

Long-term memory and Eyewitness Testimony

Aims of the Lecture

- ▶ Recap defining long term memory
- ▶ Discussion on Declarative vs Non Declarative Memories
- ▶ Discussion on Implicit Memories and Priming.
- ▶ Encoding and Self-Referent Effect.
- ▶ To Discuss Flashbulb Memories
- ▶ To Discuss Eye Witness Testimony

Long-term memory (LTM) the final stage of the multi-store memory model proposed by the Atkinson-Shiffrin, providing the lasting retention of information and skills.

Bahricks et al. (1975) -very long term memory (VLTM). Nearly 400 participants aged 17 - 74. Tests: A free recall test, where participants tried to remember names of people in a graduate class. A photo recognition test, consisting of 50 pictures. A name recognition test for ex-school friends.

The diagram features two large circles connected by two large arrows. The left circle is orange and contains text about the Bahricks et al. (1975) study. The right circle is red and contains text about the results. A large orange arrow points from the left circle to the right circle, and a large red arrow points from the right circle back to the left circle, indicating a reciprocal relationship or a cycle of information.

Results - participants who were tested within 15 years of graduation were about 90% accurate in identifying names and faces. After 48 years they were accurate 80% for verbal and 70% visual. Free recall was worse. After 15 years it was 60% and after 48 years it was 30% accurate.



Long Term Memory

One of the earliest and most influential distinctions of long-term memory was proposed by Tulving (1972).

- ▶ Explicit (declarative) memories
 - ▶ Memories of facts
 - ▶ Episodic - personal experiences tied to places & time (memories for events that happened to you)
 - ▶ Semantic - general knowledge/your organised knowledge about the world, words and other factual information capital of France...
- ▶ Implicit (non-declarative) memories
 - ▶ Procedural (Implicit - a 'know how' memory)
 - ▶ Memories of behaviours, skills, etc.
 - ▶ Demonstrated through behaviour



Long Term Memory

Cohen and Squire (1980) drew a distinction between **declarative knowledge** and **procedural knowledge**. Procedural knowledge involves “knowing how” to do things. It included skills, such as “knowing how” to playing the piano, ride a bike; tie your shoes and other motor skills. It does not involve conscious thought (i.e. it’s unconscious - automatic). For example, we brush our teeth with little or no awareness of the skills involved.



Whereas, declarative knowledge involves “knowing that”, for example London is the capital of England, zebras are animals, your mum’s birthday etc. Recalling information from declarative memory involves some degree of conscious effort - information is consciously brought to mind and “declared”.

LTM

However, their procedural memory appears to be largely unaffected. They can recall skills they have already learned (e.g. riding a bike) and acquire new skills (e.g. learning to drive).



Evidence for the distinction between declarative and procedural memory has come from research on patients with amnesia.



Typically, amnesic patients have great difficulty in retaining episodic and semantic information following the onset of amnesia.

Their memory for events and knowledge acquired before the onset of the condition tends to remain intact, but they can't store new episodic or semantic memories. In other words, it appears that their ability to retain declarative information is impaired.

Implicit Memories

Priming Effects

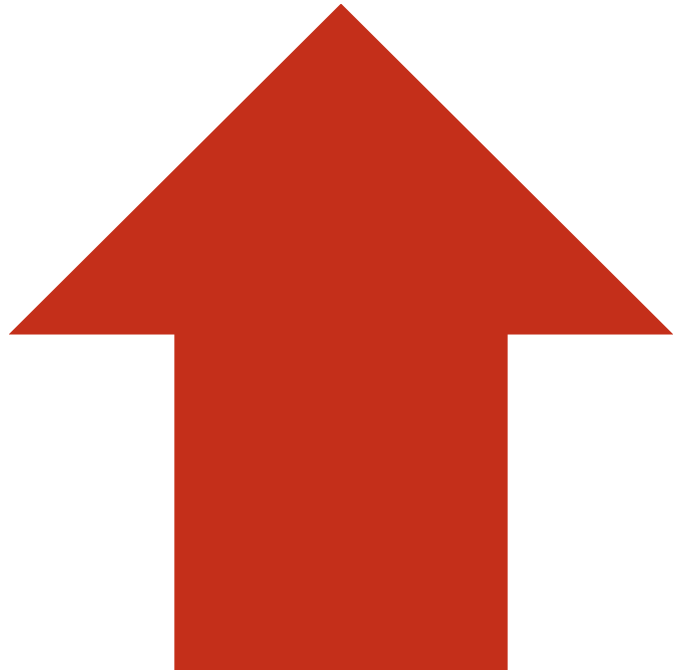
- Activating particular associations in memory just before carrying out an action or task.
- Eg, a person who sees the word "yellow" will be slightly faster to recognize the word "banana."
- This happens because yellow and banana are closely associated in memory.

The word NURSE
is recognized
more quickly
following the
word DOCTOR
than following
the word BREAD

The
terms *positive* and *negative* priming
refer to when priming affects the
speed of processing. A positive
prime speeds up processing, while a
negative prime lowers the speed to
slower than un-primed levels.

Long-term memory - Encoding

Information can be kept alive in short-term working memory by rote repetition or maintenance rehearsal.



But to transfer something into long-term memory, you would find it much more effective to use **elaborative rehearsal** - a strategy that involves thinking about the material in a more meaningful way and associating it with other knowledge that is already in long-term memory.

Elaborative rehearsal

Linking of new information to the self.

- participants looked at forty trait words (for example, **shy**, **friendly**, **ambitious**).
- some were told to judge whether the words were self-descriptive;
- others asked to judge the word's length, sound, or meaning.
- recall as many of the words as they could
- participants remembered more after thinking about the words in reference to themselves than for other purposes.

A technique for transferring information into long-term memory by thinking about it in a deeper way

The more deeply you process something, the more likely you are to recall it at a later time.

Long-term memory - Encoding

Levels of processing

- Semantic is more effective than visual or acoustic processing
- Craik & Tulving (1975)

Self-referent effect

By viewing new info as relevant to the self, we consider that info more fully and are better able to recall it.

Retrieval

Explicit Measures

Recall: learn a list of words. Then recollect the material learned. The number of items correctly recalled becomes the measure of explicit memory.

Recognition: the learner is presented with the previously learnt items or words mixed with new items and his or her job is to identify the previously learned items. Usually recognition is found to be a more sensitive measure than recall.

Implicit Measures

Word Completion: the learner is presented with fragments of words, then asked to complete the fragmented word (f – sh)

Priming Task: earlier background activities (e.g., reading a story) may help to complete fragments of word in a particular manner.

In both of the above mentioned tasks the learner is not explicitly asked to remember.

The Context Matters!!!



- ▶ Flashbulb Memories (Brown & Kulik, 1977)
 - ▶ Medgar Evers vs. Kennedy
 - ▶ Neisser (1982) -FBM is a result of rehearsal and reworking
- ▶ Mood Congruent Memory
- ▶ State Dependent Memory

Eyewitness Testimony

Eyewitness testimony is a legal term. It refers to an account given by people of an event they have witnessed.

However, research into this area has found that eyewitness testimony can be affected by many psychological factors:

Leading Questions (Loftus and Palmer, 1974)

Anxiety / Stress

Weapon Focus

Reconstructive Memory

Juries tend to pay close attention to eyewitness testimony and generally find it a reliable source of information.

Crime Scene Challenge

- ▶ You will have 2 minutes to study the photograph of a crime scene on the next slide.
- ▶ Try to pay attention to details as you will be asked 10 questions about the crime scene!
- ▶ You are not allowed to write anything down until after the time is up.
- ▶ Ready?





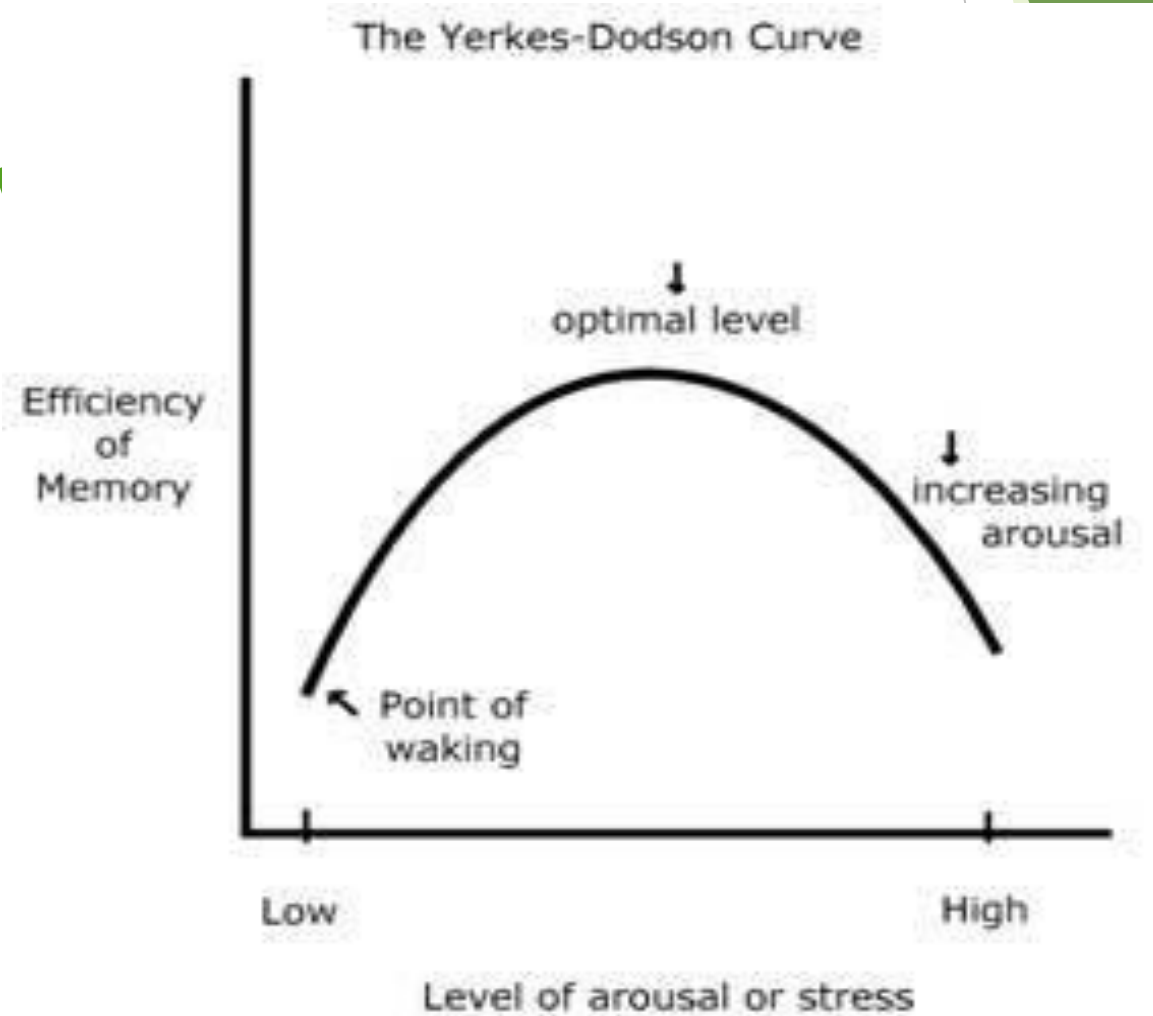
Answer each question below.

1. What color coffee mug was in the picture? Blue Red **Yellow**
2. When was the deadline? Yesterday **Today** Tomorrow
3. What time was on the clock on the wall? 10:40 **11:05** 1:55
4. How many sticky notes were on the whiteboard? Four **Six** Eight
5. Which of the following was NOT in the picture? **Stapler** Trash Can Printer
6. What was the name on the plaque on the desk? Bill **Brian** Carl
7. What color was the victim's shirt? Black **Blue** Red
8. How many plants were in the picture? None One **Two**
9. What was the color of the marker in the desk drawer? Red Blue **Green**
10. Where was the book in the picture? **On a box** In the trash can Under the body

Anxiety / Stress

Almost always associated with real life crimes of violence. Deffenbacher (1983) reviewed 21 studies and found that the stress-performance relationship followed an inverted-U function proposed by the Yerkes Dodson Curve (1908).

This means that for tasks of moderate complexity (such as EWT), performances increases with stress up to an optimal point where it starts to decline.



Anxiety / Stress

Clifford and Scott (1978) - people who saw a film of a violent attack remembered fewer of the 40 items of information about the event than a control group who saw a less stressful version. As witnessing a real crime is probably more stressful than taking part in an experiment, memory accuracy may well be even more affected in real life.



However, a study by Yuille and Cutshall (1986) contradicts the importance of stress in influencing eyewitness memory.

They showed that witnesses of a real life incident (a gun shooting outside a gun shop in Canada) had remarkable accurate memories of a stressful event involving weapons.

Anxiety / Stress

One weakness of this study was that the witnesses who experienced the highest levels of stress were actually closer to the event, and this may have helped with the accuracy of their memory recall.

The police interviewed witnesses, and thirteen of them were re-interviewed five months later.

Recall was found to be accurate, even after a long time, and two misleading questions inserted by the research team had no effect on recall accuracy.

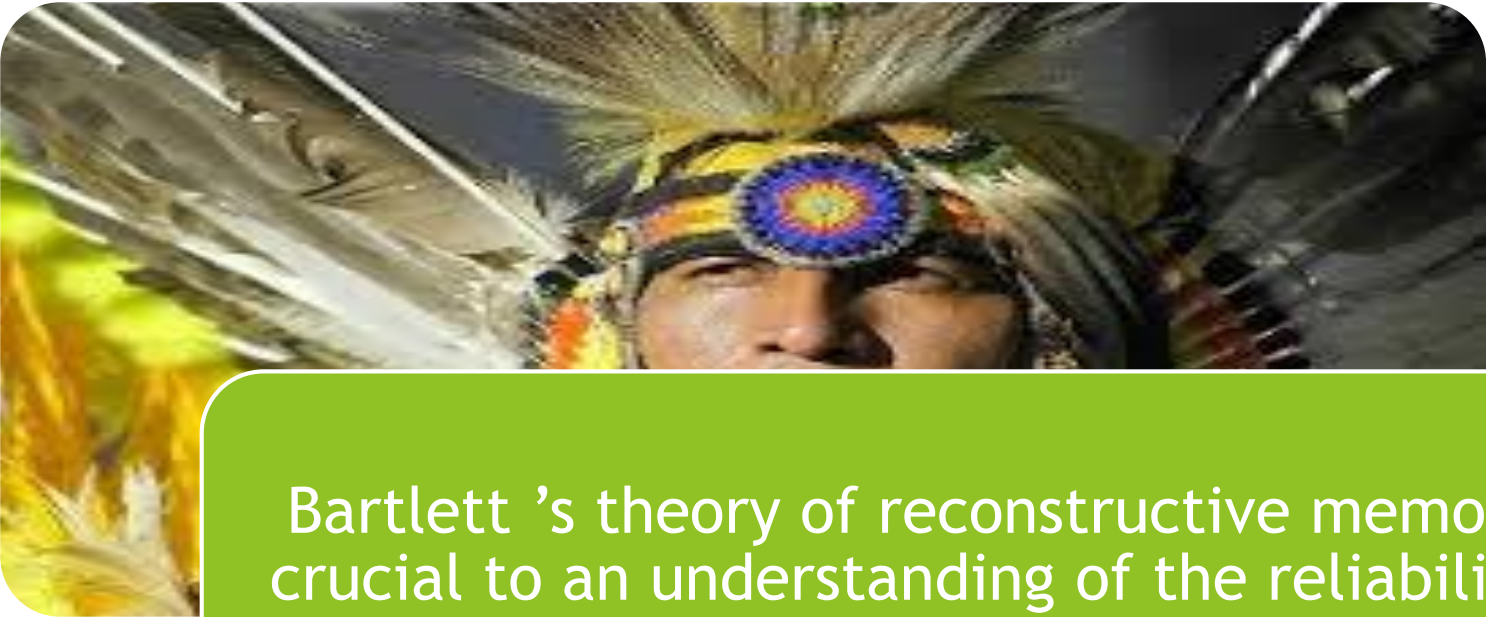
The Yuille and Cutshall study illustrates two important points:

1. There are cases of real-life recall where memory for an anxious / stressful event is accurate, even some months later.



2. Misleading questions need not have the same effect as has been found in laboratory studies (e.g. Loftus & Palmer).

Reconstructive Memory



Bartlett's theory of reconstructive memory is crucial to an understanding of the reliability of eyewitness testimony as he suggested that recall is subject to personal interpretation dependent on our learnt or cultural norms and values, and the way we make sense of our world.

People store information in the way that makes the most sense to them. We make sense of information by trying to fit it into schemas, which are a way of organizing information

Schemas are mental 'units' of knowledge that correspond to frequently encountered people, objects or situations. They allow us to make sense of what we encounter in order that we can predict what is going to happen and what we should do in any given situation. These schemas may, in part, be determined by social values and therefore prejudice.

Schemas are therefore capable of distorting unfamiliar or unconsciously 'unacceptable' information in order to 'fit in' with our existing knowledge or schemas. This can, therefore, result in unreliable eyewitness testimony.



Bartlett tested this theory using a variety of stories to illustrate that memory is an active process and subject to individual interpretation or construction.

Reconstructive Memory



His participants heard a story and had to tell the story to another person and so on, like a game of "Chinese Whispers".



'War of the Ghosts', Bartlett (1932) showed that memory is not just a factual recording of what has occurred, but that we make "effort after meaning" - we try to fit what we remember with what we really know and understand about the world. As a result, we quite often change our memories so they become more sensible to us.

Weapon Focus

This refers to an eyewitness's concentration on a weapon to the exclusion of other details of a crime. In a crime where a weapon is involved, it is not unusual for a witness to be able to describe the weapon in much more detail than the person holding it.

Loftus et al. (1987) showed participants a series of slides of a customer in a restaurant. In one version the customer was holding a gun, in the other the same customer held a chequebook. Participants who saw the gun version tended to focus on the gun. As a result they were less likely to identify the customer in an identity parade than those who had seen the chequebook version.



However, a study by Yuille and Cutshall (1986) contradicts the importance of weapon focus in influencing eyewitness memory.



Constructive Memory

Elizabeth Loftus

Memories are not always what they seem.

A constructed memory is a created memory.

Misinformation effect

According to The Innocence Project (2008) "Eyewitness misidentification is the single greatest cause of wrongful convictions nationwide, playing a role in more than 75% of convictions overturned through DNA testing."



Still, the criminal justice system profoundly relies on eyewitness identification and testimony for investigating and prosecuting crimes (Wells & Olson, 2003).

Loftus & Palmer (1974) -

Aim: - To see the effect of leading questions on Eye Witness Testimony



The first group were asked - “How fast were the cars going when they **hit** each other?”

For the other group the words: - **smashed into** each other were substituted.

A control group were not asked about speed.

A week later they were re-interviewed and asked: - “Did you see any broken glass?”

A laboratory experiment. Three groups of students, after watching a film of a car crash were asked questions (an independent measures design)

Results

The **smashed** group's average estimated speed was 41mph

The **hit** group's average estimated speed was 34mph

These words have very different connotations regarding speed and force of impact.

The word **smashed** tends to imply broken glass and it is feasible to expect broken glass at a car accident.

They unconsciously incorporated these connotations into their memory of the event and it had affected their judgement of speed and memory of the scene.

Although there was no broken glass at the scene 32% of the participants who heard the word **smashed** said there was, compared to only 14% of the **hit** group and only 12% of the control group.

Can Eyewitness Testimony Be Improved?

A **cognitive interview** is a technique whereby a trained interviewer tries to improve eyewitnesses' memories by focusing their attention on the details and context of the event.

mentally reinstate the environmental
and personal context of the crime

report every detail

different perspective

different narrative
order.

Additional Work

- ▶ Watch this video
- ▶ <http://gocognitive.net/interviews/introduction-phonological-loop>
- ▶ Watch the EWT video on moodle and answer the questions

References

- ▶ Best, J. (1999) Cognitive Psychology. ITP: Wadsworth Publishing Company.
- ▶ Eysenck, M.W and Keane, M.T. (2005) Cognitive Psychology. New York: Psychology Press.
- ▶ Gross, R.D. (2005). Psychology: The Science of Mind and Behaviour. London: Hodder and Stoughton.
- ▶ Hayes, N. (1998) Foundations of Psychology: An introductory text. Surrey: Thomas Nelson and sons Ltd.
- ▶ Matlin, M.W. (2009) Cognitive Psychology. 7th Edition: John Wiley & Sons.

Further Reading

Current issues in applied memory research

http://tsd-c.worldcat.org/title/current-issues-in-applied-memory-research/oclc/503451429&referer=brief_results

Impact of expert psychological testimony on the unreliability of eyewitness identification.

http://tsd-c.worldcat.org/title/impact-of-expert-psychological-testimony-on-the-unreliability-of-eyewitness-identification/oclc/113581176&referer=brief_results

Ten years in the life of an expert witness.

<http://web.ebscohost.com/ehost/detail?sid=4ff09168-bb79-4c75-b3c0-1b8d0b25d4f2%40sessionmgr104&vid=1&hid=123&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=pdh&AN=1987-00988-001>

Further Reading

Memory by Alan D Baddeley; Michael W Eysenck; Michael C Anderson

- ▶ http://tsd-c.worldcat.org/title/memory/oclc/237880710&referer=brief_results

Memory and cognition journal

- ▶ http://tsd-c.worldcat.org/title/memory-cognition/oclc/45405146&referer=brief_results
- ▶ <http://aja.ncsc.dni.us/publications/courtrv/cr48-1-2/CR48-1-2Wise.pdf>