

Memory: AQA A-Level Psychology

This presentation explores the key concepts of memory as outlined in the AQA A-Level Psychology specification (section 4.1.2). We'll examine models of memory, types of long-term memory, explanations for forgetting, eyewitness testimony, and include practice questions with mark allocations to help with exam preparation.

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UNDERSTANDING THE MIND

The Multi-Store Model of Memory

The multi-store model, proposed by Atkinson and Shiffrin (1968), suggests that memory consists of three distinct stores:

Sensory Register

Coding: Modality specific (visual, auditory, etc.)

Capacity: Very large

Duration: Very brief (0.5-3 seconds)

Short-Term Memory (STM)

Coding: Primarily acoustic, some visual and semantic

Capacity: Limited (7 ± 2 items)

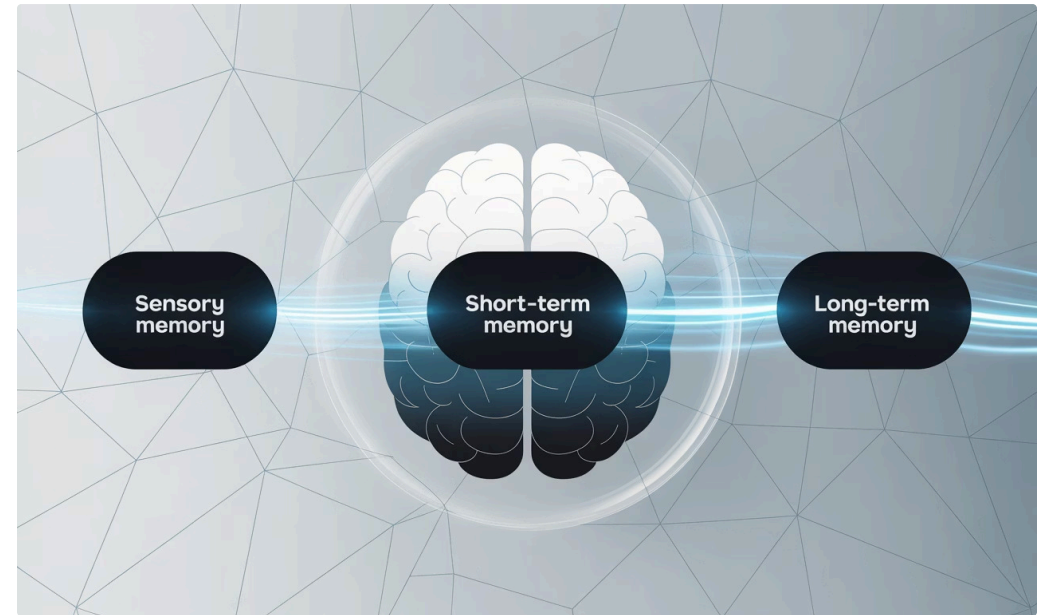
Duration: Brief (18-30 seconds without rehearsal)

Long-Term Memory (LTM)

Coding: Primarily semantic, also visual and acoustic

Capacity: Unlimited

Duration: Potentially lifetime



Information flows through these stores sequentially. Attention determines what moves from sensory register to STM, while rehearsal facilitates transfer to LTM. Information that isn't rehearsed decays and is forgotten.

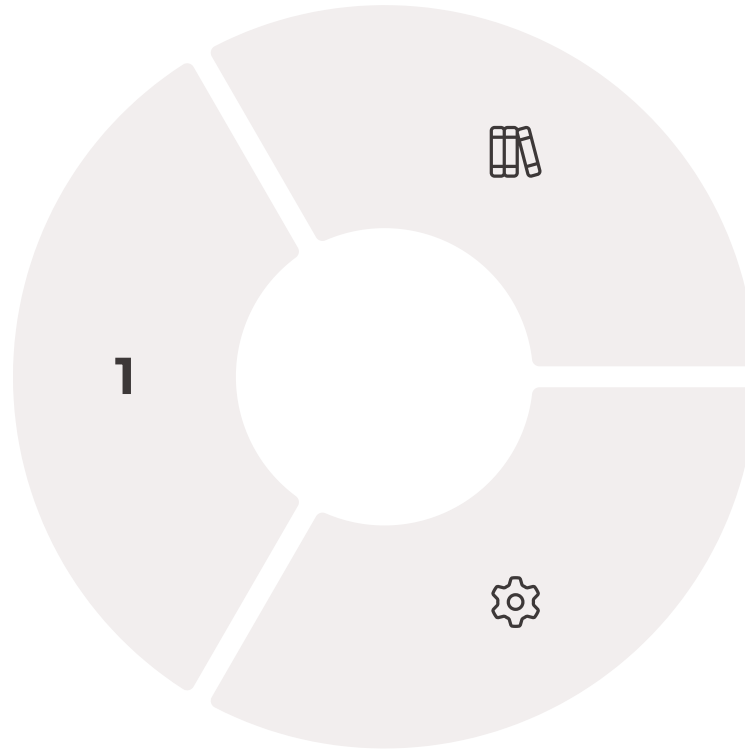
Exam Question: Outline two criticisms of the multi-store model of memory. [4 marks]

Types of Long-Term Memory

Episodic Memory

Personal experiences and specific events tied to particular times and places.

Example: Remembering your 18th birthday party or your first day at university.



Semantic Memory

General knowledge, facts, concepts, and meanings not tied to specific events.

Example: Knowing that London is the capital of England or that water boils at 100°C.

Procedural Memory

Skills, habits, and how to perform tasks, often unconscious.

Example: Knowing how to ride a bicycle or type on a keyboard without looking.

These different types of long-term memory involve different neural pathways and brain regions. Episodic and semantic memory are forms of declarative (explicit) memory, while procedural memory is non-declarative (implicit).

Exam Question: Explain how episodic memory differs from semantic memory, using examples to illustrate your answer. [6 marks]

The Working Memory Model

Baddeley and Hitch (1974) proposed the working memory model as an alternative to the simple concept of short-term memory. They later added the episodic buffer (2000).

Central Executive

The attentional control system that coordinates the subsystems

Features: Limited capacity, no storage function

Phonological Loop

Stores and rehearses speech-based information

Features: Limited capacity (2 seconds of sound)

Visuo-Spatial Sketchpad

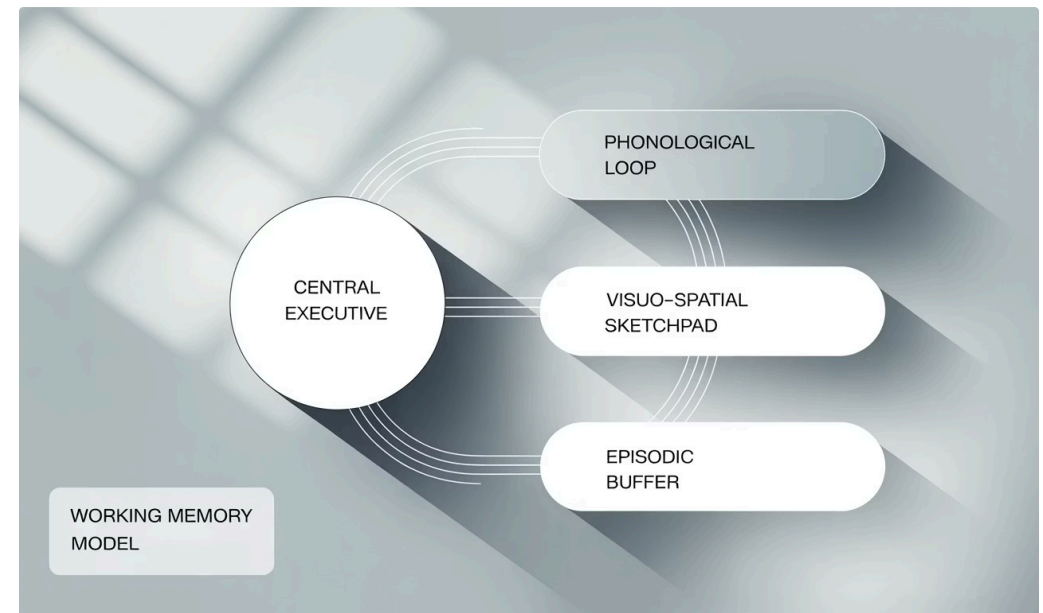
Stores and manipulates visual and spatial information

Features: Limited capacity for visual information

Episodic Buffer

Integrates information from different sources and links to long-term memory

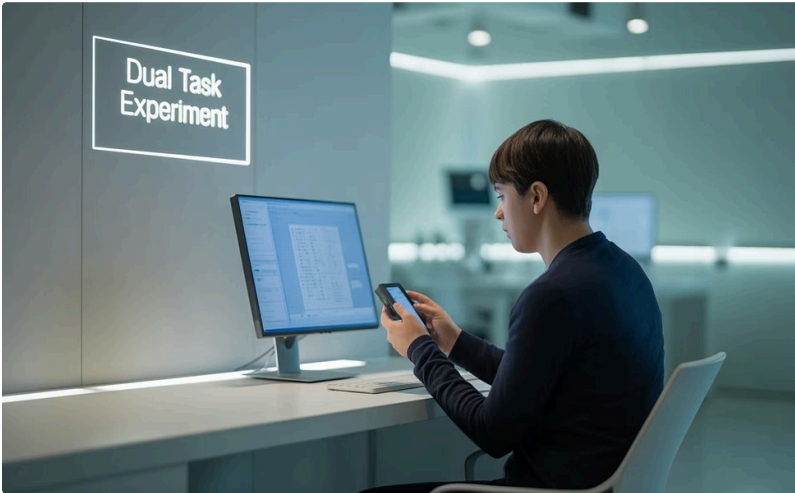
Features: Limited capacity, multimodal coding



The working memory model explains how we can perform complex cognitive tasks that require temporary storage and manipulation of information. It accounts for evidence that couldn't be explained by the multi-store model.

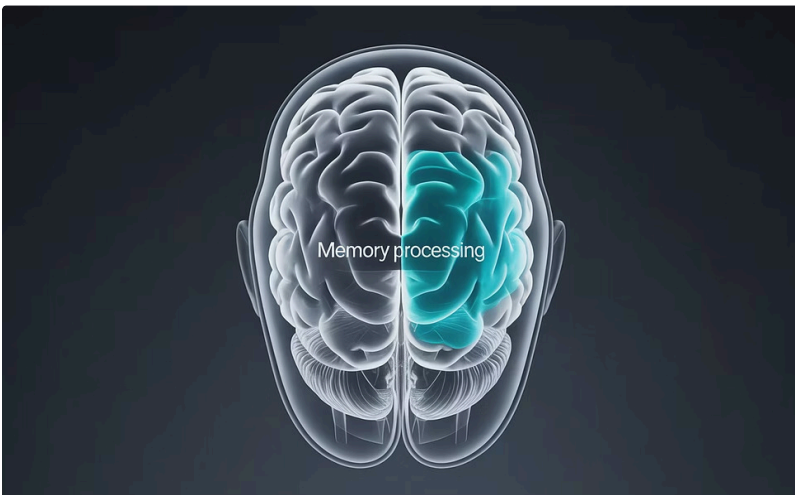
Exam Question: Describe the role of the central executive in the working memory model. [3 marks]

Evidence for the Working Memory Model



Dual Task Studies

Participants can perform two tasks simultaneously if they use different components of working memory (e.g., verbal and visual tasks). Performance declines when tasks compete for the same component.



Brain Imaging

Different brain regions activate when performing tasks associated with different components of working memory, supporting the idea of separate subsystems.



Case Studies

Patients with brain damage may show impairment in one component while others remain intact, suggesting separate systems (e.g., KF who had impaired phonological loop but normal visuo-spatial processing).

This evidence supports the working memory model's proposal that short-term memory consists of multiple components rather than being a unitary store. The model has been influential in understanding cognitive processes in education, neuropsychology, and cognitive development.

Exam Question: Evaluate the working memory model, referring to research evidence in your answer. [8 marks]

Explanations for Forgetting: Interference

Interference Theory

Interference occurs when information in memory disrupts or impedes the recall of other information. There are two main types:

Proactive Interference

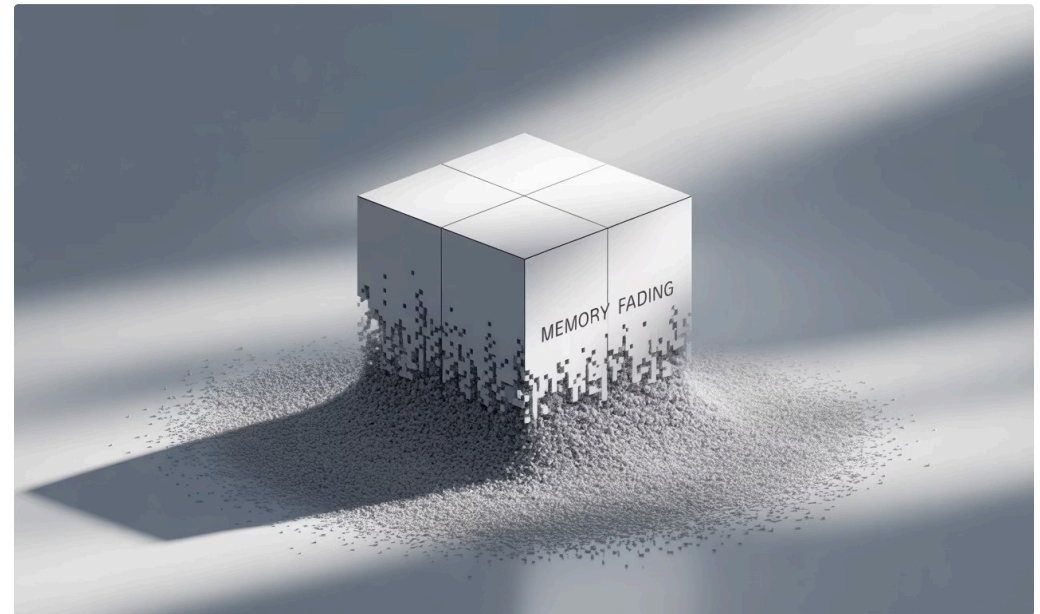
When previously learned information interferes with the ability to remember new information.

Example: Learning French vocabulary makes it harder to later learn similar Spanish words.

Retroactive Interference

When newly learned information interferes with the ability to remember previously learned information.

Example: Learning a new phone number makes it harder to recall your old one.



Research by McGeoch and McDonald (1931) demonstrated interference effects by having participants learn lists of words. Those who learned similar lists showed poorer recall than those who learned dissimilar lists, supporting interference theory.

Interference is more likely to occur when the competing information is similar, when the original learning was not well established, or when there is little time between learning the competing information.

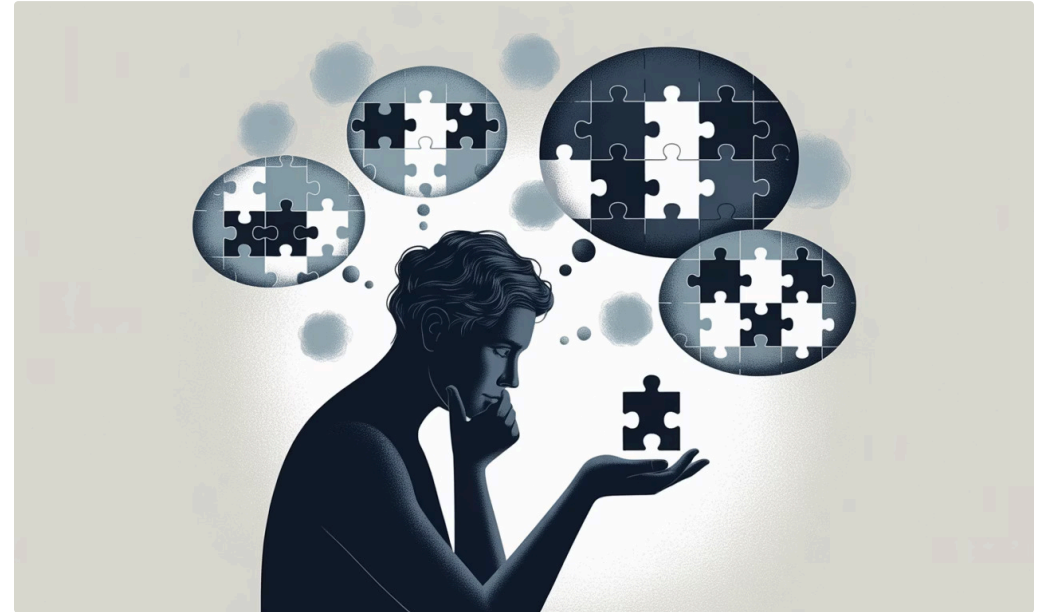
Exam Question: Explain how proactive interference differs from retroactive interference, using examples to illustrate your answer. [4 marks]

Explanations for Forgetting: Retrieval Failure

Retrieval failure theory suggests that forgetting occurs when information is available in memory but cannot be accessed due to the absence of appropriate retrieval cues.

Key Concepts:

- Information in LTM is never truly lost but may become inaccessible
- Memories are stored along with contextual information that serves as retrieval cues
- Encoding specificity principle: recall is better when retrieval conditions match encoding conditions
- State-dependent memory: recall is better when in the same physiological or psychological state as during encoding



Tulving and Pearlstone's (1966) research demonstrated that participants recalled more words when provided with category cues than without cues, supporting the retrieval failure theory.

Context-dependent forgetting explains why we sometimes remember information when we return to the environment where we originally learned it (e.g., remembering what you wanted upstairs only when you go back downstairs).

Exam Question: Describe one study that supports retrieval failure as an explanation for forgetting. [4 marks]



Comparing Explanations for Forgetting

Interference Theory

Strengths:

- Strong experimental support from laboratory studies
- Explains why similar memories are more likely to be confused

Limitations:

- Laboratory tasks may lack ecological validity
- Doesn't fully explain everyday forgetting

Retrieval Failure

Strengths:

- Explains the tip-of-the-tongue phenomenon
- Accounts for context-dependent memory effects

Limitations:

- Difficult to test experimentally
- Cannot account for all instances of forgetting

These explanations are not mutually exclusive and likely work in combination to explain different aspects of forgetting. The dominant explanation may depend on the specific circumstances, type of information, and individual differences.

Exam Question: "Interference provides a better explanation for forgetting than retrieval failure." Discuss this statement. [16 marks]

Factors Affecting Eyewitness Testimony: Misleading Information

Leading Questions

Questions phrased in a way that suggests a particular answer can distort memory.

Example: "How fast was the car going when it **smashed** into the other vehicle?" vs "How fast was the car going when it **contacted** the other vehicle?"

Loftus and Palmer (1974) found that participants estimated higher speeds when the verb "smashed" was used compared to "hit" or "contacted," demonstrating how question wording can influence memory.

Post-Event Discussion

Discussing an event with others after it occurred can introduce new information that becomes incorporated into the original memory.

This is known as the misinformation effect, where post-event information contaminates original memories.



Loftus and colleagues demonstrated that participants who were exposed to misleading post-event information often incorporated this false information into their memories of the original event.

The misinformation effect is particularly strong when:

- The original memory is weak or unclear
- The misleading information comes from a credible source
- There is a long delay between the event and recall
- The misleading information is plausible

Exam Question: Explain how leading questions might affect the accuracy of eyewitness testimony. [4 marks]

Factors Affecting Eyewitness Testimony: Anxiety



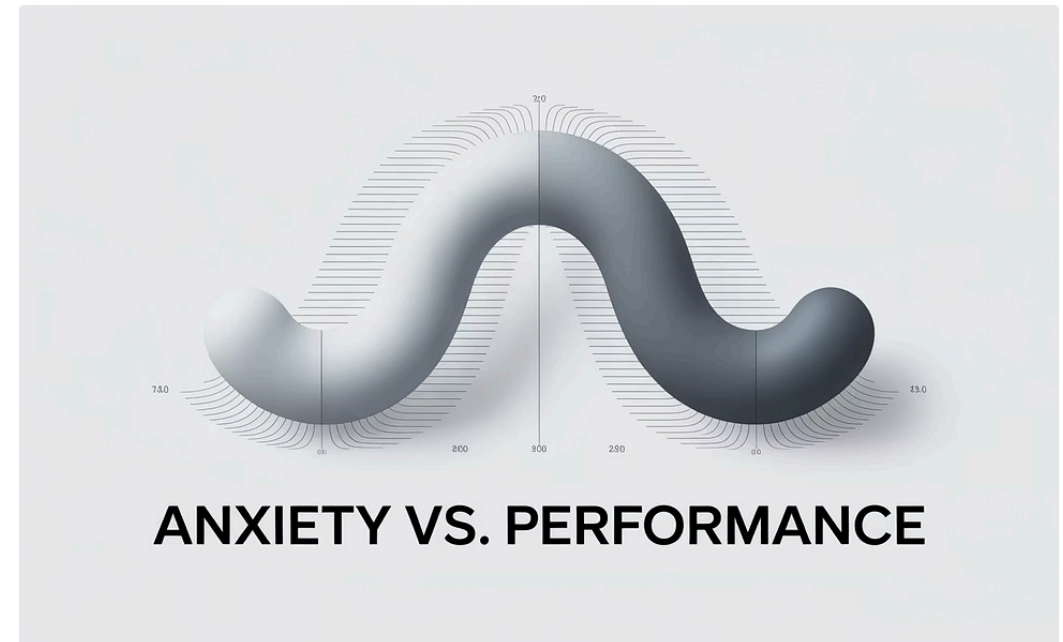
Weapon Focus Effect

When a weapon is present during a crime, witnesses often focus their attention on the weapon rather than other details like the perpetrator's face. This narrows attention and reduces memory accuracy for peripheral details.

Research by Deffenbacher et al. (2004) conducted a meta-analysis of studies on stress and eyewitness memory, finding that high stress negatively impacted the accuracy of eyewitness identification.

However, some studies show that central, emotionally significant details may actually be remembered better under high stress conditions (flashbulb memories), while peripheral details suffer.

Exam Question: Discuss research into the effects of anxiety on the accuracy of eyewitness testimony. [8 marks]



Yerkes-Dodson Law

This law suggests that moderate levels of arousal can enhance memory performance, but very high levels (like those experienced during violent crimes) can impair memory by narrowing attention and disrupting cognitive processing.

The Cognitive Interview

Developed by Fisher and Geiselman in the 1980s, the cognitive interview is a technique designed to improve the accuracy and completeness of eyewitness testimony. It consists of four main components:

1 Mental Reinstatement of Context

Witnesses are asked to mentally recreate the physical and emotional context of the event, including sights, sounds, feelings, and thoughts.

2 Report Everything

Witnesses are encouraged to report all details, even those that seem trivial or that they are not completely confident about.

3 Change Order

Witnesses are asked to recall the event in different temporal orders (e.g., backwards, starting from the middle).

4 Change Perspective

Witnesses are asked to recall the event from different perspectives (e.g., from another witness's viewpoint).



Research by Memon et al. (2010) found that the cognitive interview increased correct recall by 25-35% compared to standard interview techniques, without significantly increasing errors or confabulations.

The cognitive interview is now widely used by police forces in the UK and around the world as a way to enhance the reliability of eyewitness testimony.

Exam Question: Outline two components of the cognitive interview and explain how each might improve the accuracy of eyewitness testimony. [6 marks]

Evaluating the Cognitive Interview

Strengths

- Substantial research support for its effectiveness
- Increases correct recall without significantly increasing errors
- Based on established psychological principles of memory
- Can be adapted for different witnesses (e.g., children, elderly)
- Non-suggestive, reducing interviewer bias

Limitations

- Time-consuming to administer properly
- Requires training for interviewers
- May be less effective for highly traumatic events
- Some components (e.g., change perspective) may encourage confabulation
- Most research conducted in laboratory settings with staged events

The enhanced cognitive interview (ECI) was developed to address some limitations by incorporating additional elements like rapport-building, witness-compatible questioning, and transferring control to the witness.

Exam Question: To what extent is the cognitive interview an effective method for improving the accuracy of eyewitness testimony? [16 marks]

Memory in Real-World Contexts



Legal Applications

Understanding memory processes is crucial in legal contexts where eyewitness testimony can determine trial outcomes. Research has led to improved interview techniques and greater awareness of memory limitations among legal professionals.

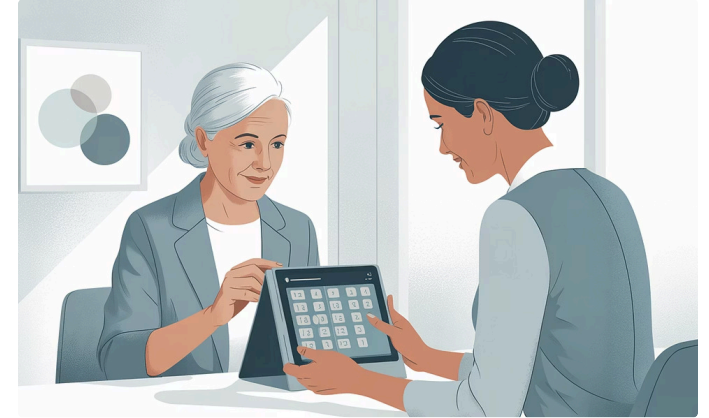
Memory research has significant real-world applications beyond the laboratory. The theories and findings we've discussed have practical implications for improving memory performance and addressing memory-related issues in various contexts.

Exam Question: Discuss how understanding the working memory model might be useful in educational settings. [8 marks]



Educational Applications

Memory research informs teaching methods and study techniques. Spaced repetition, elaborative encoding, and retrieval practice are evidence-based strategies derived from memory research that enhance learning.



Clinical Applications

Understanding memory processes helps in diagnosing and treating memory disorders like Alzheimer's disease. Memory training techniques can help maintain cognitive function in ageing populations.

Exam Practice: Short Answer Questions

Short Answer Questions

1. Outline the difference between episodic and semantic memory. [2 marks]
2. Explain what is meant by retroactive interference. [2 marks]
3. Describe the role of the phonological loop in the working memory model. [3 marks]
4. Outline one way in which misleading information can affect eyewitness testimony. [3 marks]
5. Explain what is meant by the 'weapon focus effect'. [2 marks]
6. Describe one component of the cognitive interview. [3 marks]



Essay Questions

1. Outline and evaluate the multi-store model of memory. [16 marks]
2. Discuss explanations for forgetting. [16 marks]
3. Outline and evaluate research into the factors affecting the accuracy of eyewitness testimony. [16 marks]

When answering essay questions, remember to:

- Define key terms and concepts
- Describe relevant theories and studies in detail
- Evaluate using AO3 points (strengths, limitations, alternative explanations)
- Consider methodological issues (validity, reliability, generalisability)
- Reach a balanced conclusion

Application Question

Jasmine witnessed a car accident last week. When interviewed by the police, she was asked, "How fast was the red car going when it smashed into the blue van?" Later, when discussing the accident with her friend, her friend mentioned that one of the drivers might have been using a mobile phone.

Using your knowledge of memory, explain how these factors might affect the accuracy of Jasmine's testimony about the accident. [6 marks]

Key Takeaways and Revision Tips

Key Takeaways

Models of Memory

Understand the features (coding, capacity, duration) of each store in the multi-store model and the components of the working memory model.

Types of LTM

Be able to distinguish between episodic, semantic, and procedural memory with clear examples.

Forgetting

Explain and compare interference (proactive and retroactive) and retrieval failure theories.

Eyewitness Testimony

Understand how misleading information and anxiety affect accuracy, and how the cognitive interview can improve recall.



Revision Tips

- Create comparison tables for different memory models and theories
- Practice drawing and labelling diagrams of the multi-store and working memory models
- Learn specific studies and their findings for each topic
- Practice applying theories to real-world scenarios
- Use past paper questions to practice exam technique
- Create flashcards for key terms, studies, and evaluation points
- Teach concepts to others to consolidate your understanding

Remember to link your answers to the specific requirements of AQA A-Level Psychology and to use appropriate psychological terminology throughout.