

ASSESSMENT CHECK 5:

2.1 Memory – The multi-store model (page 62)

- 1 The multi-store model sees memory as having separate, though connected, short- and long-term memory stores (as well as a sensory memory store). Travis' illness has impaired his short-term memory ability and so he is unable to transfer information and create new long-term memories. This is why he can't recall events that occurred a short while before. He knows he is married to Lois, as this is an episodic long-term memory, and he knows how to play the guitar, as this is a procedural long-term memory. Long-term memories are processed in a different brain area that has not been affected by his illness.
- 2 Information arrives in short-term memory (STM) in its original, raw form and is then encoded (entered into STM) in a form more easily dealt with. Information in STM is generally encoded acoustically (by sound), but other codes exist too, such as semantic (through meaning) and visual (through pictorial means). For example, a duck-billed platypus could be stored in STM acoustically, by saying the words 'duck-billed platypus' repeatedly; visually, by thinking of the image of a platypus; or semantically, by the knowledge of the animal being an egg-laying marsupial.
- 3 SR = B and C
STM = A and F
LTM = E and G
- 4 There are 6 marks available here for outlining the multi-store model of memory and 10 marks available for the evaluation of it. About 20 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 12½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and 250 to 310 words for the evaluation.

One way to construct an answer would be to give a description of the model in terms of how it explains memory and then to evaluate it. An alternative way to construct an answer would be to outline one part of the model, such as the sensory register, and then evaluate it, and then to repeat the process for other parts of the model.

The outline could be constructed by describing the model in terms of the sensory register, short-term memory and long-term memory, and how these components compare in terms of capacity, coding and duration.

Evaluation would probably be mainly centred on what research studies have found about the different memory stores within the model. Crowder's (1993) study would be useful for commenting on coding in sensory memory, as would Sperling (1960) for

capacity and Walsh & Thompson (1978) for duration. For short-term memory, Baddeley's (1966) study would be relevant for commenting on coding, as would Jacobs' (1887) study for capacity and Peterson & Peterson's (1959) study for duration. For long-term memory, Baddeley's study would again be useful for commenting on coding, as would Anokhin's (1973) study for capacity and Bahrick's (1975) study for duration.

Other evaluation could centre on the support that amnesia studies give to the model, the influence of the model on subsequent research and theories, and general criticisms of the model such as its over-simplistic nature.

Evaluative material focused on methodological criticisms, such as the laboratory nature of much research in this area, would be relevant only if focused on the validity of the model as an explanation for memory.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 5 There are 6 marks available here for outlining the role of the sensory register and short-term memory within the multi-store model and 6 marks available for the evaluation. About 15 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and about 7½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and similar for the evaluation.

The easiest way to construct the answer would probably be firstly to outline the role of the sensory register and then evaluate it, and then to repeat the process for the role of short-term memory.

Description of the sensory register could focus on: its role as the first storage system within the model; the coding, capacity and duration of information within the store; and how information is passed on to short-term memory. Description of short-term memory could focus on: its role as an active memory system; the coding, capacity and duration of information within the store; and how information is rehearsed and passed on to long-term memory.

Evaluation would probably centre on what research studies have found about the two memory stores. Crowder's (1993) study would be useful for commenting on coding in sensory memory, as would Sperling (1960) for capacity and Walsh & Thompson (1978) for duration. For short-term memory, Baddeley's (1966) study would be relevant for commenting on coding, as would Jacobs' (1887) study for capacity and Peterson & Peterson's (1959) study for duration.

Other evaluation could comment on how research has identified that specific brain areas are associated with different stores within the model, as well as general and specific criticisms of the model that relate to the two memory stores, such as understanding the brief duration of the sensory register from an evolutionary perspective.

Evaluative material focused on methodological criticisms, such as the laboratory nature of much research in this area, would be relevant only if focused on the validity of the model as an explanation for memory.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 6 One strength of laboratory experiments is that they are conducted under controlled conditions. This allows a researcher to see the effect of an independent variable on a dependent variable, thus permitting causality (cause-and-effect relationships) to be established.

One limitation is that laboratory experiments lack ecological validity. This means they are conducted under artificial conditions, meaning findings cannot be generalised to real-life settings.

ASSESSMENT CHECK 6:

2.2 Memory – The working memory model (page 68)

- 1 Walter cannot perform two tasks simultaneously if they both use the same slave system of working memory. This is because the slave systems have limited processing capabilities. Therefore Walter can't draw a picture with one hand and trace a moving dot of light with his other hand because both tasks compete for the limited processing capabilities of the visuo-spatial sketchpad slave system. He can, however, do two simultaneous tasks if one is processed by the visuo-spatial sketchpad slave system and the other by the phonological loop slave system.
- 2 The central executive acts as a filter to decide which information received by the sensory organs is attended to. It then sends attended information to relevant slave systems. It is the central executive that allows us to switch attention between different inputs of sensory information.

The episodic buffer is a slave system of the WMM. It functions as a temporary store of integrated information from the central executive, phonological loop, visuo-spatial sketchpad and long-term memory. It is needed because no other component of the WMM has the capacity to hold integrated information.

- 3 The command term 'discuss' means to outline and describe, in this instance features of the working memory model. There are 6 marks available here for an outline of the features and 10 marks available for the evaluation of them. About 20 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 12½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and 250 to 310 words for the evaluation.

One way to construct an answer would be firstly to outline the features of the model and then to provide evaluation of them. Alternatively, a single feature could be outlined, like the central executive, followed by an evaluation of it, with the process then repeated for other features of the model.

The outline could be constructed by describing the model in terms of its features: the central executive, which oversees and co-ordinates the components of the model; and the slave systems of the phonological loop (the component that deals with auditory information), the visuo-spatial sketchpad (the component that deals with visual and spatial information) and the episodic buffer (the component that acts as a temporary store of integrated material). Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail). For example dividing the description of the phonological loop into the sub-components of the primary acoustic store and articulatory process, and the visuo-spatial sketchpad into the sub-components of the visual cache and the inner scribe.

The evaluation would probably centre on what research has found about the features. Baddeley's (1996) study about the capacity of the CE and D'Esposito's (1995) study about its location in the brain would be useful studies for commenting on the CE. Trojan & Grossi's (1995) case study of how brain damage affects the workings of the PL and Baddeley's (1975) study of the word length effect would be useful studies for commenting on the PL. Similarly, Gathercole & Baddeley's (1993) study of performing simultaneous tasks and Klauer & Zhao's (2004) study into the workings of the visual cache and the inner scribe would be useful studies for commenting on the VSS. Prabhakaran's (2000) study of fMRI scans of participants processing different types of information and Alkhalifa's (2009) study of learning via parallel and serial presentations would be useful evidence for commenting on the workings of the episodic buffer.

Additional evaluation could be formed from critical analysis of the model in general terms, such as it explaining short-term memory better than the more simplistic multi-store model, or from critical analysis of individual features, such as little being known about how the CE functions. Evaluation that focused on how the model fits the cognitive approach of understanding memory by information processing could easily be made relevant too.

Evaluative material focused on methodological criticisms, such as the laboratory nature of much research in this area, would be relevant only if focused on the features of the model.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 4 There are 6 marks available here for outlining the model and 6 marks available for the evaluation of it. About 15 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 7½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and similar for the evaluation.

One way to construct the answer would be to outline the model and then evaluate it, or alternatively to outline a component of the model, for instance the central executive (CE), and then evaluate it, and then to repeat this process for the other components.

The outline could be constructed by describing the model in terms of its features: the central executive, which oversees and co-ordinates the components of the model; and the slave systems of the phonological loop (the component that deals with auditory information), the visuo-spatial sketchpad (the component that deals with visual and spatial information) and the episodic buffer (the component that acts as a temporary store of integrated material). Marks awarded would depend on the

accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail). For example dividing the description of the phonological loop into the sub-components of the primary acoustic store and articulatory process, and dividing the description of the visuo-spatial sketchpad into the sub-components of the visual cache and inner scribe.

The evaluation would probably centre on what research has informed about the model. Baddeley's (1996) study about the capacity of the CE and D'Esposito's (1995) study about its location in the brain would be useful studies for commenting on the CE. Trojan & Grossi's (1995) case study of how brain damage affects the workings of the PL and Baddeley's (1975) study of the word length effect would be useful studies for commenting upon the PL. Similarly, Gathercole & Baddeley's (1993) study of performing simultaneous tasks and Klauer & Zhao's (2004) study into the workings of the visual cache and the inner scribe would be useful studies for commenting on the VSS. Prabhakaran's (2000) study of fMRI scans of participants processing different types of information and Alkhalifa's (2009) study of learning via parallel and serial presentations would be useful evidence for commenting on the workings of the episodic buffer.

Additional evaluation could be formed from critical analysis of the model in general terms, such as it explaining short-term memory better than the more simplistic multi-store model, or from critical analysis of individual features, such as little being known about how the CE functions.

Evaluative material focused on methodological criticisms, such as how the use of case studies presents generalisation problems, would be relevant only if focused on the validity of the model in explaining how memory works.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 5 A filter determining which information is attended to. = Central executive
Allows sub-vocal repetition of information stored in the phonological loop. = Articulatory process
Stores information about form and colour. = Visual cache
A slave system dealing with processing and temporary storage of specific types of information. = Episodic buffer
- 6 When conducting such case studies researchers would need to make sure they didn't cause any harm to the participants. As they have damage to their memory functioning, they could easily be stressed. Gaining informed consent may also be problematic, as participants may not recall that they have given such consent. Informed consent should therefore be gained from the person or persons responsible for the participant's care.

ASSESSMENT CHECK 7:

2.3 Memory – Types of long-term memory (page 75)

- 1 Mara finds it difficult to recall the answers for her test as they involve semantic long-term memories, such as what a particular theory means, and episodic long-term memories, such as when a study was carried out. Both types require conscious thought to be recalled. Recalling how to ride her surfboard involves procedural long-term memory, where learned tasks – in this case surfing – are recalled, and this is easier as it doesn't involve conscious thought.
- 2 Procedural LTM is a type of implicit (not requiring conscious thought) memory that permits individuals to perform learned tasks, like riding a bike, without having to concentrate on how to do them. Procedural memory tasks, though easy to do, aren't easy to explain in words and so are known as non-declarative.
- 3 'Discuss' means to outline and evaluate, in this instance types of long-term memory (LTM). There are 6 marks available here for outlining types of LTM and 10 marks available for the evaluation of them. About 20 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 12½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and 250 to 310 words for the evaluation.

Possibly the best way to construct an answer would be to outline a type of LTM, for instance semantic LTM, and then to evaluate it. This process would then be repeated for other types of LTM.

The outline should focus on describing individual types of LTM: semantic LTM for meanings and understanding; episodic LTM for life events; and procedural LTM for the performance of behavioural actions. Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail), for instance how semantic and episodic LTMs may have a common origin.

The evaluation would probably centre on what research has found about different types of LTM. Tulving's (1979) study about brain areas involved in processing information and Herlitz's (1997) study of gender differences would form useful sources of evidence for episodic LTM. Kroenig's (2007) study into 'crutters' (imaginary animals that share particular features) and Vicari's (2007) case study of a girl with brain damage would be equally useful for commenting on semantic LTM. For procedural LTM, Finke's (2012) case study of a cellist with brain damage to specific brain areas and Van Gorp's (1999) study into the memory abilities of cocaine users would be useful sources of evaluatory material.

Other evaluative material could focus on practical applications, such as the construction of robot brains that mimic the workings of human brains in terms of different types of LTM.

Evaluative material focused on methodological criticisms, such as problems in generalising from case studies, would be relevant only if focused on the validity of the explanations being discussed.

It should be remembered that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 4 There are 6 marks available here for outlining episodic and procedural LTM and 6 marks available for the evaluation of them. About 15 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 7½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and similar for the evaluation.

Probably the easiest way to construct an answer would be to outline one type of LTM first, for example episodic, and then evaluate it, and then to repeat the process for the other type of memory.

The outline would focus on describing the two types of LTM, episodic being for life events and procedural for the performance of behavioural actions. Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail). For instance how episodic LTM is declarative as it's easy to put into words, while procedural is non-declarative as it's not easy to put into words.

The evaluation would probably centre on what research has found about the two types of LTM. Tulving's (1979) study of brain areas involved in processing information and Herlitz's (1997) study of gender differences would form useful sources of evidence for episodic LTM. For procedural LTM, Finke's (2012) case study of a cellist with brain damage to specific brain areas and Van Gorp's (1999) study into the memory abilities of cocaine users would be useful sources of evaluatory material.

Other evaluative credit could be gained by comparing the two types of LTM, for example how procedural LTMs take longer to form as they involve learning motor actions, and how episodic LTMs require conscious thought while procedural LTMs don't.

Evaluative material focused on methodological criticisms, such as the ecological validity of the laboratory experiments that create much of the research evidence in this area, would be relevant only if focused on the two types of LTM being discussed.

It should be remembered that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 5 Episodic = C
 Semantic = B
 Procedural = A
- 6 (i) Mean = 6.71
 (ii) Median = 6
 (iii) Mode = 6
 (iv) Range = 4

ASSESSMENT CHECK 8:

2.4 Memory – Explanations for forgetting (page 84)

- 1 Anneka did worse than Emma on the test as the context of retrieval differed from the context of coding. Anneka sat the test in a different room and with a different teacher than she had learned the material, while Emma sat the test in the same room and with the same teacher as when she learned the material. This therefore concerns context-dependent forgetting.
- 2 One explanation for forgetting is interference theory, where forgetting occurs when similar material is confused at recall from long-term memory. This can occur as proactive interference, where previously stored information interferes with the recall of more recently learned material (such as the memory of an old phone number disrupting attempts to recall a new phone number), or as retroactive interference, where more recently coded material interferes with the recall of previously coded material (such as the memory of a new car registration number preventing recall of an older one).
- 3 There are 6 marks available here for outlining two explanations for forgetting and 10 marks available for evaluation of them. About 20 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 12½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and 250 to 310 words for the evaluation.

Probably the best way to construct an answer would be to outline one explanation first, for instance cue-dependent forgetting, and evaluate it, then to repeat the process for another explanation.

The description of the explanations should focus on detailing how they see forgetting as occurring. Cue-dependent forgetting explains forgetting as due to a failure to retrieve the prompts that trigger recall, while interference theory explains forgetting as due to similar material becoming confused in recall from LTM. (Other explanations, such as displacement, trace decay, repression, etc., would be equally creditworthy.) Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail). For example how interference divides into proactive and retroactive types, while cue-dependent forgetting can occur as context-dependent and state-dependent failure.

The evaluation would probably centre on what research has found about the two types of forgetting. Abernethy's (1940) and Godden & Baddeley's (1975) studies into context-dependent failure would be useful sources of evaluation for cue-dependent forgetting, as would Overton's (1972) and Darley's (1973) studies into state-dependent failure. For interference theory, Schmidt's (2000) study into

remembering street names from one's childhood, Baddeley & Hitch's (1977) study of rugby union players remembering games they had played in, and Abel & Bäuml's (2013) study into recall of word pairs, would form good sources of evaluation.

Other evaluative content could focus on more general critical analysis, such as interference theory explaining forgetting only when two sets of information are similar, as well as practical applications, such as police reconstructions being based on cue-dependent forgetting. Valid explanations should lend themselves to practical applications. Comparisons with other explanations for forgetting could also be made relevant, but only if they were used to draw out the strengths and weaknesses of the explanations under discussion.

Evaluative material focused on methodological criticisms, such as research into CDF being mainly laboratory-based and thus not relevant to real-life scenarios, would be relevant only if focused on the validity of the explanations being discussed.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 4 There are 6 marks available here for outlining proactive and retroactive interference as explanations for forgetting and 6 marks available for the evaluation of them. About 15 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 7½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and similar for the evaluation.

Possibly the easiest way to construct the answer would be firstly to outline one type of interference, say proactive interference, and then evaluate it, and then to repeat the process for the second type of interference.

The outline should focus on describing how the two types of interference explain forgetting, with proactive interference occurring when past memories inhibit an individual's ability to retain new memories, and retroactive interference occurring when newly learned information disrupts the recall of previously learned information. Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail).

The evaluation would probably centre on what research has found about the two types of forgetting. Schmidt's (2000) study into remembering street names from one's childhood, Baddeley & Hitch's (1977) study of rugby union players remembering games they had played in, and Abel & Bäuml's (2013) study into recall of word pairs, would form good sources of evaluation.

Other evaluative material could focus on general criticisms, such as that although research shows interference to be a real form of forgetting, it doesn't identify the cognitive processes at work. Comparisons with other explanations for forgetting could also be made relevant, but only if they were used to draw out the strengths and weaknesses of proactive and retroactive interferences as explanations for forgetting.

Evaluative material focused on methodological criticisms, such as research being mainly laboratory-based and thus not relevant to real-life scenarios, would be relevant only if focused on the validity of the explanations being discussed.

Remember that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

5 Retroactive interference = B

Absence of retrieval cues = A

Proactive interference = D

6 The null hypothesis is that there will not be a significant difference between the number of words recalled from a list by participants recalling in a different room to the one they were read the list in and by participants recalling in the same room to the one they were read the list in.

ASSESSMENT CHECK 9:**2.5–2.6 Memory – Factors affecting the accuracy of eyewitness testimony (EWT) & Improving the accuracy of eyewitness testimony (page 98)**

- 1 Witnesses may have recalled Roland's speed as different because a lawyer may have asked misleading questions that suggested a desired answer. For example, if a lawyer wanted to infer that Roland was driving too fast they may have asked, 'How fast was Roland driving when his car smashed into the other car?' This would suggest to the witness that the speed was higher than if the lawyer had asked, 'How fast was Roland driving when his car made contact with the other car?'
- 2 One way in which anxiety is suggested to affect the accuracy of EWT is through the inverted-U hypothesis. This suggests that if anxiety is low or high, then the quality of recall will be poor in terms of accuracy and detail, while moderate anxiety levels will facilitate the recall of much more accurate and detailed memories.
- 3 There are 6 marks available here for outlining how misleading information can affect the accuracy of EWT and 10 marks available for the evaluation. About 20 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 12½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and 250 to 310 words for the evaluation.

Possibly the best way to construct an answer would be first to outline how misleading information can affect the accuracy of recall and then to evaluate it.

The outline should focus on describing how misleading information, in the form of leading questions (questions that increase the likelihood that an individual's schemas will influence them to give a desired answer) and post-event discussion (where information is added to a memory after an event has occurred), affects the accuracy of recall of EWT. Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail).

The evaluation would probably centre on what research has found about misleading information affecting the recall of EWT. Loftus & Palmer's (1974) study of recall of the speeds of cars involved in crashes viewed on video and Loftus & Pickrell's (1973) study of participants' recall of childhood visits to Disneyland would provide useful evidence, as would Loftus' (1975) study of whether participants recalled information added to a memory after an event had been witnessed.

Other evaluative material could focus on practical applications, such as the use of misleading information by advertisers to create false positive memories of products,

as well as more general critical analysis, such as that misleading information tends to affect only unimportant aspects of memories.

Evaluative material focused on methodological criticisms, such as how participants don't really expect to be deliberately misled by researchers, would be relevant only if focused on conclusions being drawn about how misleading information affects recall.

It should be remembered that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 4 There are 6 marks available here for outlining the use of the cognitive interview as a means of improving the accuracy of eyewitness testimony and 6 marks available for the evaluation of it. About 15 minutes should be spent constructing the answer, of which about 7½ minutes should be spent on the outline and 7½ minutes on the evaluation. For the average student this equates to about 150 to 185 words for the outlining and similar for the evaluation.

Probably the easiest way to construct an answer would be firstly to describe the components of the cognitive interview, such as the 'change of narrative order' component, and then to provide the evaluation.

The outline should consist of a description of the components of the cognitive interview, consisting of the 'change of narrative order', the 'change of perspective', the 'mental reinstatement of context' and the 'report everything' components. Marks awarded would depend on the accuracy, relevance and clarity of the descriptions and the degree of elaboration (detail), for instance giving details of the enhanced cognitive interview and modified cognitive interview.

The evaluation would probably centre on what research has found about the cognitive interview. Memom *et al.*'s (2010) meta-analysis of the effectiveness of the cognitive interview, the modified cognitive interview and the enhanced cognitive interview, would be especially beneficial here, as would Fischer's (1989) study that compared the effectiveness of the cognitive interview to that of the standard police interview. Holliday's (2003) and Verkamp & Ginet's (2010) studies that compared the effectiveness of different types of interview would also be relevant.

Additional evaluation could focus on more general critical analysis, such as the time-consuming nature of using the cognitive interview and the suitability of the modified cognitive interview for interviewing children and those with learning difficulties. Evaluation could also focus on wider usage of the technique, for instance in the military for debriefing purposes.

Evaluative material focused on methodological criticisms, such as the difficulty in isolating and assessing the relative contributions of the individual components that make up the technique, would be relevant only if focused on the effectiveness of the cognitive interview as a means of improving EWT.

It should be remembered that the most effective evaluation is created from a number of evaluative points being woven together to form a sophisticated commentary, rather than being a series of unconnected evaluative points.

- 5 The police could have used the cognitive interview technique to gain more accurate and detailed information from witnesses. This technique involves: changing the narrative order, such as recalling the incident from the end to the beginning; changing the perspective, such as getting witnesses to recall from someone else's viewpoint; mentally reinstating the context, such as recalling environmental and emotional aspects of the incident; and reporting everything, however trivial or incomplete it may seem.
- 6 Recounting the scene in different chronological orders. = A
Returning to the environmental and emotional context of the crime scene. = B
Recounting the scene from different perspectives. = D
Recalling all information, even if it appears to have little relevance or is accorded a lower level of confidence. = C