University of Maryland Medical Center-Nursing Research Council

Glossary of Research Terms

Abstract----a brief summary of the research study

Analysis---the process of synthesizing data to answer the research question

Alpha---in tests of statistical significance, the alpha level indicates the Probability of committing a Type I error; in estimates of internal consistency, a reliability coefficient, as in Cronbach alpha.

Analysis of variance---a statistical test for comparing mean scores among 3 or more groups

Attrition---loss of study participants during a study. Attrition can be a threat to the internal validity of a study, and it can change the composition of the study sample.

Beta---in statistical testing, the beta is the probability of a type II error; in multiple regressions, the standardized coefficients indicating the relative weights of the independent variables

Bias---any influence that can change the results of a study

Case Study---a study design that provides an in-depth review of a single subject or case

Causal relationship---a relationship between 2 variables in which the presence or absence of one variable determines the presence or absence of the other

Chi-square test---a nonparametric statistical test used to determine relationships between two nominal level variables

Cluster sampling---selecting a random sample from clustered groups

Coefficient alpha (Cronbach alpha) ---a reliability index that estimates the internal **consistency of a measure with several items of subparts**

Conceptual map---a diagram representing the relationship of variables

Concurrent validity---the degree to which scores on an instrument are correlated with some external criterion, measured at the same time

Confidence interval---a range of values that a parameter is estimated to fall within

Confounding variable---a variable that might affect the dependent variable, also termed "extraneous variable"

Consent form---a written document reflecting agreement between a researcher and subject

Construct validity---the degree to which an instrument measures the construct intended

Content analysis---the process of organizing narrative qualitative information according to themes and concepts

Control group---subjects in a research study who do not receive the experimental treatment

Convergent validity---a type of validity that reflects the degree to which scores from an instrument resemble scores from a different measure of the construct

Correlation coefficient---an index that reflects the degree of relationship between 2 variables. A perfect positive relationship + 1, no relationship is 0, and – 1 is a perfect negative relationship

Criterion validity---the degree to which scores on an instrument are correlated with some external criterion

Cronbach alpha---a reliability index that reflects the internal consistency of a measure

Cross-sectional study---a study design that collects data at a single point in time for the purpose of inferring trends over time

Data cleaning---the process of trying to find errors in the data set

Degrees of freedom---a concept used with statistical tests that refers to the number of sample values that are free to vary. In a sample, all but one value is free to vary, and the degrees of freedom is often N-1

Descriptive study---a study that defines or describes a population or phenomenon

Descriptive statistics---methods used to describe or summarize the characteristics of data in a sample

Dependent variable---the outcome variable of interest

Dichotomous variable---a variable with only 2 categories

Effect size---a statistical term of the magnitude of the relationship between 2 variables

Experimental group---subjects in a research study who receive the experimental treatment or intervention

Exploratory study---a type of study design used to explore or gain insights into a phenomenon

Ex post facto---a type of research design that studies something after it has occurred

Experiment--- a research study in which the independent variables are manipulated and subjects are randomly assigned to different conditions

External validity---refers to how representative the results of the study are (generalizability)

Face validity---the degree to which a test appears to measure a concept based on the judgment by experts

Factor analysis---a statistical procedure for reducing a large set of variables into smaller sets of related variables

Focused interview---an interview that is partially structures or semi-structures

Frequency distribution---a display of data values from the lowest of the highest, along with a count of the number of times each value occurred

Grounded theory---a method used in qualitative research to develop categories of theories and propositions about their relationships from data

Halo effect---the tendency for an observer to rate certain subjects as high or low because of the overall impress the subject gives the observer

Hawthorne effect---changes that occur in people's behavior because they know they are being studied

Histogram---a graphic display of data frequency using rectangular bars with heights equal to the frequency count

Hypothesis---a statement of the relationship between 2 or more study variables

Independent variable---the conditions or factors that are explored in relationship to their influence on the dependent variable

Indirect (inverse) relationship---a negative correlation between 2 variables

Internal consistency reliability---the degree to which all items in a scale are measuring the same dimension of a concept

Internal validity---a measure of the independent variable being responsible for an observed effect
Inter-rater reliability---the reliability of measures across different raters

Interval scale---measures data that rank orders a variable with equal distance between measurement points (eg, temperature data)

Instruments---devices or techniques used to collect data

Likert scale---a scale of measurement in which respondents are asked to respond to statements based on how much they agree or disagree

Literature review---the process of searching published work to find out what is known about a research topic

Longitudinal study---a research study that is conducted over time and measures the same variables

Mean---the average value or measure of central tendency. The mean is obtained by dividing the sum of values by the total number of values

Median---the middle score

Mode---the value that occurs most frequently

Multiple regression---a statistical procedure for understanding the effects of 2 or more independent variables on a dependent variable

N---used to designate the total sample size

n---used to designate the number of subjects in a subgroup

Nominal scale---a scale that measures data by assignment of characteristics into categories (eg, male=1, female=2)

Nonparametric statistics---tests that can be used to analyze nominal and ordinal data or data that are not normally distributed

Null hypothesis---a statement that no relationship exists between study variables

Ordinal scale---a scale that measures data that rank order values

Parametric statistics---tests that are used to analyze interval level data and data that is normally distributed

Pearson's r---a correlation coefficient that designates the magnitude of a relationship between 2 variables

Phenomenology---a qualitative research method that focuses on the lived experience of subjects

Pilot study---a small scale study conducted to test the plan and method of a research study

Power analysis---refers to a way of calculating the number of subjects needed for results of a study to be considered statistically significant

Quasi-experimental---a type research design in which subjects are not randomly assigned to treatment conditions, but manipulation of the independent variable does occur

R---the symbol that indicates the squared multiple correlation coefficient which indicates the amount of variance in the dependent variable accounted for or explained by the independent variable

Random sample---a sample selected in a way that ensures that every subject has an equal chance of being included

Range---represents the dispersion of data or the difference between the smallest and largest values

Ratio scale---a scale that has a zero point and equal distances between scores

Regression---a statistical procedure for predicting values of a dependent variable based on the values of one or more independent variables

Reliability---refers to the consistency of the measures and means that an instrument produces consistent results or data with repeated use

Research utilization---implemented of research findings in practice

Respond rate---the rate of participation in a study

Scatter diagram (scatter plot) ---a graphic presentation of the correlation between two variables

Significance level---the probability that an observed relationship could be caused by chance. A significance level of 0.5 indicates the probability that a relationship would be found by chance only 5 times out of 100

Standard deviation---a measure of variability of data. The standard deviation is the average of the deviations from the mean

Standard score (z-score) ---refers to how many standard deviations away from the mean a particular score is located
Test-retest reliability---a method for determining the reliability of an instrument by administering it in 2 or more occasions to the same respondents

Triangulation---refers to the use of several methods to collect data on the same concept

T-test---a statistical test used to determine if the means of 2 groups are significantly different

Type I error (alpha error) --- occurs when it is concluded that a difference between is not due to chance when in fact it is (reject a true null hypothesis)

Type II error (beta error)--- occurs when it is concluded that differences between groups were due to chance when in fact they were due to the effects of the independent variable (accepts a false null hypothesis

Variable---a characteristic, attribute, or outcome

Variability---the degree to which values are widely different or dispersed

Validity---refers to the ability of the instrument to measure what it proposes to measure

Variance---a descriptive statistic that examines how scores are distributed

Z-score---a standard score, express in terms of standard deviations from the mean

---

REFERNCES

The Cochrane Collaboration Research directory. Accessed on July 26, 2002 Available at: http://www.cochrane.org/chchrane/cngloss.htm

Mateo MA, Kirchoff KT. Using and Conducting Nursing Research in the clinical setting Philadelphia, Pa: Saunders; 1999

Polit DF, Hungler BP. Nursing Research: Principles and Methods. Philadelphia, Pa:Lippincott; 1999

World Opinion Glosard of Research terms. Accessed on July 25, 2002. Available at: http://worldopinion/regloss.taf