7.1 Probability, Significance and Type I and Type II Errors: 10-minute Pack

AQA 7182 · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Define 'probability' in psychological research reporting, including the numerical range and interpretation with reference to the null hypothesis.

(Total for Question 1 is 2 marks)

2 Give one empirical situation where a directional hypothesis is appropriate and justify briefly with reference to prior evidence or theory.

(Total for Question 2 is 2 marks)

3 Explain the meaning of $p = 0.04$ in a memory study context, referring to chance and the null hypothesis.

(Total for Question 3 is 3 marks)

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Mark scheme · 7.1 Probability, Significance and Type I and Type II Errors: 10-minute Pack

Question 1

probability is a numerical measure of how likely an event or outcome is to occur, ranging from 0 to 1 oe **B1**

in hypothesis testing it indicates how likely the observed result would be if the null hypothesis were true oe **B1**

Answer: Probability is a numerical measure from 0 to 1 of how likely an outcome is; in hypothesis testing it indicates how likely the observed result would be if the null hypothesis were true.

Question 2

identifies a plausible situation, e.g. testing whether a well supported cognitive training program increases working memory compared with control oe **B1**

brief justification that prior theory or strong evidence predicts the direction of the effect oe **B1**

Answer: E.g. testing whether an established cognitive training program increases working memory compared with control; a directional hypothesis is appropriate because prior studies and theory predict an increase.

Question 3

states that p = 0.04 means there is a 4% probability of obtaining the observed results, or more extreme results, if the null hypothesis is true oe **M1**

applies this to the memory study, e.g. there is a 4% chance the apparent improvement happened by chance alone oe **A1**

links to decision at α = 0.05: result would be classed as statistically significant and the null hypothesis rejected oe **A1**

Answer: p = 0.04 means there is a 4% chance of observing this result, or something more extreme, if there really were no effect; in the memory study it suggests a 4% chance the apparent improvement was due to chance, and it would be significant at α = 0.05 so the null hypothesis would be rejected.

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