Writing@CSU Writing Guide

Qualitative and Quantitative Research: Glossary of Key Terms

This glossary provides definitions of many of the terms used in the guides to conducting qualitative and quantitative research. The definitions were developed by members of the research methods seminar (E600) taught by Mike Palmquist in the 1990s and 2000s.

Accuracy: A term used in survey research to refer to the match between the target population and the sample.

ANCOVA (Analysis of Co-Variance): Same method as ANOVA, but analyzes differences between dependent variables.

ANOVA (Analysis of Variance): A method of statistical analysis broadly applicable to a number of research designs, used to determine differences among the means of two or more groups on a variable. The independent variables are usually nominal, and the dependent variable is usual an interval.

Apparency: Clear, understandable representation of the data

Bell curve: A frequency distribution statistics. Normal distribution is shaped like a bell.

Case Study: The collection and presentation of detailed information about a particular participant or small group, frequently including the accounts of subjects themselves.

Causal Model: A model which represents a causal relationship between two variables.

Causal Relationship: The relationship established that shows that an independent variable, and nothing else, causes a change in a dependent variable. Establishes, also, how much of a change is shown in the dependent variable.

Causality: The relation between cause and effect.

Central Tendency: These measures indicate the middle or center of a distribution.

Confirmability: Objectivity; the findings of the study could be confirmed by another person conducting the same study

Confidence Interval: The range around a numeric statistical value obtained from a sample, within which the actual, corresponding value for the population is likely to fall, at a given level of probability (Alreck, 444).

Confidence Level: The specific probability of obtaining some result from a sample if it did not exist in the population as a whole, at or below which the relationship will be regarded as statistically significant (Alreck, 444).

Confidence Limits: (Same as confidence interval, but is terminology used by Lauer and Asher.) "The range of scores or percentages within which a population percentage is likely to be found on variables that describe that population" (Lauer and Asher, 58). Confidence limits are expressed in a "plus or minus" fashion according to sample size, then corrected according to formulas based on variables connected to population size in relation to sample size and the relationship of the variable to the population size--the larger the sample, the smaller the variability or confidence limits.

Confounding Variable: An unforeseen, and unaccounted-for variable that jeopardizes reliability and validity of an experiment's outcome.

Construct Validity: Seeks an agreement between a theoretical concept and a specific measuring device, such as observation.

Content Validity: The extent to which a measurement reflects the specific intended domain of content (Carmines & Zeller, 1991, p.20).

Context sensitivity: Awareness by a qualitative researcher of factors such as values and beliefs that influence cultural behaviors

Continuous Variable: A variable that may have fractional values, e.g., height, weight and time.

Control Group: A group in an experiment that receives not treatment in order to compare the treated group against a norm.

Convergent Validity: The general agreement among ratings, gathered independently of one another, where measures should be theoretically related.

Correlation: 1) A common statistical analysis, usually abbreviated as**r**, that measures the degree of relationship between pairs of interval variables in a sample. The range of correlation is from -1.00 to zero to +1.00. 2) A non-cause and effect relationship between two variables.

Covariate: A product of the correlation of two related variables times their standard deviations. Used in true experiments to measure the difference of treatment between them.

Credibility: A researcher's ability to demonstrate that the object of a study is accurately identified and described, based on the way in which the study was conducted

Criterion Related Validity: Used to demonstrate the accuracy of a measuring procedure by comparing it with another procedure which has been demonstrated to be valid; also referred to as instrumental validity.

Data: Recorded observations, usually in numeric or textual form

Deduction: A form of reasoning in which conclusions are formulated about particulars from general or universal premises

Dependability: Being able to account for changes in the design of the study and the changing conditions surrounding what was studied.

Dependent Variable: A variable that receives stimulus and measured for the effect the treatment has had upon it.

Design flexibility: A quality of an observational study that allows researchers to pursue inquiries on new topics or questions that emerge from initial research

Deviation: The distance between the mean and a particular data point in a given distribution.

Discourse Community: A community of scholars and researchers in a given field who respond to and communicate to each other through published articles in the community's journals and presentations at conventions. All members of the discourse community adhere to certain conventions for the presentation of their theories and research.

Discrete Variable: A variable that is measured solely in whole units, e. g., gender and siblings

Discriminate Validity: The lack of a relationship among measures which theoretically should not be related.

Distribution: The range of values of a particular variable.

Dynamic systems: Qualitative observational research is not concerned with having straight-forward, right or wrong answers. Change in a study is common because the researcher is not concerned with finding only one answer.

Electronic Text: A "paper" or linear text that has been essentially "copied" into an electronic medium.

Empathic neutrality: A quality of qualitative researchers who strive to be non-judgmental when compiling findings

Empirical Research: "…the process of developing systematized knowledge gained from observations that are formulated to support insights and generalizations about the phenomena under study" (Lauer and Asher, 1988, p. 7)

Equivalency Reliability: The extent to which two items measure identical concepts at an identical level of difficulty.

Ethnography: Ethnographies study groups and/or cultures over a period of time. The goal of this type of research is to comprehend the particular group/culture through observer immersion into the culture or group. Research is completed through various methods, which are similar to those of case studies, but since the researcher is immersed within the group for an extended period of time more detailed information is usually collected during the research.

Ethnomethodology: A form of ethnography that studies activities of group members to see how they make sense of their surroundings

Existence or Frequency: This is a key question in the coding process. The researcher must decide if he/she is going to count a concept only once, for existence, no matter how many times it appears, or if he/she will count it each time it occurs. For example, "damn" could be counted once, even though it appears 50 times, or it could be counted all 50 times. The latter measurement may be interested in how many times it occurs and what that indicates, whereas the former may simply looking for existence, period.

Experiment: Experimental Research A researcher working within this methodology creates an environment in which to observe and interpret the results of a research question. A key element in experimental research is that participants in a study are randomly assigned to groups. In an attempt to create a causal model (i.e., to discover the causal

origin of a particular phenomenon), groups are treated differently and measurements are conducted to determine if different treatments appear to lead to different effects.

External Validity: The extent to which the results of a study are generalizable or transferable. See also validity

Face Validity: How a measure or procedure appears.

Factor Analysis: A statistical test that explores relationships among data. The test explores which variables in a data set are most related to each other. In a carefully constructed survey, for example, factor analysis can yield information on patterns of responses, not simply data on a single response. Larger tendencies may then be interpreted, indicating behavior trends rather than simply responses to specific questions.

Generalizability: The extent to which research findings and conclusions from a study conducted on a sample population can be applied to the population at large.

Grounded theory: Practice of developing other theories that emerge from observing a group. Theories are grounded in the group's observable experiences, but researchers add their own insight into why those experiences exist.

Holistic perspective: Taking almost every action or communication of the whole phenomenon of a certain community or culture into account in research

Hypertext: A nonsequential text composed of links and nodes

Hypothesis: A tentative explanation based on theory to predict a causal relationship between variables.

Independent Variable: A variable that is part of the situation that exist from which originates the stimulus given to a dependent variable. Includes treatment, state of variable, such as age, size, weight, etc.

Induction: A form of reasoning in which a generalized conclusion is formulated from particular instances

Inductive analysis: A form of analysis based on induction; a researcher using inductive analysis starts with answers, but forms questions throughout the research process.

Internal Consistency: The extent to which all questions or items assess the same characteristic, skill, or quality.

Internal Validity: (1) The rigor with which the study was conducted (e. g., the study's design, the care taken to conduct measurements, and decisions concerning what was and wasn't measured) and (2) the extent to which the designers of a study have taken into account alternative explanations for any causal relationships they explore (Huitt, 1998). In studies that do not explore causal relationships, only the first of these definitions should be considered when assessing internal validity. See alsovalidity.

Interrater Reliability: The extent to which two or more individuals agree. It addresses the consistency of the implementation of a rating system.

Interval Variable: A variable in which both order of data points and distance between data points can be determined, e.g., percentage scores and distances

Interviews: A research tool in which a researcher asks questions of participants; interviews are often audio- or video-taped for later transcription and analysis.

Irrelevant Information: One must decide what to do with the information in the text that is not coded. One's options include either deleting or skipping over unwanted material, or viewing all information as relevant and important and using it to reexamine, reassess and perhaps even alter the one's coding scheme.

Kinesics: Kinesic analysis examines what is communicated through body movement

Level of Analysis: Chosen by determining which word, set of words, or phrases will constitute a concept. According to Carley, 100-500 concepts is generally sufficient when coding for a specific topic, but this number of course varies on a case by case basis.

Level of Generalization: A researcher must decide whether concepts are to be coded exactly as they appear, or if they can be recorded in some altered or collapsed form. Using Horton as an example again, she could code profanity individually and code "damn" and "dammit" as two separate concepts. Or, by generalizing their meaning, i.e. they both express the same idea, she could group them together as one item, i.e. "damn words."

Level of Implication: One must determine whether to code simply for explicit appearances of concepts, or for implied concepts, as well. For example, consider a hypothetical piece of text about skiing, written by an expert. The expert might refer several times to "???," as well as various other kinds of turns. One must decide whether to code "???" as an entity in and of itself, or, if coding for "turn" references in general, to code "???" as implicitly meaning "turn." Thus, by determining that the meaning "turn" is implicit in the words "???," anytime the words "???" or "turn" appear in the text, they will be coded under the same category of "turn."

Link: In hypertext, a pointer from one node to another

Matched T-Test: A statistical test used to compare two sets of scores for the same subject. A matched pairs T-test can be used to determine if the scores of the same participants in a study differ under different conditions. For instance, this sort of t-test could be used to determine if people write better essays after taking a writing class than they did before taking the writing class.

Matching: Process of corresponding variables in experimental groups equally feature for feature.

Mean: The average score within a distribution.

Mean Deviation: A measure of variation that indicates the average deviation of scores in a distribution from themean: It is determined by averaging the absolute values of thedeviations.

Median: The center score in a distribution.

Mental Models: A group or network of interrelated concepts that reflect conscious or subconscious perceptions of reality. These internal mental networks of meaning are constructed as people draw inferences and gather information about the world.

Mode: The most frequent score in a distribution.

Multimodal Methods: A research approach that employs a variety of methods; see also triangulation

Narrative Inquiry: A qualitative research approach based on a researcher's narrative account of the investigation, not to be confused with a narrative examined by the researcher as data

Naturalistic Inquiry: Observational research of a group in its natural setting

Node: In hypertext, each unit of information, connected by links

Nominal Variable: A variable determined by categories which cannot be ordered, e.g., gender and color

Normal distribution: A normal frequency distribution representing the probability that a majority of randomly selected members of a population will fall within the middle of the distribution. Represented by the bell curve.

Ordinal Variable: A variable in which the order of data points can be determined but not the distance between data points, e.g., letter grades

Parameter: A coefficient or value for the population that corresponds to a particular statistic from a sample and is often inferred from the sample.

Phenomenology: A qualitative research approach concerned with understanding certain group behaviors from that group's point of view

Population: The target group under investigation, as in all students enrolled in first-year composition courses taught in traditional classrooms. The population is the entire set under consideration. Samples are drawn from populations.

Precision: In survey research, the tightness of the confidence limits.

Pre-defined or Interactive Concept Choice: One must determine whether to code only from a pre-defined set of concepts and categories, or if one will develop some or all of these during the coding process. For example, using a predefined set, Horton would code only for profane language. But, if Horton coded interactively, she may have decided to half-way through the process that the text warranted coding for profane gestures, as well.

Probability: The chance that a phenomenon has a of occurring randomly. As a statistical measure, it shown as **p** (the "p" factor).

Qualitative Research: Empirical research in which the researcher explores relationships using textual, rather than quantitative data. Case study, observation, and ethnography are considered forms of qualitative research. Results are not usually considered generalizable, but are often transferable.

Quantitative Research: Empirical research in which the researcher explores relationships using numeric data. Survey is generally considered a form of quantitative research. Results can often be generalized, though this is not always the case.

Quasi-experiment: Similar to true experiments. Have subjects, treatment, etc., but uses nonrandomized groups. Incorporates interpretation and transferability in order to compensate for lack of control of variables.

Quixotic Reliability: Refers to the situation where a single manner of observation consistently, yet erroneously, yields the same result.

Random sampling: Process used in research to draw a sample of a population strictly by chance, yielding no discernible pattern beyond chance. Random sampling can be accomplished by first numbering the population, then selecting the sample according to a table of random numbers or using a random-number computer generator. The sample is said to be random because there is no regular or discernible pattern or order. Random sample selection is used under the assumption that sufficiently large samples assigned randomly will exhibit a distribution comparable to that of the population from which the sample is drawn.

Randomization: Used to allocate subjects to experimental and control groups. The subjects are initially considered not unequal because they were randomly selected.

Range: The difference between the highest and lowest scores in a distribution.

Reliability: The extent to which a measure, procedure or instrument yields the same result on repeated trials.

Response Rate: In survey research, the actual percentage of questionnaires completed and returned.

Rhetorical Inquiry: "entails…1) identifying a motivational concern, 2) posing questions, 3) engaging in a heuristic search (which in composition studies has often occurred by probing other fields), 4) creating a new theory or hypotheses, and 5) justifying the theory" (Lauer and Asher, 1988, p. 5)

Rigor: Degree to which research methods are scrupulously and meticulously carried out in order to recognize important influences occurring in a experiment.

Sample: The population researched in a particular study. Usually, attempts are made to select a "sample population" that is considered representative of groups of people to whom results will be generalized or transferred. In studies that use inferential statistics to analyze results or which are designed to be generalizable, sample size is critical--generally the larger the number in the sample, the higher the likelihood of a representative distribution of thepopulation.

Sampling Error: The degree to which the results from the sample deviate from those that would be obtained from the entire population, because of random error in the selection of respondent and the corresponding reduction in reliability (Alreck, 454).

Sampling Frame: A listing that should include all those in the population to be sampled and exclude all those who are not in the population (Alreck, 454).

Selective Reduction: The central idea of content analysis. Text is reduced to categories consisting of a word, set of words or phrases, on which the researcher can focus. Specific words or patterns are indicative of the research question and determine levels of analysis and generalization.

Serial Effect: In survey research, a situation where questions may "lead" participant responses through establishing a certain tone early in the questionnaire. The serial effect may accrue as several questions establish a pattern of response in the participant, biasing results.

Short-term observation: Studies that list or present findings of short-term qualitative study based on recorded observation

Skewed Distribution: Any distribution which is not normal, that is not symmetrical along the x-axis

Stability Reliability: The agreement of measuring instruments over time.

Standard Deviation: A term used in statistical analysis. A measure of variation that indicates the typical distance between the scores of a distribution and the mean; it is determined by taking the square root of the average of the squared deviations in a given distribution.It can be used to indicate the proportion of data within certain ranges of scale values when the distribution conforms closely to the normal curve.

Standard Error (S.E.) of the Mean: A term used in statistical analysis. A computed value based on the size of the sample and the standard deviation of the distribution, indicating the range within which the mean of the population is likely to be from the mean of the sample at a given level of probability (Alreck, 456).

Survey: A research tool that includes at least one question which is either open-ended or close-ended and employs an oral or written method for asking these questions. The goal of a survey is to gain specific information about either a specific group or a representative sample of a particular group. Results are typically used to understand the attitudes, beliefs, or knowledge of a particular group.

Synchronic Reliability: The similarity of observations within the same time frame; it is not about the similarity of things observed.

T-Test: A statistical test. A t-test is used to determine if the scores of two groups differ on a single variable. For instance, to determine whether writing ability differs among students in two classrooms, a t-test could be used.

Thick Description: A rich and extensive set of details concerning methodology and context provided in a research report.

Transferability: The ability to apply the results of research in one context to another similar context. Also, the extent to which a study invites readers to make connections between elements of the study and their own experiences.

Translation Rules: If one decides to generalize concepts during coding, then one must develop a set of rules by which less general

concepts will be translated into more general ones. This doesn't involve simple generalization, for example, as with "damn" and "dammit," but requires one to determine, from a given set of concepts, what concepts are missing. When dealing with the idea of profanity, one must decide what to do with the concept "dang it," which is generally thought to imply "damn it." The researcher must make this distinction, i.e. make this implicit concept explicit, and then code for the frequency of its occurrence. This decision results in the construction of a translation rule, which instructs the researcher to code for the concept "dang it" in a certain way.

Treatment: The stimulus given to a dependent variable.

Triangulation: The use of a combination of research methods in a study. An example of triangulation would be a study that incorporated surveys, interviews, and observations. See also multi-modal methods

Unique case orientation: A perspective adopted by many researchers conducting qualitative observational studies; researchers adopting this orientation remember every study is special and deserves in-depth attention. This is especially necessary for doing cultural comparisons.

Validity: The degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. A method can be reliable, consistently measuring the same thing, but not valid. See also internal validity and external validity

Variable: Observable characteristics that vary among individuals. See also ordinal variable, nominal variable, interval variable, continuous variable, discrete variable,dependent variable, independent variable.

Variance: A measure of variation within a distribution, determined by averaging the squared deviations from the mean of a distribution.

Variation: The dispersion of data points around the mean of a distribution.

Verisimilitude: Having the semblance of truth; in research, it refers to the probability that the research findings are consistent with occurrences in the "real world."

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