Reliability of memory - revisited for exams

This factsheet explores reliability of memory, from looking at how memories are formed and stored to the factors that may influence memories being retained or forgotten. A range of theories and studies will be explored and evaluated along with advice and guidance on how to answer exam questions. Words in bold are explained in the glossary and the worksheet provides an opportunity to practice what you have learned.

The examiners will expect you to:

- Demonstrate a clear understanding of the key concepts of the topic (e.g. that memory is part of the cognitive approach to psychology and the role of schemas in memory).
- Be able to discuss the possible reasons for some types of memory being more easily recalled than others (e.g. the accuracy of flashbulb memories).
- Be able to discuss under what conditions memory is more likely to be either reliable or unreliable (e.g. laboratory conditions or real life).
- Have a secure knowledge of a range of studies and theories which consider reliability of memory.
- Be able to link question, theory and study coherently.
- Show strong essay-writing skills by incorporating key evaluation and exam hint: if you are going to use the MSM of memory in an answer on reliability of memory you need to focus on the ways in which memory can be seen to be reliable in the context of the model and its studies. Simply focusing on the model as a way of conceptualising memory is not enough for the purpose of this question.

Schemas and memory

Schemas are mental representations of the world – for example an individual may develop a schema for ‘birds’ which contains the knowledge that birds fly, have feathers, eat worms, have beaks. An individual’s schema set develops based on his or her experience of the world and the knowledge they have obtained about the world so far. Schemas are linked to memory because they help to inform and guide our recall of events – and sometimes they can interfere with a reliable version of events being remembered.

Schemas work by:

- Organising information in the memory
- Providing prompts or cues for the memory
- Providing expectations about the information being encoded
- Providing stable ideas about the world which are resistant to change.

Bartlett’s War of the Ghosts study

In one of the earliest experiments to investigate the way that schemas affect memory Frederick Bartlett (1932) carried out a piece of research that highlighted an unreliable aspect of memory. His study involved asking a sample of male Cambridge University students to read a Native American folk tale called The War of the Ghosts. The tale included details that the participants were unfamiliar with (e.g. place names, hunting implements) and supernatural details that did not accord with Western ideas of war (e.g. a spirit wound rather than a flesh wound).

After the participants had read the story they were asked to tell the story to another participant who in turn tells it to another and so on. This process is known as serial reproduction. What Bartlett found was that the story became much shorter than the original version; place names were left out and some unfamiliar details were ignored. The most interesting findings related to how the participants’ schemas had distorted the recall of the story – they tended to make the story fit with their own cultural understanding and experience.
of the world. So, unfamiliar activities such as hunting seals were changed to more easily recognisable pastimes such as fishing. Canoes became simply ‘boats’ and the spiritual element of the story was largely lost.

What does this tell us about the reliability of memory? Bartlett concluded that his study demonstrated that memory is an active reconstructive process rather than a simple recall process. His study highlights the way in which cultural schemas can interfere with memory at the point of retrieval by imposing the familiar world-view on unfamiliar ideas.

Exam Hint: examiners report that not enough candidates are clear as to how this study was carried out, often making errors as to the nature of serial reproduction. It is important to get study details correct in an exam, particularly with regard to terminology. Confident use of accurate terminology can really enhance your exam performance.

Other schema-based studies:

Bransford & Johnson (1972) – recall for a piece of text is much easier if the text has been given a title compared to if the text is presented without a title; schemas in this case help to activate memories by contextualising the information.

Macrae et al (1994) – participants who had been told someone’s job title found it easier to assign stereotypical personality characteristics to them than those who hadn’t eg if the person was a doctor then participants were more likely to describe them as intelligent, caring, reliable and hard-working.

Allport & Postman (1947) – participants who saw an image of a black man and a white man on a train were much more likely to report that the black man was holding a cut-throat razor when in fact it was the white man.

Exam Hint: it is worth considering the year in which a particular study was carried out when you are evaluating it. Some studies might yield different results if replicated with a 21st century sample of participants. The Allport and Postman study (above) for example may well be a product of its time as it was carried out well before the Civil Rights movement in the USA.

Eye-witness testimony and reliability of memory

http://commons.wikimedia.org/wiki/Car_crash#mediaviewer/File:Japanese_car_accident.jpg

Eye-witness testimony (EWT) is widely used as a means of identifying suspects and securing a conviction. There are, however, mistakes and confusion that can arise from EWT that can result in an innocent person being charged and convicted of a crime. Elizabeth Loftus is the foremost researcher in this area of psychology, having run several studies and delivered lectures on the dangers of relying too heavily on EWT in police interviews and in court.

Her major concerns with the use of EWT are that:

- People may reconstruct memory of a crime to fit their schemas
- The way in which a question is asked may influence a witness’ memory and produce an incorrect version of the incident
- Cross-cultural EWT is fallible as people find it much harder to distinguish facial features of someone who is from a different ethnic group.

Loftus & Palmer (1974) tested the reliability of EWT in a study which involved 5 separate groups of participants who watched a series of the same car crashes on a video. They were then asked questions about what they had seen. One of these questions was the critical question, which formed the independent variable of the study. This question asked the participants ‘at what speed were the cars going when they contacted/hit/bumped/collided into each other’ – each group experienced one of these verbs. The results revealed that ‘smashed’ received the highest speed estimates with a mean of 40.8 mph while ‘contacted’ was the lowest with 31.8 mph. Loftus and Palmer concluded that interference from the schemas associated with the verbs (ie ‘smashed’ sounds more violent than ‘contacted’) had produced the range of different responses. A follow-up study revealed that participants in the ‘smashed’ condition reported having seen broken glass more times than the ‘contacted’ group even though no broken glass was present.

Exam Hint: be careful not to state that Loftus and Palmer’s study (or any piece of psychological research) ‘proves’ that memory can be unreliable. It is much better to say that the research ‘demonstrates’, ‘supports’, ‘highlights’ or ‘provides evidence for’ a theory or concept. Proof in psychological research is almost impossible to obtain due to the changing and unpredictable nature of human behaviour.

Other key Loftus studies into EW

Loftus & Zanni (1975) – participants were much more likely to say they’d seen the broken headlight rather than a broken headlight; the changing article triggered a different response due to ‘the’ seeming to point to something specific that had been present at the scene.

Loftus et al (1987) – participants who had seen a man holding a pen were better able to identify him from 50 photographs than participants who had seen a man carrying a blood-soaked knife – this is known as the weapon focus effect, where memory for a face is hampered due to the witness focusing on the weapon instead.

Interestingly, Loftus points out that it is not possible to mislead witnesses when they are presented with information that is blatantly incorrect. In a 1979 study she was able to show that participants were not misled about the colour of a stolen purse (98% accurately recalled it as red). This highlights the idea that false information which relates to insignificant details rather than key issues is more likely to be distorted in recall. A time delay also tends to affect accurate memory for events as does after-the-fact information.

Exam Hint: the bulk of EWT research has been conducted using laboratory experiments. It might be a good idea to suggest improvements to lab-based studies when you are evaluating them. What might the effects be of turning one of Loftus’ studies into a field study in a naturalistic setting? What practical considerations would have to be made to do this? What ethical issues are there with changing the method? Can you still retain reliability if you lose control of extraneous variables?
A gun store owner in Canada was tied up in his shop by a thief. The thief fired two shots at the store owner from six feet away. The store owner managed to free himself, picked up a gun and as a result fired all six shots from his gun, killing the thief.

There were 21 witnesses to this event, some close to the scene (FBM).

A study by Yuille & Cutshall (1986) underlines the idea that important information witnessed at the scene of an emergency or dramatic event is much less resistant to being distorted by leading questions or misinformation. The sequence of events which led to this field study taking place is as follows:

- A gun store owner in Canada was tied up in his shop by a thief who then proceeded to steal money and several guns.
- The store owner managed to free himself, picked up a gun and went outside the shop where he encountered the thief who was about to drive away from the scene.
- The thief fired two shots at the store owner from six feet away. The store owner fired all six shots from his gun, killing the thief.
- There were 21 witnesses to this event, some close to the scene of the shooting, some across the street, in adjacent buildings.
- 4 to 5 months later 13 witnesses agreed to be interviewed by the researchers who involved verbatim accounts of the event plus questions – 2 of which were leading questions.

A massive amount of accurate detail was generated (from information given to the police as well as the researchers) with the most detailed accounts being given to the researchers. This is probably because the police asked questions which related only to the crime itself rather than to other details (such as the colour of a car nearby). Interestingly it was the witnesses who had been closest to the event who gave the most detailed accounts and who were the most accurate witnesses. What directly contradicts Loftus and Palmer (1974) is that the leading questions had no effect on the accuracy of the memory – in this case memory was shown to be very reliable. The witnesses who had been most affected by the event, showing deeper levels of distress than others, also gave the most accurate accounts of the event.

Studies which support the idea that memory can be reliable

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What does this tell us about the nature of memory?

This study points to the idea that emotional memories may elicit a better version of an event than when the event is neutral or lacking in dramatic value. It may be that the participants in the Yuille and Cutshall study formed a flashbulb memory (FBM) of the event, thus cementing the event and peripheral details firmly in their minds. Brown & Kulik (1977) introduced the idea of FBM as a memory which is vivid, detailed and which may contain highly personal, emotional information or which may be linked to a dramatic world event (eg the twin towers attack). Their research demonstrated that people tend to have very distinct memories of where they were, what they were doing and what they felt when they heard of events such as the death of Princess Diana or the 9/11 terrorist attacks. A high number of their participants also reported FBM associated with personal events such as the death of a relative.

There are, however, some limitations to FBM theory, the main criticism being that after-the-fact information may distort the memories, even though the person who claims to have that memory denies that this interference has taken place.

Talarico and Rubin (2003) asked participants to recount their memories of the 9/11 terrorist attacks at specific intervals to avoid an inadvertent “rehearsal effect,” in which a memory gets strengthened through each retelling. They found that the consistency and accuracy of both 9/11 flashbulb memories and everyday memories declined over time, at comparable rates. The participants, however, thought something quite different was going on.

Participants believed that their 9/11 memories were much more accurate than their everyday memories. One finding in particular interested Rubin: people had already changed their stories of how they heard about the attacks over just a few days, from the day after the event to one week later. “Because at that point you’ve told 35 people how you heard about it, and it’s been solidified in your memory the way you’re telling it, not necessarily how it really happened,” he explains.

The biggest 9/11 study carried out to date was led by Hirst and Phelps (2001). In this seven-city investigation, 3,000 adults answered survey questions about their memories of learning about the attacks at three points in time: one week, 11 months and 35 months later. Hirst and his team looked at how people’s flashbulb recollections, such as where and from whom they learned of the attacks, compared with their factual recollections, such as which airlines and how many airplanes were involved.

It turned out that the rate of forgetting for both types of memory slowed and stabilized after a year. But overall flashbulb recollections declined more than factual recollections, possibly because nonstop media coverage bolstered people’s factual memories.

Exam Hint: It is important to point out the differences in the methods used by Yuille and Cutshall compared to the studies carried out by Loftus. A good answer should focus on the ways in which reliability and validity differ for studies carried out in the field as opposed to the controlled conditions of a lab experiment. The fact that this study relies on witness self-reports means that it may be subject to lying or social desirability. The consistency of the accuracy of the witness reports should, however encourage you to consider that reliability might be higher in this study than in other pieces of research based on real events.

So, what’s the best way to encourage reliable memory for an event?

An increasing number of police forces are using the cognitive interview as a means of obtaining reliable witness statements. The cognitive interview is structured as follows:

- Reinstating the context – the context of the event is recreated during the interview (surroundings, temperature, sights, smells, sounds, feelings) first
- Reporting the event – the witness is asked to report absolutely everything no matter how irrelevant or unimportant it might seem. They will then be asked to do this in several orders (ie reverse, from middle of account, just after etc.)
- Reporting the event from multiple perspectives – the witness is asked to recall the event from the perspective of others involved in the crime eg the store owner who was held up at gunpoint.
Studies into the effectiveness of the cognitive interview (Geiselman 1985; Fisher and Geiselman 1988) highlight that the cognitive interview produces more information than the standard police interview and it is less susceptible to producing misinformation from leading questions.

Exam Hint: When discussing to what extent memory is reliable it is important to consider the conditions under which memory has been found to be either reliable or unreliable. Choose your research evidence carefully so that you really are backing up the points you make using studies that directly measure the issue of reliability in memory. An essay which simply concludes that memory is unreliable is not addressing the studies which have shown otherwise. It is easier for a researcher to demonstrate unreliable memory under lab conditions as there are fewer extraneous variables to contend with as opposed to a study which takes place in the field or which asks for participants’ personal recall of events.

Glossary

**After-the-fact information** – information about an event which is received after the event has taken place and which may affect memory of that event.

**Cognitive approach** – a way of investigating behaviour which focuses on the way that the mind processes information in the form of memory, perception, language etc.

**Cognitive interview** – this method encourages witnesses to recreate the original context in which the information of the event was originally encoded.

**Encoding** – the manner in which sensory information is picked up by the senses as the first part of the memory-formation process.

**Extraneous variables** – any variable in a study which is not part of the study and which may confound the results if not controlled for (eg noise, temperature, time of day, mood of pps).

**Flashbulb memories** – a memory which is highly vivid and detailed which may relate to a personal event in someone’s life (eg being involved in a car crash) or to a worldwide event which is dramatic or shocking (eg the twin towers attack of 9/11).

**Independent variable** – the variable that is manipulated by the researchers to test for an effect on the dependent variable.

**Lab experiments** – a way of investigating behaviour which involves using controlled conditions in which a manipulated variable (the IV) is tested to look for an effect on the dependent variable.

**Leading question** – a question which suggests what the response should be due to the choice of words (eg ‘tell me about your excessive alcohol intake’).

**Long-term memory** – this memory store is thought to hold long-lasting memories and to have an infinite capacity.

**Mean** – a measure of central tendency in which all scores/values are taken into account and an average score/value is generated.

**Reconstructive memory** – a memory that has been changed possibly due to the activation of schemas or to after-event information.

**Rehearsal** – information that has been repeated or has been encountered several times.

**Reliability** – the extent to which a study can be replicated, showing the same results each time; the consistency of the method used.

**Retrieval** – the process by which memories are located and recalled in the mind.

**Schemas** – an organised structure of knowledge in the form of a mental representation of something eg a school schema may involve knowledge of what happens in a school (eg lessons) alongside a collection of more personal experiences (eg being excluded).

**Self-Report** – a way of investigating behaviour which takes the form of asking participants for their opinions, attitudes, ratings on a topic either via a questionnaire or an interview.

**Serial Reproduction** – the telling and re-telling of the same story by different people in turn in which the story may alter over the course of the process.

**Short-term memory** – a temporary memory store which holds information briefly and has a capacity to hold 5-9 items at a time.

**Storage** – the way in which the mind stores memories.

**Validity** – the confidence that a researcher may have that their study is measuring what it set out to measure.

**Verbatim** – an account of an event word-for-word as the witness experienced it first-hand.

**Weapon focus effect** - this is what happens when a witness focuses their attention on the weapon carried by a criminal at a crime scene rather than on the facial features of the criminal.
1. Copy out the Multi-Store Model of memory and write a paragraph which explains how this model conceptualises the idea of two separate memory stores.

2. Bartlett’s War of the Ghosts study was carried out in 1932 with a sample of male Cambridge University students.
   - How have attitudes towards other cultures changed since 1932?
   - How might a more enlightened attitude to other cultures affect the outcome of this study?
   - Do you think this study is lacking in reliability or validity or both?

3. Loftus and Palmer (1974) suggest that a leading question can alter the memory of an event. How might their results have been different if:
   a) The sample was a mixed age range (eg a sample ranging from 18 – 50?)
   b) The study had involved an actual staged, live car crash?
   c) The participants had been exposed to all conditions?

4. Suggest a way of measuring flashbulb memory using laboratory conditions.

5. Try conducting your own cognitive interview; work with a friend and take it in turns to recreate an event using the CI procedure. Make sure that the event you choose is not distressing but it should be one that you are able to recreate in your mind and that involves sufficient detail.