**Report 1**

**Selection of sample size, 31 or 32?**

Available Case Analysis: Uses as much data as possible by excluding only the missing values relevant to each computation.

Complete Case Analysis: Only includes data points where all variables have complete information.

Complete case analysis maintains the consistency, avoids biased correlation estimation, and makes interpretation easier. Since the missingness is small and multivariate analysis might be used we will use 31 observations to maintain overall generalizability.

**Item discrimination:**

Item discrimination measures how well an item differentiates between high-performing and low-performing test-takers.

**How is this related to Point-Biserial Correlation?**

Both Point-Biserial Correlation and Item Discrimination Index (DI) measure how well an item differentiates high-scoring and low-scoring test-takers. However, they are calculated differently and provide unique insights into item performance.

Point Biserial Correlation and Item Discrimination Comparison

表格

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表格

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图表, 条形图

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Mann-Whitney U Test function comparison:

Item Difficulty:

表格

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Point Biserial:

表格

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DIF:

20 quiz items were analyzed for DIF.

Mantel-Haenszel statistics (MH) and p-values (p.value) indicate whether DIF is present in each item.

If any items had significant DIF, they would be listed in the DIFItems. However, since difPur is NULL, it suggests that no items remained flagged after purification.

Purification (purify = TRUE) was applied, which means that the analysis iteratively removed items showing DIF. Since difPur = 0, this suggests that no final DIF items were detected. The convergence is true confirms that the purification process ran successfully without errors.手机屏幕截图

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Checking if there is a quadratic relationship hold for item difficulty and point-biserial.

However, the result implies that quadratic relationship is not held.文本

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