5.5 The Cognitive Approach: Schema, Inference and Cognitive Neuroscience: 30-minute Pack

AQA 7182 · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Explain how schema can affect attention and therefore influence what information is encoded into memory. Give one developed reason.

(Total for Question 1 is 4 marks)

2 Outline what psychologists mean by 'inference' when studying internal mental processes in cognitive psychology.

(Total for Question 2 is 2 marks)

3 Define 'cognitive neuroscience' and state one method it uses to link brain activity to mental processes.

(Total for Question 3 is 2 marks)

4 Outline how schemas can lead to distortions in memory or judgement. Give one concrete example in your answer, not involving eyewitness testimony.

(Total for Question 4 is 2 marks)

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5 Evaluate the strengths and limitations of the cognitive approach. In your answer discuss scientific rigour and explanatory power, and contrast these with limitations such as inference from behaviour, machine reductionism and ecological validity. Refer to evidence or examples where relevant.

(Total for Question 5 is 12 marks)

6 Explain the role of computer models in cognitive psychology. In your answer, describe how the computer analogy is used and one strength and one limitation of this analogy.

(Total for Question 6 is 6 marks)

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Mark scheme · 5.5 The Cognitive Approach: Schema, Inference and Cognitive Neuroscience: 30-minute Pack

Question 1

states that schemas guide attention towards schema-consistent information and away from inconsistent information oe	**M1**
explains that focused attention increases likelihood information is encoded into memory oe	**A1**
gives a specific example or consequence, e.g. at a conference a person may attend more to details that fit their 'expert' schema and not notice conflicting points oe	**M1**
explains why this matters, e.g. selective attention due to schema can bias what is remembered and create systematic memory distortions oe	**A1**

Answer: Schemas direct attention to schema-consistent information and away from inconsistent details; because attention increases encoding, schema-consistent information is more likely to be stored. For example, an attendee who identifies as an 'expert' may focus on confirming details and miss contradictory points, producing biased memory.

Question 2

inference is drawing conclusions about unobservable mental processes from observable behaviour or performance oe	**B1**
it involves using experimental tasks or behaviour as indirect evidence about cognition oe	**B1**

Answer: Inference is drawing conclusions about unobservable mental processes from observable behaviour or task performance, using behaviour as indirect evidence of cognition.

Question 3

cognitive neuroscience is the study of the neural basis of mental processes oe	**B1**
names a brain-scanning method such as fMRI or EEG as an example oe	**B1**

Answer: Cognitive neuroscience studies the neural basis of mental processes, for example using fMRI to measure brain activity linked to cognition.

Question 4

states that schemas can fill gaps in memory or bias interpretation of information, leading to distortions oe	**B1**
gives one concrete example, e.g. remembering details of a restaurant visit as fitting the schema for 'fine dining' when it was actually a casual cafe oe	**B1**

Answer: Schemas can fill gaps or bias interpretation so memory or judgements fit expectations; for example, someone might later recall a casual cafe meal as more formal because it is fit to their 'fine dining' expectations schema.

Question 5

Level 4 Knowledge of the cognitive approach is accurate and detailed, showing clear understanding of its assumptions and methods. Evaluation is thorough and well developed, discussing multiple strengths and limitations interactively, with reasons and evidence. Issues such as scientific methods, inference, model usefulness and ecological validity are integrated. Specialist terminology is used accurately and the answer is coherent and balanced.	**10-12**
Level 3 Knowledge and understanding are clear but may be less detailed. Evaluation addresses both strengths and limitations with some development and supporting examples or evidence. Discussion is balanced but may be less wide ranging or less deeply justified. Terminology is used appropriately and the answer is mostly well structured.	**7-9**
Level 2 Knowledge is present but limited. Evaluation is superficial or one-sided, with limited justification or few examples. The answer may list points rather than develop them and links between claims and evidence may be weak. Organisation is limited and terminology may be used inconsistently.	**4-6**
Level 1 Very limited knowledge or relevance. Evaluation is minimal or absent, points are simplistic and unsupported. The answer lacks structure and specialist terms are largely absent.	**1-3**
Level 0 No creditable content.	**0**

Indicative content:

- AO1: The cognitive approach assumes internal mental processes can be studied scientifically by creating controlled tasks and using inference from observable behaviour.
- AO1: It makes use of theoretical models and computer models to generate testable hypotheses and formal predictions, and cognitive neuroscience uses brain-scanning methods to link mental processes to neural activity.
- AO3 strength: Scientific rigour, including controlled experiments, precise operationalisation of tasks, and computational modelling, allows falsifiable, replicable hypotheses. This increases reliability and cumulative theory-building.
- AO3 strength: Cognitive neuroscience provides converging evidence, for example fMRI localisation studies that support cognitive theories, strengthening explanatory power by linking mind and brain.
- AO3 limitation: Inference from behaviour to internal processes is indirect and relies on assumptions; if these are wrong the conclusions may be invalid. This raises concerns about construct validity.
- AO3 limitation: Machine reductionism and the computer analogy may oversimplify human cognition by ignoring emotion, motivation and embodied factors, limiting the approach's ability to explain whole-person behaviour in natural settings.
- AO3 limitation: Laboratory tasks can lack ecological validity; highly controlled tasks may not reflect real-world complexity, so findings may not generalise to everyday cognition.
- AO3 balance and application: Where appropriate, researchers mitigate limitations by triangulating methods, using more naturalistic tasks, improving models to include affective components, and combining behavioural, computational and neuroscientific data to build stronger explanations.
- AO3 evaluation of evidence: Cite examples where computational models made precise predictions successfully, and where brain-imaging evidence supported cognitive theories, but also note cases where laboratory findings failed to generalise or where inference produced competing interpretations.

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Question 6

describes the computer analogy: likening the mind to an information processor with inputs, stores and outputs oe	**M1**
explains how models use this analogy to produce precise, testable theories and simulations of cognitive processes oe	**A1**
identifies a strength: encourages formalisation and precise predictions, making cognition testable with experimental tasks oe	**M1**
explains why this strength matters, e.g. it increases scientific rigour and allows computational modelling to generate measurable predictions oe	**A1**
identifies a limitation: machine reductionism, treating cognition as purely computational and neglecting emotion, motivation or embodied factors oe	**M1**
explains why this limitation matters, e.g. it may oversimplify human cognition and reduce ecological validity of models oe	**A1**

Answer: The computer analogy likens the mind to an information processor with inputs, stores and outputs; computer models use this to formalise cognitive processes and generate simulations. A strength is precise, testable predictions that increase scientific rigour and allow computational modelling to make measurable predictions. A limitation is machine reductionism, which can ignore emotion, motivation and embodied aspects of cognition, potentially oversimplifying human mental processes and reducing ecological validity.

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