7.3 Spearman's Rho: Rationale, Application and Critical Values: 10-minute Pack

AQA 7182 · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 Explain briefly how sample size affects the critical value required for significance when using Spearman's ρ and give one implication for researchers working with small samples.

(Total for Question 1 is 2 marks)

2 Give one reason why researchers might prefer Spearman's ρ to Pearson's r when analysing a pair of co-variables from a small sample of ordinal data.

(Total for Question 2 is 1 mark)

3 Write down the Spearman's ρ formula used when there are no tied ranks, naming every symbol used.

(Total for Question 3 is 3 marks)

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Question 1

explains that smaller sample sizes require larger absolute ρ values to reach significance, because random variation has a bigger effect in small samples oe — **M1**

gives implication: researchers with small samples need very strong correlations to be significant or should use caution in generalising results or increase sample size oe — **A1**

Answer: Smaller sample sizes demand larger absolute ρ values for significance, since chance variation is proportionally larger; therefore researchers with small samples need very strong correlations to achieve significance and should be cautious about generalising or try to increase sample size.

Question 2

states suitability for ordinal or ranked data or for non-parametric data where Pearson's assumptions (interval level and normality) are not met — **B1**

Answer: Because Spearman's ρ is suitable for ordinal or ranked data and does not require interval-level measurement or normal distribution assumptions.

Question 3

states formula: $\rho = 1 - (6 * \text{sum } d^2) / (n * (n^2 - 1))$ or equivalent — **M1**

defines d as the difference between paired ranks and n as the number of pairs — **A1**

notes that sum d^2 means the sum of squared rank differences across all pairs — **A1**

Answer: $\rho = 1 - (6 * \text{sum } d^2) / (n * (n^2 - 1))$, where d = difference between ranks for each pair, n = number of pairs, and sum d^2 is the total of squared differences.

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