

Working Memory Model - Mark Scheme

Q1.

Please note that the AOs for the new AQA Specification (Sept 2015 onwards) have changed. Under the new Specification the following system of AOs applies:

- AO1 knowledge and understanding
- AO2 application (of psychological knowledge)
- AO3 evaluation, analysis, interpretation.

AO2 = 4

Candidates may refer to the original 1974 version of the model, later additions, or may include the episodic buffer which was added in 2000.

Likely strengths include research support such as dual task studies and physiological evidence from brain scans. Candidates may offer a comparison with the MSM and suggest WMM gives a better account of STM.

Likely weaknesses include the fact that little is known about how the central executive works or evidence from brain studies suggesting the central executive is not unitary. Simply stating the model does not explain LTM is not credit-worthy as a weakness. However, stating that the link between WM and LTM is not fully explained is legitimate. Credit any acceptable strength and weakness.

For each strength and weakness, 1 mark for identification. A further mark for accurate elaboration.

For example, there is evidence from dual task studies to support the model (1 mark). It is easier to do two tasks at the same time if they use different processing systems (verbal and visual) than if they use the same slave system (2 marks).

Q2.

AO1 = 6

The central executive has a supervisory function and controls the slave systems. It has limited capacity but can process information from any sensory modality.

The phonological loop is a limited capacity, temporary storage system for holding verbal information in a speech based form.

The visuo-spatial sketchpad is a limited capacity, temporary memory system for holding visual and spatial information.

In each case 1 mark for a brief answer eg the visuo-spatial sketchpad holds visual and spatial information. 2nd mark for accurate elaboration or an example of how it might be used.

Within each component award a maximum of 1 mark for simply naming 1 or more parts eg phonological store (inner ear), articulatory process (inner voice) in the phonological loop, or inner scribe, visual cache in the visuo-spatial sketchpad.

Q3.

[AO1 = 6]

Level	Mark	Description
3	5-6	Knowledge of the cognitive interview is accurate and generally well detailed. The answer is clear and coherent. Specialist terminology is used effectively
2	3-4	Some knowledge of the cognitive interview is present but there may be some detail missing / lack of clarity. There is some appropriate use of specialist terminology.
1	1-2	Limited knowledge of the cognitive interview. The answer as a whole lacks clarity / accuracy. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Possible content:

Knowledge of the cognitive interview.

- reinstating the context – interviewee mentally reinstates the environmental and personal context of the incident, e.g. sights, sounds, weather etc; (based on the principle of retrieval failure / cue-dependent forgetting that cues may trigger recall)
- report everything – interviewer encourages the reporting of every single detail of the event, even though it may seem irrelevant; (such detail may trigger other memories)
- changing order – interviewer tries alternative ways through the timeline of the incident; (reduces possibility that recall may be influenced by schema / expectations)
- changing perspective – interviewee recalls from different perspectives, e.g. how it would have appeared to other witnesses; (reduces influence of schema)
- features of enhanced cognitive interview to facilitate recall – focus on social interaction, reducing anxiety / distractions, slow speech, use of open-ended questions.

Simply listing aspects of the cognitive interview, maximum 2 marks.

[6]

Q4.

[AO2 = 4]

Level	Marks	Description
2	3 – 4	Knowledge of relevant features of the working memory model is clear and accurate. The application of these to the scenario is effective. At the top of the band there must be reference to both characters in the stem. Specialist terminology is used effectively.
1	1 – 2	Knowledge of relevant features of the working memory model lacks clarity/accuracy/detail. Application may be limited or absent. Specialist terminology is not always used effectively.

	0	No relevant content.
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Possible content:

- Reference to attentional capacity/capacity of the central executive – because driving is an ‘automated’ task for Bryan, it makes fewer attentional demands on his central executive so he is free to perform other tasks (such as talking or listening to music); this is not the case for Bob who requires all of his attentional capacity for driving.
- Credit reference to Bob’s inability to dual-task and to divide resources effectively between components of working memory.
- Credit the idea that Bryan is able to divide resources between his visuo-spatial scratch / sketch pad (driving) and articulatory control process / articulatory / phonological loop / primary acoustic store (talking and listening to music) and thus to dual-task.

Accept other valid applications of the model.

Q5.

(a) **AO2 = 4**

The visuo-spatial scratchpad (sketchpad) stores / manipulates visual and spatial information and will be active when the person is doing a visual task. The phonological loop, comprising the phonological store (inner ear) and articulatory control system (inner voice) will be active during a verbal task.

1 mark for accurate identification of at least two components, eg central executive, visuo-spatial sketchpad / scratchpad and phonological loop (or a sub-component). Credit an accurate diagram.

1 mark for a very brief or muddled explanation.

Up to 2 further marks for an accurate explanation.

(b) **AO2 = 2**

Likely examples for a verbal task include learning / repeating words, speaking and reading.

Visual tasks include forming an image of something and answering questions about it or mentally counting the windows of a house, watching DVD, reading.

Credit any acceptable tasks which are clearly verbal or visual.

To be appropriate in this context, the verbal and visual tasks must be different. However, some tasks, eg reading, could be verbal or visual.

Q6.

[AO1 = 6 AO3 = 6]

Level	Marks	Description
4	10 – 12	Knowledge of what psychological research (theory and/or evidence) has shown about working memory is accurate and generally well detailed. Discussion is effective. The

		answer is clear and coherent. Minor detail and/or expansion is sometimes lacking. Specialist terminology is used effectively.
3	7 – 9	Knowledge of what psychological research (theory and/or evidence) has shown about working memory is evident but there are occasional inaccuracies/omissions. There is some effective discussion. The answer is mostly clear and organised. Specialist terminology is mostly used appropriately.
2	4 – 6	Limited knowledge of what psychological research (theory and/or evidence) has shown about working memory is present. Focus is mainly on description. Any discussion is of limited effectiveness. The answer lacks clarity, accuracy and organisation in places. Specialist terminology is used inappropriately on occasions.
1	1 – 3	Knowledge of what psychological research (theory and/or evidence) has shown about working memory is very limited. Discussion is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology is either absent or inappropriately used.
	0	No relevant content.

Content:

Full credit can be gained for theory and/or evidence.

- The working memory model proposed by Baddeley and Hitch in 1970s as an updated version of STM
- WM is understood as an active processor
- The components and their functions and properties; central executive; phonological loop/store (articulatory and acoustic processing); visuo-spatial scratchpad/sketchpad; episodic buffer. Credit diagram
- Description of what research evidence has shown/findings of studies/conclusions in relation to working memory in general or the different components including:
 - Concurrent/dual task studies
 - Articulatory suppression studies
 - Brain imaging research showing different areas of the brain are active when performing different types of task
 - Clinical evidence of selective impairments to STM

Possible discussion points:

- Explains how different cognitive processes interact
- Comparison with passive view of STM in the MSM
- Use of evidence to support or contradict the concept of working memory
- Discussion/evaluation of working memory research eg issues of validity in dual task research/scanning studies where tasks might be seen as unrealistic/artificial; sampling issues and generalisation
- Problem of testing/fully explaining the central executive

- Applications eg explains processing deficits like reading difficulties and offers possible routes to therapy

Credit other relevant material.

Note – ethical issues in relation to studies would not normally be relevant as they do not affect the understanding of working memory.

Q7.

[AO1 = 6 AO3 = 10]

Level	Marks	Description
4	13 – 16	Knowledge of components and functioning of model is accurate and generally well detailed. Evaluation is thorough and effective. The answer is clear, coherent and focused. Specialist terminology is used effectively. Minor detail and / or expansion of argument sometimes lacking.
3	9 – 12	Knowledge of components of model is evident and there is some reference to function of model. There are occasional inaccuracies. Evaluation is apparent and mostly effective. The answer is mostly clear and organised. Specialist terminology mostly used effectively. Lacks focus in places.
2	5 – 8	Knowledge of some components of model is present. Focus is mainly on description. Any evaluation is only partly effective. The answer lacks clarity, accuracy and organisation in places. Specialist terminology used inappropriately on occasions.
1	1 – 4	Knowledge of model is limited. Evaluation is limited, poorly focused or absent. The answer as a whole lacks clarity, has many inaccuracies and is poorly organised. Specialist terminology either absent or inappropriately used.
	0	No relevant content.

AO1 Content:

- version of STM which sees this store as an active processor
- description of central executive and ‘slave systems’ – visuo-spatial scratch / sketch pad; phonological store / loop; articulatory loop / control process; primary acoustic store; episodic buffer (versions vary – not all of slave systems need to be present for full marks)
- information concerning capacity and coding of each store
- allocation of resources / divided attention / dual-task performance.

AO3 Possible evaluation points:

- strengths include: explains how cognitive processes interact; memory is active rather than passive; provides explanation / treatments for processing deficits; highlights different memory tasks that STM can deal with by identifying

- separate components; explains results of dual task studies
- limitations include: vague, untestable nature of the central executive; supported by highly controlled lab studies which may undermine the validity of the model
- use of evidence to support or refute the model
- credit other relevant evaluative points.

Only credit evaluation of the methodology used in studies when made relevant to discussion of the model.