



**2024-25 FALL**

**FORENSIC  
PSYCHOLOGY**

**WEEK 6**

# EYEWITNESS EVIDENCE

# INTRODUCTION

## ➤ **November 2015 Paris attacks**

- The November 2015 Paris attacks were a series of coordinated terrorist attacks that took place on 13 November 2015 in Paris, France and the city's northern suburb, Saint-Denis.
- Beginning at 21:16 CET, three suicide bombers struck outside the Stade de France in Saint-Denis, during a football match.
- This was followed by several mass shootings and a suicide bombing, at cafés and restaurants.
- Gunmen carried out another mass shooting and took hostages at an Eagles of Death Metal concert in the Bataclan theatre, leading to a stand-off with police.
- The attackers were shot or blew themselves up when police raided the theatre.

# INTRODUCTION

- The attackers killed 130 people, including 90 at the Bataclan theatre.
- Another 413 people were injured, almost 100 seriously.
- Seven of the attackers also died while the authorities continued to search for accomplices.
- The attacks were the deadliest in France since the Second World War, and the deadliest in the European Union since the Madrid train bombings in 2004.
- France had been on high alert since the January 2015 attacks on Charlie Hebdo offices and a Jewish supermarket in Paris that killed 17 people and wounded 22, including civilians and police officers.

# INTRODUCTION

- The scenes they are describing are reminiscent of a **battlefield**:
- “It was **carnage**... There seemed to be **at least** two gunmen. They shot from the balcony. I saw **my final hour unfurl before me**. I thought this was **the end**. I thought **I’m finished**, I’m finished. I **was terrified**.” (Marc Coupris, as quoted in Chrisafis, 14 November 2015).

# INTRODUCTION

- Much of the information about the attackers is **consistent** across media reports. However, there are also **inconsistencies**. For example,
- Among the victims who were inside the Bataclan concert hall, some have reported that the **attackers said nothing** while they fired their weapons, whereas others have reported that they heard the **attackers shout**, “It’s for Syria”.
- Some victims have reported that one of the attackers was a **female**, while others have reported seeing only **male** attackers.
- Still other victims have reported they were **transfixed** by the pain and suffering of those around them, and **could not describe** what the attackers said or what they looked like.

# INTRODUCTION

- The accounts of the Paris attacks may **vary** because **witnesses attended to different aspects of the scene**, or because **differential exposure to stress and weapons** affected **memory storage** across witnesses.
- Different **factors affect memory retrieval**:
  - **delay between the event and witnesses giving information** to the police,
  - the **accuracy and completeness** of the testimony provided depends on the **type of questions** that are asked,
  - memories might be affected by **exposure to post-event information**, such as media reports.

# Witness testimony

- Witness testimony **plays a vital role in criminal investigation and in the courtroom**, providing a **first-hand account of a criminal event** to allow a judge and jury to **decide the guilt of a defendant**.
- **Psychologists** have long been **interested in factors** that contribute to the accuracy of **witness memory**.
- The **inaccuracy of witness identification and testimony** is often cited as a **leading cause of wrongful convictions**.



# THE MEMORY PROCESS

# THE MEMORY PROCESS

- When explaining **memory**, researchers often refer to **three stages**:
  - **encoding,**
  - **storage and**
  - **retrieval.**
- **At each stage, factors can operate to undermine the quality and accuracy of memory.**

# encoding

- involves the **creation of a memory** by an **observer**,
- the **quality of encoding** can be compromised by **the extent to which the observer is paying attention**.

# storage (retention)

- **After** the memory has been **encoded** the observer will **store the memory** for **later retrieval**.
- **Despite encoding** it clearly, the accuracy of one witness' **stored memory might be influenced** by hearing other people **describe the attack incorrectly**.
- **false memory**: a complex mixture of correct and incorrect information

# retrieval

- the **process** by which **memory** is accessed,
- in the **legal contexts**, involves the **witness explaining what happened during the event** to the police.
- **Witnesses may encounter difficulty** accessing their memories.
- *being interviewed in a police station, in an unfamiliar place, feeling under pressure to recount the event as accurately as possible, the police ask specific questions about details you are struggling to remember.*

# ESTIMATOR vs. SYSTEM VARIABLES

# ESTIMATOR vs. SYSTEM VARIABLES

- **Eyewitness testimony** can be a **crucial** and an **influential** source of evidence in criminal cases.
- Psychologist Gary Wells (1978) made an important **distinction** between two **types of factor affecting eyewitness accuracy**:
  - **estimator variables**
  - **system variables**

# ESTIMATOR vs. SYSTEM VARIABLES

- Estimator variables **cannot be controlled by the legal justice system**, so their impact has to be **estimated by legal professionals**.
- Estimator variables are **primarily related to the encoding and storage stages** of memory, particularly the characteristics of the crime event.
- Examples include factors such as:
  - **how stressed** the witness was,
  - **how far away** the witness was at the time of the event,
  - what **the lighting was like**, and
  - whether **the witness' memory was later contaminated** by conflicting accounts.
- Once the witness comes into **contact with the criminal justice system** (i.e. is interviewed by the police, writes a witness statement or is questioned in court), **estimator variables** will have already **exerted their influence** on the **quality and accuracy** of the memory.



# ESTIMATOR vs. SYSTEM VARIABLES

- **System variables** are most closely related to the retrieval stage of memory, and can be controlled by the criminal justice system.
- An example is the **kind of questions** (open or closed) posed to witnesses.
- **Legal professionals** have to manage their interactions with witnesses very carefully to minimize further damage to their memories.

# ENCODING FACTORS

# Stress

- **During a crime**, it is likely that witnesses will **experience relatively high levels of stress**, which can affect the clarity and accuracy of the memory they encode.
- Stress can have a **negative effect on memory recall accuracy**. (an **inverted U-shaped curve**)
- **Memory performance is optimal under moderate stress levels**, but **declines at the two extremes of physiological arousal**.

# weapon-focus effect

- weapon focus is an important factor in eyewitness memory accuracy
  - people **narrow their attention** to the weapon because of the **threat associated with it**
  - weapons **capture attention** because it is **so unusual to encounter** one in **everyday life**
- as **exposure length increases**, witnesses **shift their attention** away from the weapon and **towards the perpetrator**



Witnesses who experience “**weapon focus**” attend to the weapon but **fail to notice details** of the offender’s appearance.

# Change Blindness

- While observing a crime, you might **shift your attention** around, looking in one direction then another, to try and make sense of what is happening.
- Research suggests that **if a change occurs in the brief time** you are not looking, you might **not notice** it when you **revert your attention**.
- This surprising phenomenon is caused by **lapses in perception**.
- **Change blindness** is particularly likely to **occur** when **witnesses make assumptions about continuity**.

# Stereotyping

- **Crime events** can be highly **complex and difficult** to make sense of, resulting in a **high cognitive load at encoding**.
- **Available information** from the crime alone **can be confusing**, so as a way of creating a more coherent memory, people might **unknowingly make use of schemas and scripts**.
- Thanks to books, films and TV, we probably all have a **representation of what might happen during a crime**.
- This **representation might be used to try and fill memory gaps**.

# Stereotyping

- **The higher the cognitive load, the more likely** people are to **employ stereotypes** to increase coherence.
- *describing the suspect in a crime scenario as either a drug addict (negative condition) or a bank worker (positive condition)*
- In the **negative condition**, participants who had encoded the information under a **high cognitive load** remembered **more incriminating** details **than exonerating** details.
- These results show **memory operating** in keeping with the **negative stereotype**.

# Stereotyping

- **Older adults** appear to be susceptible to stereotype and **schema-based processing of crime information**, with **less typical features** of a crime being particularly likely to **be forgotten** by older witnesses.
- It is also necessary to consider the **facilitative effects of stereotypes on memory performance**.
- **Encoded information** that is **consistent with a stereotype or schema** might actually be **preserved very well**.
- In fact, there is evidence that **when people try to repress stereotypical thinking** they **make memory errors**.



# Intoxication

- When a crime occurs, it is relatively common for the **witness or victim to be intoxicated**.
- Participants who were **intoxicated during encoding recalled less**, and were less accurate than their **sober** counterparts.
- According to the **alcohol myopia framework**, **intoxication affects attention and encoding by narrowing focus to central details**, at the expense of **peripheral** details.

# Intoxication

- Some results even suggest that people's **preconceptions** about the effect of alcohol has on memory may be **more detrimental than the alcohol** itself.
- Participants who were **intoxicated during the encoding of a sexual assault** scenario provided significantly **less information** overall than their sober counterparts, the **accuracy** of the information they provided **did not differ** one day or four months later.

# Age

- Of all age groups, **young adults exhibit the most reliable memories.**
- **Older adults may be less accurate** because of **age-related declines in encoding** quality, which, for example, make it more **difficult to bind new information.**
- **Children** are also frequently found to make **less reliable witnesses**, although the completeness and accuracy of children's memories do improve in line with their age.
- **Younger children lack the life experience** that would enable them to employ useful **scripts and schemas** to help **make sense of an event**, and therefore to recall it accurately.

# STORAGE FACTORS

# Post-event Information

- **Separating witnesses while others testify** has long been relied upon by police investigators and in court as a means to preserve the independent character of witness testimony.
- These practices are **enacted in the legal system** to help **deter social conformity and misremembering** by eyewitnesses.
- Yet, people often **witness crimes in the presence of others**, and **discuss** what they saw with them.

# Post-event Information

- Through **subsequent discussion**, witnesses might **learn information** about the event that they **did not actually observe** themselves.
- **If** the witness **incorporates** this information into his or her **own testimony**, this can be **problematic for justice**.
- **Confabulation** caused by witnesses talking to each other can have a **detrimental impact on police investigations**.
- In psychology, **confabulation is a memory error** defined as the production of **fabricated, distorted, or misinterpreted memories** about oneself or the world.

# How do we come to conform our memory reports to another person's?

- **The updateable memory hypothesis** proposes that the **misinformation effect occurs** because **stored memories are overwritten** with the misinformation we encounter.
- According to this account, **memory is the product of reconstruction**, and we **continually reinterpret events** that we see.

# How do we come to conform our memory reports to another person's?

- Person who accepts the **misinformation embedded in the questionnaire** might **visualize the misleading detail** as part of the scene.
- The witness will then **assimilate the fragments of misinformation into their memory** of the event.
- When they come to **recall it**, their **memory will be based on all of the fragments, misinformation included.**



# When are witnesses most likely to report misinformation?

- **Processing the misinformation requires retrieval of the original event information.**
- **if they think that the other person's memory of the event is better than theirs,**
- **when the cost of disagreeing is large,**
- **when they are acquainted with one another,**
- **when the source of the information is a credible expert.**

# False Memories

- Can adults recover memories of sexual abuse they experienced as children?
- **Unpleasant memories can be suppressed.**
- People can suffer **global amnesia** and then spontaneously **recover memory**, typically **through therapy**.
- **Memories** for events that **did not actually happen** can be **implanted** by even well-meaning therapists.
- **Traumatic amnesia rarely occurs.**

# What is the underlying psychological mechanism that accounts for the development of false memories?

- False memories may **arise from source monitoring errors**:
- Other **similar memories are activated** when people imagine false events.
- **Memory traces** comprising elements of **true and false events** are formed.
- Subsequently, **when** people **retrieve a false event** from memory, they are not able to **discern the original source** of the information.

# What is the underlying psychological mechanism that accounts for the development of false memories?

- A false memory of an event depends on the **plausibility of the false event**.
- There are **individual differences** in **susceptibility to false memory** development, such as individual **capacity of working memory**.
- There is evidence of **repressed memory** for **abuse** suffered in **childhood**.

# Delay

- The **delay**, or **length of time**, between the crime and when the witness provides testimony, **can vary** from a few minutes to several years.
- All other things being equal, **information** is more likely to **be forgotten with longer delays**.
- **Memory reports** may be especially **accurate** when witnesses are **interviewed immediately after the crime**, because **memory traces** are the **strongest, most accessible and most available**.
- **Memory** initially **decays rapidly**, followed by a much **slower decline**.

# Delay

- The **extent to which memories are forgotten** depends on whether a person has had their **memory tested during the retention interval**.
- Repeated interviews have complex effects on memory reports. Across **repeated interviews**, studies find evidence of **hyperamnesia, reminiscence** and **increased inconsistencies**.
- Additionally, information is more likely to be **accurately reported across interviews** when it is **consistent with a crime schema** (i.e. conceptual knowledge structures regarding a crime, including events, roles and scenes).

# Emotional and Traumatic Memories

- Are some memories more resistant to decay over time?
- **Flashbulb memories** arise from a special memory mechanism that **produces** highly **vivid, accurate** and **detailed memory traces**.
- Flashbulb memories are **retained for a long time**, perhaps indefinitely, with **people accurately remembering the original event and its reception context** (i.e. where they were when the event occurred, who they were with, what they were doing, the aftermath of the event, personal and other people's reactions to the event).

# Emotional and Traumatic Memories

- **Emotional memories** are often recalled with a high degree of **vividness**.
- There is evidence that **emotional memories** may be more **accurately remembered**.
- **Concentration camp survivors' memories**, particularly for information central to the **traumatic experiences**, were **accurate** and **consistently reported decades later**. One reason emotional memories may be better remembered is because they are **often rehearsed**.



# Emotional and Traumatic Memories

- However, people's memories for significant **emotional events may not always be especially accurate**, even when the memory seems vivid.
- There is evidence that **memories of highly symbolic events** are influenced by **reconstructive processes**, and are **altered over time**, as the event becomes more **personally important and emotionally impactful**.

# RETRIEVAL FACTORS

# Question Format

- **The format in which questions are asked** can influence the accuracy of the response given.
- With an **open-response format** (e.g. “Describe the attacker”), the participant is asked to **freely report information** that they remember.
- A **closed-response format** limits the response of the witness (“What colour was the attacker’s shirt?”), as do **yes/no questions** (“Was the attacker’s shirt black?”).
- The **accuracy and completeness of the response** varies dramatically, depending upon **question format**.

# Question Format

- People **tend to provide accurate answers** more often to **open-ended** questions, and to questions that are **less specific**.
- People find questions **difficult to answer** involving:
  - **double negatives** (“Did the man not tell you not to get on the ground?”),
  - **compound questions** (“Did the men enter the premises at 9:30? Did you look for an exit?”),
  - **questions with complex syntax** (“Before or after you ran away, did the men move towards the front or the back of the room?”)

# Suggestive Questioning

- **Leading questions** suggest to witnesses the answer that is required.
- In their groundbreaking study, Loftus and Palmer (1974) demonstrated that **leading questions influence responses**.
- Loftus and Palmer (1974) showed participants films of road accidents and found that when questioned later, **the severity of the verb used** (“smashed” vs. “bumped”) **influenced the estimates of speed of the vehicle** involved.
- The **severity implied in the question** had **influenced their memories** of the original event.

# Retrieval Enhancement

- Psychologists have also identified techniques for **enhancing the recall of events**. One technique is the **cognitive interview**, which is based on **supplementary techniques** or **mnemonics** for enhancing **memory retrieval**.
- One method is the use of a **timeline technique** to help witnesses establish in their testimony the **temporal context** of the event.
- The **testimony of children and vulnerable adults** is **influenced** by numerous factors.

# Do Confident Witnesses Make Accurate Witnesses?

- Research has shown that the **relationship between confidence and accuracy** can be **complex, depending on the circumstances**.
- It is common for **witnesses to be repeatedly questioned at various stages** about what they saw, and **confidence can increase** across interviews, particularly for **speculative information**.
- Similarly, **people often feel under great pressure to provide useful testimonies**.

# The Accuracy-Informativeness Trade-off

- **When** witnesses are **questioned** by the police, they face **competing demands**:
  - On the one hand, they are in a role that requires them to **report as much information as they possibly can** about the crime that they witnessed.
  - On the other hand, **the testimony** they provide **should also be accurate**.
- The attempt to resolve these competing demands is known as the accuracy-informativeness trade-off.
- How do witnesses resolve this dilemma?



# The Accuracy-Informativeness Trade-off

- One way in which they might do it is by **regulating the granularity, or level of detail they provide** in their responses.
- Participants responded to questions that required both **fine-grained** (e.g. a specific colour, or a specific number) and **coarse-grained** (e.g. the overall tone, or a numeric range) answers.

# SUMMARY

- The **accuracy of witness memory** can be affected at all **three different stages of memory**, including **encoding, storage and retrieval**.
- Wells has distinguished between **estimator and system variables**, in an effort to identify how the **legal system might work** to improve the accuracy of **witness testimony**.
- **Witness factors** such as **age and intoxication** are associated with the **accuracy of testimony**.

# SUMMARY

- Research has investigated a number of factors that affect memory encoding, including **stress, change blindness, stereotyping** and **weapon exposure**.
- A number of factors that affect memory storage have been investigated, including exposure to **post-event information**, the **emotional nature of the memory**, and **delay**.
- Retrieval factors associated with accuracy have also been studied by researchers, including **question format, suggestive questioning**, and the **informativeness-accuracy trade-off**.