NCE Research and Program Evaluation Practice Test (Sample)

Study Guide

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Questions

1. What type of research begins with established theory to explore relationships among its elements?

A. Deductive Research

B. Exploratory Research

C. Descriptive Research

D. Comparative Research

2. Which type of data allows for the ordering of values from high to low?

A. Nominal

B. Ordinal

C. Interval

D. Ratio

3. What is the implication of a percentile rank of 85?

A. The subject scored higher than 85% of test-takers

B. The subject scored lower than 85% of test-takers

C. The subject's score is exactly 85

D. The subject fell in the average range of scores

4. What type of validity is determined by the extent to which extraneous variables have been controlled?

A. External Validity

B. Internal Validity

C. Construct Validity

D. Criterion Validity

5. Which of the following describes a distribution with a long tail on one side, influencing the mean?

A. Normal Distribution

B. Bimodal Distribution

C. Skewed Distribution

D. Uniform Distribution

6. What statistical concept does not imply causation but rather indicates the extent of relationship between paired numbers?

A. Correlation

B. Regression

C. Covariance

D. Descriptive Statistics

7. In which type of research does data collection happen simultaneously across different groups?

A. Longitudinal Research

B. Action Research

C. Cross-sectional research

D. Single-subject Design

8. What tool is utilized to determine the significance level for critical values in an F-test?

A. F-Ratio Chart

B. P-Value Table

C. T-Test Chart

D. Chi-Square Table

9. What kind of evaluation is typically conducted at the end of a program cycle?

A. Preliminary Evaluation

B. Formative Evaluation

C. Summative Evaluation

D. Diagnostic Evaluation

10. Which test is used to determine if the mean scores of two groups are significantly different?

A. T-Test

B. Chi-Square Test

C. ANOVA

D. Mann-Whitney U Test

Answers

1. A
2. B
3. A
4. B
5. C
6. A
7. C
8. A
9. C
10. A

Explanations

1. What type of research begins with established theory to explore relationships among its elements?

A. Deductive Research

B. Exploratory Research

C. Descriptive Research

D. Comparative Research

The type of research that begins with established theory to explore relationships among its elements is deductive research. This approach typically starts with a general theory or hypothesis and then tests this theory through specific observations or experiments. Deductive research seeks to determine whether the theory holds true in particular instances by analyzing empirical data. This method is characterized by a logical progression where researchers derive specific predictions from broader theoretical frameworks. By engaging with existing theories, deductive research allows scholars to confirm, refute, or refine these theories based on the results obtained during the study. This contrasts with exploratory research, which is generally designed to gather preliminary data and generate hypotheses rather than test existing theories. Descriptive research focuses on providing a detailed account of a phenomenon without necessarily linking it to a theoretical framework, and comparative research emphasizes identifying differences and similarities between groups or variables rather than testing a theory. Thus, deductive research is uniquely suited for examining established relationships based on existing theoretical constructs.

2. Which type of data allows for the ordering of values from high to low?

A. Nominal

B. Ordinal

C. Interval

D. Ratio

The correct choice is ordinal data, which is characterized by the ability to order values or categories in a meaningful way from high to low or low to high. Ordinal data reflects a rank order among the categories, indicating relative positions without a specific numerical distance between them. For instance, in a survey asking respondents to rate satisfaction on a scale of "very satisfied," "satisfied," "neutral," "dissatisfied," and "very dissatisfied," one can discern that "very satisfied" represents a higher level of satisfaction than "satisfied." This ordering feature is crucial in many research contexts, as it helps in understanding trends, preferences, and relative comparisons between different groups or conditions. In contrast, nominal data lacks any inherent order; it merely labels categories without a ranking system. Interval data involves numerical values with meaningful intervals but without a true zero point, making it inappropriate for simply ordering values since it doesn't provide information about the order. Ratio data is similar to interval data but includes a true zero, which allows for the measurement of ratios between values. However, while both interval and ratio data allow for more sophisticated analyses, it is the ordinal data that explicitly captures the ordered relationship among categories.

3. What is the implication of a percentile rank of 85?

A. The subject scored higher than 85% of test-takers

B. The subject scored lower than 85% of test-takers

C. The subject's score is exactly 85

D. The subject fell in the average range of scores

A percentile rank indicates the relative standing of a score among a group of scores. When a subject has a percentile rank of 85, it means that the individual's score is higher than that of 85% of the test-takers. This positioning shows that the subject performed better than a significant majority, suggesting a strong performance relative to peers. This concept is essential in understanding standardized testing and evaluation metrics, as it helps to contextualize an individual's score within a larger population. High percentile ranks are often associated with above-average performance, which can have positive implications in various settings, such as academic assessments or professional evaluations. On the contrary, a percentile rank of 85 does not indicate that the subject scored lower than 85% of test-takers, that their score is exactly 85, or that they are in the average range of scores. Instead, it specifically confirms the strength of their performance in comparison to others, reinforcing that they belong to the upper echelon of test-takers.

4. What type of validity is determined by the extent to which extraneous variables have been controlled?

A. External Validity

B. Internal Validity

C. Construct Validity

D. Criterion Validity

Internal validity refers to the degree to which a study accurately establishes a causal relationship between variables without being influenced by extraneous variables. When conducting research, it is essential to control for outside factors that could interfere with the results. A study with high internal validity minimizes the potential for confounding variables, leading to more confident conclusions about the effects or relationships being investigated. For example, in a controlled experiment, researchers may use random assignment, control groups, and standardized procedures to ensure that variations in the outcome are primarily due to the manipulation of the independent variable rather than other unrelated factors. This control enhances the credibility and reliability of the findings, making internal validity a critical aspect of experimental research design. The concept of internal validity is distinct from the other types of validity mentioned. External validity deals with the generalizability of the results to other settings or populations, construct validity focuses on whether the operationalizations of variables truly represent the theoretical constructs they intend to measure, and criterion validity assesses how well one measure predicts an outcome based on another measure. Each type serves a different purpose in the framework of research validity.

5. Which of the following describes a distribution with a long tail on one side, influencing the mean?

A. Normal Distribution

B. Bimodal Distribution

C. Skewed Distribution

D. Uniform Distribution

A distribution with a long tail on one side is known as a skewed distribution. This type of distribution is characterized by the presence of outliers or extreme values that significantly pull the mean toward the tail, resulting in a distortion of the typical central tendency. In a skewed distribution, if the tail extends towards the right, it's referred to as positively skewed, and if it extends to the left, it's called negatively skewed. The key aspect is that these tails lead to a situation where the mean, median, and mode are not all equal, contrasting with a normal distribution where they coincide. The mean is particularly sensitive to extreme values, making it a less reliable measure of central tendency in skewed distributions. Recognizing the implications of this is crucial for proper data analysis and interpretation. Specifically, in skewed distributions, reliance on the mean can obscure the reality of the data's central tendency and variability, aiding in making more informed decisions in research and program evaluation efforts.

6. What statistical concept does not imply causation but rather indicates the extent of relationship between paired numbers?

A. Correlation

B. Regression

C. Covariance

D. Descriptive Statistics

The concept that does not imply causation but indicates the extent of the relationship between paired numbers is correlation. Correlation measures the strength and direction of the linear relationship between two variables. It quantifies how changes in one variable are associated with changes in another without asserting that one variable causes the change in the other. This distinction is critical in data analysis, as establishing correlation does not provide evidence of a causal relationship. In contrast, regression analysis often explores the relationship between variables and attempts to establish predictive relationships, which can imply causation under certain conditions. Covariance is a measure that indicates the direction of the linear relationship between variables but does not standardize this value, making it less interpretable than correlation. Descriptive statistics summarize and describe the features of a dataset without exploring relationships between specific paired variables. Therefore, correlation is the most appropriate term for indicating the extent of a relationship between paired numbers without inferring causality.

7. In which type of research does data collection happen simultaneously across different groups?

A. Longitudinal Research

B. Action Research

C. Cross-sectional research

D. Single-subject Design

Cross-sectional research is characterized by its approach to data collection, which occurs at a single point in time across various groups or segments. This method allows researchers to gather data from different individuals, demographics, or conditions simultaneously, providing a snapshot of the population or phenomena being studied. This simultaneous collection is efficient and particularly useful for identifying patterns, relationships, or differences among groups without the time commitment required for other types of research. In contrast, longitudinal research involves collecting data from the same subjects over an extended period, which examines changes and developments over time. Action research focuses on collaborative problem-solving within specific settings, often through iterative cycles of reflection and data collection, not a simultaneous snapshot. Single-subject design emphasizes examining the behavior or outcomes of one individual or a small group over time, using repeated measures rather than simultaneous data gathering across multiple groups.

8. What tool is utilized to determine the significance level for critical values in an F-test?

A. F-Ratio Chart

B. P-Value Table

C. T-Test Chart

D. Chi-Square Table

The F-Ratio Chart is the correct tool used to determine the significance level for critical values in an F-test. The F-test itself is a statistical test that compares the variances between two or more groups to see if they statistically differ from each other. In the context of an F-test, the F-Ratio Chart provides critical values that help researchers assess whether the calculated F-ratio from their data is significant. This means that if the computed F-value exceeds the critical value from the chart (considering the specified degrees of freedom), the null hypothesis can be rejected, indicating significant differences between the variances of the groups being compared. While the P-Value Table can also provide insights into significance levels, it is not specifically tailored for the F-test, making it less appropriate for determining critical values in this context. The T-Test Chart and Chi-Square Table are designed for different statistical tests (t-tests and chi-square tests, respectively) and would not provide relevant information for conducting an F-test. Therefore, the F-Ratio Chart specifically serves this purpose effectively, making it the appropriate choice for identifying significant levels in the context of F-tests.

9. What kind of evaluation is typically conducted at the end of a program cycle?

A. Preliminary Evaluation

B. Formative Evaluation

C. Summative Evaluation

D. Diagnostic Evaluation

The evaluation typically conducted at the end of a program cycle is known as summative evaluation. This type of evaluation focuses on assessing the outcomes and impacts of a program after its implementation. Summative evaluations are designed to determine the effectiveness of the program, whether it met its objectives, and provide insights into the overall success of the initiative. At this stage, data is collected and analyzed to understand the results, which can include participant outcomes, achievement of program goals, and overall program efficacy. The findings from a summative evaluation are crucial for stakeholders, as they inform decision-making for future programming, budgeting, and policy development. In contrast, other types of evaluations serve different purposes throughout the program cycle. Preliminary evaluations are used before implementation to provide insights into planning. Formative evaluations occur during the program's implementation to improve ongoing processes and adapt strategies as needed. Diagnostic evaluations aim to identify specific issues or problems within a program, typically at the beginning stages. Each type supports different phases of program development, but summative evaluation specifically addresses the final assessment stage of program performance.

10. Which test is used to determine if the mean scores of two groups are significantly different?

A. T-Test

B. Chi-Square Test

C. ANOVA

D. Mann-Whitney U Test

The T-Test is used to determine if the mean scores of two groups are significantly different. This statistical test assesses whether the averages of two independent samples are different from each other. It is particularly useful when the sample data are normally distributed and when the variances of the two groups can be assumed to be equal (in its standard form known as the independent samples t-test). The t-test calculates the t-statistic, which measures the size of the difference relative to the variation in the sample data. If the t-statistic is greater than the critical value from the t-distribution (based on the degrees of freedom and desired significance level), it indicates that there is a statistically significant difference between the means of the two groups. Other tests listed serve different purposes: the Chi-Square Test is primarily used for categorical data to assess how the observed frequencies compare to the expected frequencies; ANOVA (Analysis of Variance) is applied when comparing means across three or more groups; and the Mann-Whitney U Test is a non-parametric alternative to the t-test that assesses whether the ranks of two independent samples differ. Therefore, the t-test is the appropriate choice for assessing mean differences between two groups specifically.