTING

DISTANCE

VISIBILITY

STRESS

EXPOSURE
DURATION

TIME LAPSE

WEAPON FOCUS
EFFECT

CROSS-RACE
EFFECT

EW AGE,
PHYSICAL/MENTAL
CONDITION)

System Variables

Controlled by justice system
Wells (1978)

**Lineup
procedures**

**Instructions
to witnesses**

**Interview
methods**

**Questioning
techniques**

**Presentation
methods**

**Why is understanding
the factors that can
impact eyewitness
memory important?**

Case Study:

Ronald Cotton and Jennifer Thompson Misidentification Case (US)

[Link to APA Article](#)

Eyewitness Misidentification

Misidentification by Jennifer Thompson central to Ronald Cotton's wrongful conviction of rape and assault 1984.

Confidence Inflation

Confirming feedback increased witness confidence, impacting jury perception despite lack of physical evidence.

Memory Contamination

Repeated exposure to photos altered original memories, showing how memory can be reshaped by new information.

Legal Reforms and Impact

Led to reforms like blind lineups and sequential procedures to reduce eyewitness errors nationwide.

Understanding Eyewitness Memory and Its Importance

Eyewitness Memory Characteristics

Eyewitness memory is subjective, influenced by attention and personal interpretation, making it fallible despite its courtroom power.

Confidence vs Accuracy

Confident eyewitnesses are often persuasive, but their confidence does not reliably indicate accurate memory recall.



Understanding Eyewitness Memory and Its Importance

Cognitive Memory Processes

Memory involves encoding, storage, and retrieval, each affected by stress, environment, and individual differences.

Legal Implications and Safeguards

Mistaken eyewitness identification has caused wrongful convictions, highlighting the need for informed legal safeguards.



How Encoding, Storage, and Retrieval Shape Accuracy



Encoding and Attention

Encoding depends on selective attention, which narrows under stress, often focusing on survival-relevant details like weapons.

Storage and Memory Malleability

Memories stored are malleable and can be distorted by external influences like misinformation or leading questions.

Retrieval/Reconstruction Bias

Memory retrieval is reconstructive and prone to bias from questioning techniques, environmental mismatches, and stress.

NOTICING
CHANGE:
WHO DUN
IT VIDEO?



Case Study: Devlin Report (1976)



**MAJOR REVIEW OF EWT
USE IN UK COURTS**



**HIGHLIGHTED DANGERS
OF SOLE-WITNESS
IDENTIFICATION**

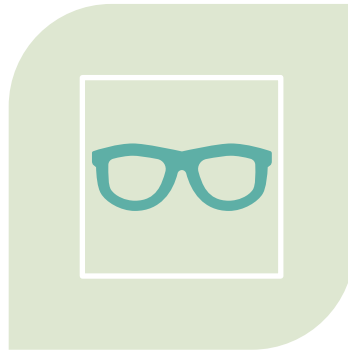


**LED TO PROCEDURAL
REFORMS**

Case Study: Devlin Report (1976)



**EVEN WHEN THE ONLY
EVIDENCE IS EW ID = 74%
CONVICTION RATE.**



**EW ID ACCEPTED EVEN
WHEN CONTRADICTED
BY PHYSICAL AND/OR
EXPERT EVIDENCE.**



**JURYS TEND TO BE
SUSPICIOUS OF PAID
EXPERTS**

Eyewitnesses are:

- Perceived as independent
 - No vested interest in trial outcome
- (Usually) have no scientific, legal, or Ψ expertise
 - Peers of the jury, lay-people
- Not paid to give testimony – perhaps even had to spend money



EYEWITNESS MEMORY:

ARE THEY GENUINE?

- EWs not always independent
 - May be getting something out of it
 - Do genuine acts of altruism really exist?
- CPS sometimes use co-accused (who will get lesser sentence) as a witness.
 - E.g., Michael Stone case: cell mate used as prosecution witness, claims Stone admitted murders
- Some want 15-minutes of fame: 24-hour news channels, social media paying to hear EWs story

EYEWITNESS MEMORY: RESEARCH

Loftus (1974): Students used as mock jury presented with “evidence” about a murder

Type of “Evidence”	% Conviction
1. Circumstantial	18%
2. Circumstantial + EW ID	72%
3. Circumstantial + EW ID but with expert contradicting EW	68%

EYEWITNESS MEMORY: EVIDENCE

- Rattner (1988):
 - 205 exonerations by physical evidence in US
 - Mistaken EW ID main source of errors
 - Executions halted in Illinois.
- Brandon & Davies (1973); Huff et al. (1986):
 - 1000 wrongful convictions due to EW error

EYEWITNESS MEMORY VS. PHYSICAL EVIDENCE



- Introduction of physical evidence e.g., fingerprint, DNA, much more reliable and exemplifies mistakes by EWs.
- Wells et al. (1998): 40 cases of DNA evidence exonerating suspects wrongly identified
 - In 5 cases, the person had been on death row!

INFLUENCES ON EYEWITNESS MEMORY



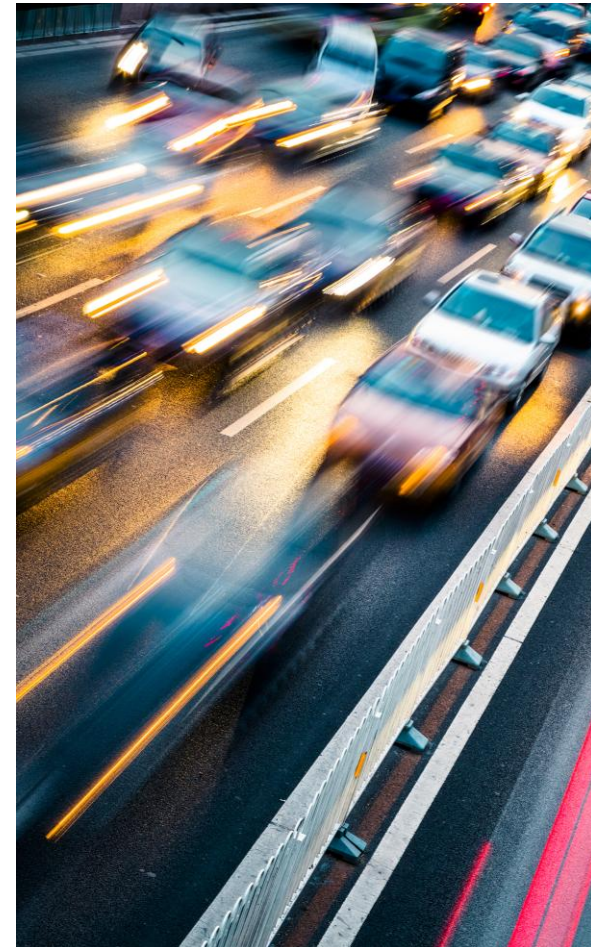
- Inadvertently pick out innocent person.
- False IDs often “honest errors”
 - Over eager to help?
- Recall prone to distortion by prior knowledge/expectation (schema)
- Susceptible to reconstructive error (Zaragoza & Lane, 1998)
- Prone to error when events involve violence - less perceptive when frightened (Loftus & Burns, 1982)

EFFECTS OF POST-EVENT (MIS)INFORMATION

- Misleading info can be intentionally/unintentionally communicated
 - Leading questions from investigators or content of questions
- (Mis)information can “fill-in” gaps/contradict memory
- Co-witness effects:
 - Time between witnessing event & police arriving - EW may talk to other witnesses who saw something different (from difference in interpretation, difference in viewpoint, etc.), which can **contaminate** EWs memory.

POST-EVENT (MIS) INFORMATION

- Loftus & Palmer (1974): Car accident
 - PEQ: “How fast were cars travelling when they hit/smashed/bumped/etc.”
 - Week later: “Did you see broken glass”: response depends on wording
 - Report of car speed depends on wording.
 - Phrasing of questions is important
 - Interaction between visual and verbal memory - Question was verbal but constructed a visual memory



EFFECTS OF POST-EVENT (MIS)INFORMATION



- Loftus and Zanni (1975):
 - After viewing car crash, Ps report seeing broken headlight if asked “did you see **the** broken headlight” rather than “**a** broken headlight”
 - No broken headlight shown.
 - Single word change sufficient to influence retrieval – makes implicit suggestion about what they should have seen

EFFECTS OF POST-EVENT (MIS)INFORMATION



- How/why does this happen?
- Loftus: memory is **not** a recording: it reconstructs/changes
- Two types of info encoded:
 1. Info encoded during initial event
 2. Info encoded after (learning new info)
 - Cannot remember both (especially contradict)
 - Both sources become integrated memory
 - Memory updated by adding/subtracting info.



EFFECTS OF POST-EVENT (MIS)INFORMATION

- Loftus, Miller, & Burns (1978):
 - Ps shown car sat at **stop** sign.
 - PEQ: “Did another car pass while car was at **give-way** sign?”
 - Recognition test for original vs. mislead slide
 - Sig decrease in accuracy for original slide when misleading info given
- Memory: increasingly vulnerable with increase interval between event and receiving contaminated info
 - Why? - Original trace is weaker.

EFFECTS OF POST-EVENT (MIS)INFORMATION

- How does misinformation affect memory?
- **Destructive Updating hypothesis.....**
 - We have single memory representation - can be updated with leading info
 - New/contradictory info integrates into existing memory
 - Original trace destroyed and replaced by post misleading trace
 - In EW situations, no opportunity to re-encode info.
- Loftus' work received major backlash and criticism:
 - [Loftus TED Talk – How reliable is your memory?](#)

ALTERNATIVE MEMORY ACCOUNT

- **Non-retention** (McCloskey & Zaragoza, 1985):
 - Even if misinfo has no effect on memory, misled Ps still choose original items less than controls
 - Why? Original item has decayed or never encoded?
 - Thus, PEQ provides source of memory
 - Those who cannot remember base choice from misinfo
 - So, does **not** show a destructive memory effect!

MAJOR ISSUE WITH SUGGESTIBILITY RESEARCH



- Demand characteristics
- Is there change or do Ps go along because they assume experimenter must be correct?
- Problem with the paradigm!

EXAMPLE...

■ Control Ps:

1. Remember original item → choose original
 - 50% of Ps are correct straight away
2. Do not remember original item → $\frac{1}{2}$ guess original, $\frac{1}{2}$ guess misinfo

■ Misled Ps

1. Remember original item → choose original
2. Do not remember original or misinfo → $\frac{1}{2}$ guess original, $\frac{1}{2}$ guess misinfo
3. Remember original & Misinfo → $\frac{1}{2}$ guess original, $\frac{1}{2}$ guess misinfo
4. Remember misinfo → choose misinfo

PARADIGM MODIFICATION TO TEST NON RETENTION ACCOUNT OF MEMORY

- McCloskey & Zaragoza (1985): modified test.
 - Remove misinformation as a choice at test –
 - Equalises guessing rates across conditions - Removes demand characteristics
 - If memory for original item remains, misled Ps should choose original
 - If original memory decayed, misled Ps should perform at chance

PARADIGM MODIFICATION EVALUATION

- However, different findings from different studies:

Misinfo effect with modified test:

- Chandler (1989, 1991);
- Chandler & Gargano (1998)
- Belli et al. (1992)
- Ceci et al. (1987)
- Tolia et al. (1992)

Retention intervals 3-7 days

NO misinfo effect with modified test:

- Belli (1993); Belli et al (1992)
- Bonto & Payne (1991)
- Loftus et al. (1989)
- McCloskey & Zaragoza (1985)
- Zaragoza et al. (1987)

Retention intervals 30 min or less

Major implications for police questioning, which can take place days/weeks after event – when memory trace has become weaker.

REVISION OF DESTRUCTIVE UPDATING HYPOTHESIS



- Loftus & Hoffman (1989):
 - Original trace not destroyed
 - Misinfo weakens original trace = disintegration of features
 - Original trace may remain in degraded form and retrievable

EYEWITNESS MEMORY: SUMMARY



- Can memory be adapted?
 - To some degree, but not as easily as we might think.
 - Social factors & demand characteristics
 - EWs want to be helpful
 - Weak memories most vulnerable
 - Blending of memories possible
 - Retrieval failures and source misattribution can occur