

Glossary

A Refers to the baseline measurement in a single-case design.

A-B design A single-case design in which you measure the baseline behavior, institute a treatment, and use a posttest.

A-B-A design A single-case design consisting of a baseline measurement, a treatment, a posttest, and a return to the baseline condition. It may not be recommended if the participant is left without a beneficial or necessary treatment in the second baseline.

A-B-A-B design A single-case design consisting of a baseline, treatment, posttest, return to baseline, repeated treatment, and second posttest. This design gives the best chance of isolating causation.

Abscissa The horizontal or x axis of a graph.

Abstract A brief description of the research that is presented in an APA-format paper.

Achievement test Designed to evaluate an individual's level of mastery or competence.

Analytic statement Statements that are always true.

Analytic survey Seeks to determine the relevant variables and how they are related.

APA format Accepted American Psychological Association form for preparing reports describing psychological research.

Apparatus subsection The second subsection of the method section. When appropriate, contains information about the equipment used in an experiment.

Aptitude test Designed to assess an individual's potential ability or skill in a particular job.

Asymptotic Refers to tails of distributions that approach the baseline but never touch the baseline.

Author note A note at the end of an experimental report that contains information about the author or paper for readers' use.

Axial coding The process of rearranging data after open coding so that new relations are formed between concepts.

B Refers to the outcome (treatment) measurement in a single-case design.

Balancing A control procedure that achieves group equality by distributing extraneous variables equally to all groups.

Bar graph A graph in which the frequency for each category of a qualitative variable is represented as a vertical column. The columns of a bar graph do not touch.

Baseline A measurement of a behavior made under normal conditions (i.e., no IV is present); a control condition.

Between-groups variability Variability in DV scores that is due to the effects of the IV.

Between-subjects comparison Refers to a contrast between groups of participants who were randomly assigned to groups.

Carryover effect The effects of one treatment persist or carry over and influence responses to the next treatment.

Case studies Studies involving the intensive observation of a single participant over an extended period of time.

Case-study approach An observational technique in which a record of observations about a single participant is compiled.

Cause-and-effect relation Occurs when we know that a particular IV (cause) leads to specific changes in a DV (effect).

Citation A notation in text that a particular reference was used. The citation provides the

name(s) of the author(s) and date of the work's publication.

Cohort A group of individuals born during the same time period.

Comparative psychology The study of behavior in different species, including humans.

Complete counterbalancing All possible treatment sequences are presented.

Completely randomized ANOVA This one-way ANOVA uses independent groups of participants.

Concurrent validity Degree to which the score on a test or inventory corresponds with another measure of the designated trait.

Conditional matrix A diagram that helps the researcher consider the conditions and consequences related to the phenomenon under study.

Confirmability The extent to which the qualitative research report is accurate, unbiased, and can be confirmed by others.

Confounded experiment An experiment in which an extraneous variable varies systematically with the IV, which makes drawing a cause-and-effect relation impossible.

Confounding A situation in which the results of an experiment can be attributed to either the operation of an IV or an extraneous variable.

Constancy A control technique by which an extraneous variable is reduced to a single value that is experienced by all participants.

Content validity The extent to which test items actually represent the type of material they are supposed to represent.

Contradictory statement Statements that are always false.

Control Either directly manipulate (1) a factor of interest in a research study to determine its effects or (2) other, unwanted variables that could influence the results of a research project.

Control group In a two-group design, the group of participants that does not receive the IV.

Control procedure One of several steps experimenters take to ensure that potential extraneous variables are controlled, including random assignment, matching, and so on.

Convenience sampling A researcher's sampling of participants based on ease of locating the participants; often it does not involve true random selection.

Correlated assignment A method of assigning research participants to groups so that there is a relationship between small numbers of participants; these small groups are then randomly assigned to treatment conditions (also known as *paired or matched assignment*).

Correlated groups Groups of research participants that are related in some way, for example, matching, repeated measures, or natural sets.

Correlation coefficient A single number representing the degree of relation between two variables.

Correlational study Determination of the relation between two variables.

Counterbalancing A procedure for controlling order effects by presenting different treatment sequences.

Credibility The accuracy of the identification and description of the subject of the study.

Criterion validity Established by comparing the score on a test or inventory with a future score on another test or inventory.

Cross-cultural psychology A branch of psychology whose goal is to determine the universality of research results.

Cross-sectional research Comparison of two or more groups during the same, rather limited, time period.

Cultural response set The tendency of a particular culture to respond in a certain manner.

Culture Lasting values, attitudes, and behaviors that are shared by a group and transmitted to subsequent generations.

Debriefing session The time at the conclusion of an experiment when its nature and purpose are explained to participants.

Deductive logic Reasoning that proceeds from general theories to specific cases.

Degrees of freedom The ability of a number in a specified set to assume any value.

Demand characteristics Features of the experiment that inadvertently lead participants to respond in a particular manner.

Demographic data Information about participants' characteristics such as age, sex, income, and academic major.

Dependability The extent to which the researcher believes that the same results would be produced if the study were replicated.

Dependent variable (DV) A response or behavior that the experimenter measures. Changes in the DV should be caused by manipulation of the independent variable (IV).

Descriptive research methods Research methods that do not involve the manipulation of an independent variable.

Descriptive statistics Procedures used to summarize a set of data.

Descriptive survey Seeks to determine the percentage of the population that has a certain characteristic, holds a particular opinion, or engages in a particular behavior.

Differential carryover The response to one treatment depends on which treatment was administered previously.

Diffusion or imitation of treatment A threat to internal validity that can occur if participants in one treatment group become familiar with the treatment of another group and copy that treatment.

Directional research hypothesis Prediction of the specific outcome of an experiment.

Discussion section The fourth major section of the APA-format paper. Contains a summary of the experiment's results, a comparison of those results to previous research, and the conclusion(s) drawn from the experiment.

Double-blind experiment An experiment in which both the experimenter and the participants

are unaware of which treatment the participants are receiving.

Effect size The magnitude or size of the experimental treatment.

Elimination A control technique whereby extraneous variables are completely removed from an experiment.

Emic A culture-specific finding.

Empirical Objectively quantifiable observations.

Environmental generalization Applying the results from an experiment to a situation or environment that differs from that of the original experiment.

Error variability Variability in DV scores that is due to factors other than the IV, such as individual differences, measurement error, and extraneous variation (also known as *within-groups variability*).

Ethnocentric Other cultures are viewed as an extension of one's own culture.

Ethnographic inquiry Research in which the goal is to learn about a culture or some aspect of a culture from the perspective of the members of that culture.

Etic A finding that is the same in different cultures.

Experience IV Manipulation of the amount or type of training or learning.

Experiment An attempt to determine the cause-and-effect relations that exist in nature. Involves the manipulation of an independent variable (IV), recording of changes in a dependent variable (DV), and control of extraneous variables.

Experimental analysis of behavior A research approach popularized by B. F. Skinner, in which a single participant is studied.

Experimental design The general plan for selecting participants, assigning participants to experimental conditions, controlling extraneous variables, and gathering data.

Experimental group In a two-group design, the group of participants that receives the IV.

Experimental mortality This threat to internal validity can occur if experimental participants from different groups drop out of the experiment at different rates.

Ex post facto research A research approach in which the experimenter cannot directly manipulate the IV but can only classify, categorize, or measure the IV because it is predetermined in the participants (e.g., IV = sex).

Ex post facto study A study in which the variable(s) to be studied are selected after they have occurred.

External validity A type of evaluation of an experiment; do the experimental results apply to populations and situations that are different from those of the experiment?

Extraneous variables Uncontrolled variables that may unintentionally influence the dependent variable (DV) and thus invalidate an experiment.

Fabrication of data Those instances where the experimenter either deliberately alters or creates research data.

Factorial design An experimental design with more than one IV.

Factors Synonymous with IVs.

Figure A pictorial representation of a set of results.

Focus group Seven to 10 participants with shared experiences or similar characteristics who meet for 1 to 1½ hours to discuss a topic of common interest.

Frequency polygon A graph that is constructed by placing a dot in the center of each bar of a histogram and then connecting the dots.

General implication form Statement of the research hypothesis in an “if . . . then” form.

Generalization Applying the results from an experiment to a different situation or population.

Good participant effect The tendency of participants to behave as they perceive the experimenter wants them to behave.

Grounded theory A qualitative research approach that attempts to develop theories of understanding based on data from the real world.

Hawthorne effect Another name for reactance or reactivity effect.

Headings Titles for various sections of a psychology paper that are designed to help the reader understand the outline and importance of the parts of the paper.

Heterogeneity of variance Occurs when we do not have homogeneity of variance; this means that our two (or more) groups’ variances are not equivalent.

Histogram A graph in which the frequency for each category of a quantitative variable is represented as a vertical column that touches the adjacent column.

History A threat to internal validity; refers to events that occur between the DV measurements in a repeated-measures design.

Homogeneity of variance The assumption that the variances are equal for the two (or more) groups you plan to compare statistically.

Hypothesis An attempt to organize certain data and specific relations among variables within a specific portion of a larger, more comprehensive theory.

Incomplete counterbalancing Only a portion of all possible sequences are presented.

Independent groups Groups of participants formed by random assignment.

Independent variable (IV) A stimulus or aspect of the environment that the experimenter directly manipulates to determine its influences on behavior.

Inductive logic Reasoning that proceeds from specific cases to general conclusions or theories.

Inferential statistics Procedures used to analyze data after an experiment is completed in order to determine whether the independent variable has a significant effect.

Institutional Review Board (IRB) The university committee that is responsible for determining whether a proposed research project conforms to accepted ethical standards.

Instrumentation A threat to internal validity that occurs if the equipment or human measuring the DV changes the measuring criterion over time.

Interaction The joint, simultaneous effect on the DV of more than one IV.

Interaction of selection and treatment A threat to external validity that can occur when a treatment effect is found only for a specific sample of participants.

Interaction of testing and treatment A threat to external validity that occurs when a pretest sensitizes participants to the treatment yet to come.

Interactions with selection Threats to internal validity that can occur if there are systematic differences between or among selected treatment groups based on maturation, history, or instrumentation.

Internal validity A type of evaluation of your experiment; it asks whether your IV is the only possible explanation of the results shown for your DV.

Interobserver reliability The extent to which observers agree.

Interrater reliability Degree of agreement among judges concerning the content validity of test or inventory items.

Interrupted time-series design A quasi-experimental design, involving a single group of participants, that includes repeated pretreatment measures, an applied treatment, and repeated posttreatment measures.

Interval scale A scale of measurement that permits rank ordering of events with the assumption of equal intervals between adjacent events.

Introduction The first major section of the APA-format paper. Contains the thesis statement, review of relevant literature, and experimental hypothesis.

Level 1 heading A centered section title in which the first letters of major words are capitalized. Occupies a line by itself.

Level 3 heading A section title that is left-margin justified, italicized, and has the first letter of each major word capitalized. Occupies a line by itself.

Level 4 heading A section title that is indented five spaces, italicized, has only the first word capitalized, and ends with a period; it does not occupy a separate line.

Levels Differing amounts or types of an IV used in an experiment (also known as *treatment conditions*).

Line graph A graph that is frequently used to depict the results of an experiment.

Longitudinal research project Obtaining research data from the same group of participants over an extended period of time.

Main effect Refers to the sole effect of one IV in a factorial design.

Manuscript page header The first two or three words of the report's title. Appears with the page number on each page of the research report.

Marginal significance Refers to statistical results with a probability of chance between 5% and 10%; in other words, almost significant, but not quite. Researchers often talk about such results as if they reached the $p = .05$ level.

Matched pairs Research participants in a two-group design who are measured and equated on some variable before the experiment.

Matching variable A potential extraneous variable on which we measure our research participants and from which we form sets of participants who are equal on the variable.

Materials subsection The second subsection of the method section. When appropriate, contains information about materials other than the equipment used in the experiment.

Maturation A threat to internal validity; refers to changes in participants that occur over time during an experiment; could include actual

physical maturation or tiredness, boredom, hunger, and so on.

Measurement The assignment of symbols to events according to a set of rules.

Mean The arithmetic average of a set of numbers; found by adding all the scores in a set and then dividing by the number of scores.

Mean square The “averaged” variability for each source; computed by dividing each source’s sum of squares by its degrees of freedom.

Median The number that divides a distribution in half.

Method section The second major section of the APA-format paper. Contains information about the participants; the apparatus, materials, and testing instrument(s), and the procedures used in the experiment.

Mixed assignment A factorial design that has a mixture of independent groups for one IV and correlated groups for another IV. In larger factorial designs at least one IV has independent groups and at least one has correlated groups (also known as *mixed groups*).

Mode The score in a distribution that occurs most often.

Mortality A threat to internal validity that can occur if experimental participants from different groups drop out of the experiment at different rates.

Multiple-treatment interference A threat to external validity that occurs when a set of findings results only when participants experience multiple treatments in the same experiment.

Natural pairs Research participants in a two-group design who are naturally related in some way (e.g., a biological or social relationship).

Naturalistic observation Seeking answers to research questions by observing behavior in the real world.

Nay-sayers Participants who tend to answer no to all questions.

Negative correlation As scores on one variable increase, scores on the second variable decrease.

Nominal scale A scale of measurement in which events are assigned to categories.

Nondirectional research hypothesis A specific prediction concerning the outcome of an experiment is not made.

Nonequivalent group design A design involving two or more groups that are not randomly assigned; a comparison group (no treatment) is compared to one or more treatment groups.

Nonreactive measures DV measurements that do not influence the DV being measured.

Nonsystematic sources Sources for research ideas that present themselves in an unpredictable manner; a concerted attempt to locate researchable ideas has not been made.

Normal distribution A symmetrical, bell-shaped distribution having half the scores above the mean and half the scores below the mean.

Nuisance variable Unwanted variables that can cause the variability of scores within groups to increase.

Null hypothesis A hypothesis that says that all differences between groups are due to chance (i.e., not the operation of the IV).

One-way ANOVA A statistical test used to analyze data from an experimental design with one independent variable that has three or more groups (levels).

Open coding The process of describing data through means such as examination, comparison, conceptualization, and categorization.

Operational definition Defining the independent, dependent, and extraneous variables in terms of the operations needed to produce them.

Ordinal scale A scale of measurement that permits events to be rank ordered.

Ordinate The vertical or y axis of a graph.

Participant characteristics Aspects of the participant, such as age, sex, or personality traits, which are treated as if they were IVs.

Participant observation Research in which the researcher becomes part of the group being studied.

Participants at minimal risk Participants in an experiment that does not place them under physical or emotional risk.

Participants at risk Participants in an experiment that places them under some type of physical or emotional risk.

Participants subsection The first subsection of the method section. Provides full information about the participants in the study.

Personality test or inventory Measures a specific aspect of the individual's motivational state, interpersonal capability, or personality.

Physiological IV A physiological state of the participant manipulated by the experimenter.

Pie chart Graphical representation of the percentage allocated to each alternative as a slice of a circular pie.

Placebo effect An experimental effect caused by expectation or suggestion rather than the IV.

Plagiarism Using someone else's work without giving credit to the original source.

Pilot testing Preliminary, exploratory testing that is done prior to the complete research project.

Population The complete set of individuals or events.

Population generalization Applying the results from an experiment to a group of participants that is different and more encompassing than those used in the original experiment.

Positive correlation As scores on one variable increase, scores on the second variable also increase.

Post hoc comparisons Statistical comparisons made between group means after finding a significant *F* ratio.

Power The probability that a statistical test will be significant (i.e., the experimental hypothesis is accepted when it is true).

Practice effect A beneficial effect on a DV measurement caused by previous experience with the DV.

Precedent An established pattern.

Principle of falsifiability Results not in accord with the research hypothesis are taken as evidence that this hypothesis is false.

Principle of parsimony The belief that explanations of phenomena and events should remain simple until the simple explanations are no longer valid.

Procedure subsection The third subsection of the method section. Provides a step-by-step account of what the participants and experimenter did during the experiment.

Process The manner in which actions and interactions occur in a sequence or series.

Programmatic research A series of research experiments concerning a related topic or question.

Qualitative research Research conducted in a natural setting that seeks to understand a complex human behavior by developing a complete narrative description of that behavior.

Quasi-experimental design A research design used when the researcher cannot randomly assign experimental participants to the groups but the researcher does manipulate an IV and measure a DV.

Random assignment A method of assigning research participants to groups so that each participant has an equal chance of being in any group.

Random sample A sample in which every member of the population has an equal likelihood of being included.

Random sampling without replacement Once chosen, a score, event, or participant cannot be returned to the population to be selected again.

Random sampling with replacement Once chosen, a score, event, or participant can be returned to the population to be selected again.

Random selection A control technique that ensures that each member of the population has an equal chance of being chosen for an experiment.

Randomization A control technique that ensures that each participant has an equal chance of being assigned to any group in an experiment.

Range A measure of variability that is computed by subtracting the smallest score from the largest score.

Ratio scale A scale of measurement that permits rank ordering of events with the assumptions of equal intervals between adjacent events and a true zero point.

Reactance or reactivity effect The finding that participants respond differently when they know they are being observed.

Reactive arrangements A threat to external validity caused by an experimental situation that alters participants' behavior, regardless of the IV involved.

Reactive measures DV measurements that actually change the DV being measured.

Reference A full bibliographic record of any work cited in the text of a psychological paper.

Reference section A complete listing of all the references cited in a psychological paper.

Reliable Producing consistent measurements.

Reliability Extent to which a test or inventory is consistent in its evaluation of the same individuals.

Repeated measures An experimental procedure in which research participants are tested or measured more than once.

Repeated-measures ANOVA This one-way ANOVA uses correlated groups of participants.

Replication An additional scientific study that is conducted in exactly the same manner as the original research project.

Replication with extension An experiment that seeks to confirm (replicate) a previous finding but does so in a different setting or with different participants or under different conditions.

Research design The general plan for conducting research and gathering data.

Research idea Identification of a gap in the knowledge base or an unanswered question in an area of interest.

Research or experimental hypothesis The experimenter's predicted outcome of a research project.

Response set The result when an experimental context or testing situation influences the participants' responses.

Results section The third major section of the APA-format paper. Contains information about the statistical findings from the experiment.

Robust Refers to a statistical test that can tolerate violation of its assumptions (e.g., homogeneity of variances) and still yield valid results.

Rosenthal effect The result when an experimenter's preconceived idea of appropriate responding influences the treatment of participants and their behavior.

Running head A condensed title that is printed at the top of alternate pages of a published article.

Sample A group that is selected to represent the population.

Scale of measurement A set of measurement rules.

Selection A threat to internal validity that can occur if participants are chosen in such a way that the groups are not equal before the experiment; the researcher cannot then be certain that the IV caused any difference observed after the experiment.

Selective coding The process of selecting the main phenomenon (core category) around which all other phenomena (subsidiary categories) are grouped, arranging the groupings, studying the results, and rearranging where necessary.

Sequence or order effects The position of a treatment in a series determines, in part, the participants' response.

Serendipity A situation in which one phenomenon is sought but something else is found.

Single-blind experiment An experiment in which the experimenter (or participants) is unaware of the treatment the participants are receiving.

Single-case experimental design An experiment that consists of one participant (also known as $N = 1$ designs).

Single-strata approach Gathering data from a single stratum of the population of interest.

Situation sampling Observing the same behavior in different situations.

Source table A table that contains the results of ANOVA. *Source* refers to the source of the different types of variation.

Split-half technique Determination of reliability by dividing the test or inventory into two subtests and then comparing the scores made on the two halves.

Standard deviation Square root of the variance; has important relations to the normal curve.

Statistical regression A threat to internal validity that occurs when low scorers improve or high scorers fall on a second administration of a test solely as a result of statistical reasons.

Statistics The branch of mathematics that involves the collection, analysis, and interpretation of data.

Stimulus or environmental IV An aspect of the environment manipulated by the experimenter.

Stratified random sampling Random samples are drawn from specific subpopulations or strata of the general population.

Sum of squares The amount of variability in the DV attributable to each source.

Synergistic effects Dramatic consequences that occur when you combine two or more substances, conditions, or organisms. The effects are greater (or less) than what is individually possible.

Synthetic statement Statements that can be either true or false.

Systematic sources Thoroughly examined, carefully thought-out sources for research topics.

t test An inferential statistical test used to evaluate the difference between two means.

Table A chart containing an array of descriptive statistics.

Temporal generalization Applying the results from an experiment to a time that is different from the time when the original experiment was conducted.

Testing A threat to internal validity that occurs because measuring the DV causes a change in the DV.

Testing instrument(s) subsection The second subsection of the method section. When appropriate, contains information about standardized tests used in the experiment.

Test-retest procedure Determination of reliability by repeatedly administering a test to the same participants.

Theory A formal statement of the relations among the IVs and DVs in a given area of research.

Thesis statement A statement of the general research topic of interest and the perceived relation of the relevant variables in that area.

Three-way design A factorial design with three IVs.

Time sampling Making observations at different time periods.

Title page The first page of an APA-format paper. It includes the manuscript page header, the running head, the manuscript's title, and the name(s) of the author(s) and their affiliation(s).

Transactional system An analysis of how actions and interactions relate to their conditions and consequences.

Transferability The extent to which the results of a qualitative research project can be generalized to other settings and groups.

Treatment groups Groups of participants that receive the IV.

Treatment variability Variability in DV scores due to the effects of the IV (also known as *between-groups variability*).

True experiment An experiment in which the experimenter directly manipulates the IV.

Type I error Accepting the experimental hypothesis when the null hypothesis is true.

Type II error Accepting the null hypothesis when the experimental hypothesis is true.

Unbiased language Language that does not display prejudice toward an individual or group.

Valid Measuring what is supposed to be measured.

Validity The extent to which a test or inventory measures what it is supposed to measure.

Variability The extent to which scores spread out around the mean.

Variable An event or behavior that can assume two or more values.

Variance A single number that represents the total amount of variation in a distribution; also the square of the standard deviation, σ^2 .

Within-group counterbalancing Presentation of different treatment sequences to different participants.

Within-groups variability Another term for error variability.

Within-subject counterbalancing Presentation of different treatment sequences to the same participant.

Within-subjects comparison Refers to a contrast between groups of participants who were assigned to groups through matched pairs, natural pairs, or repeated measures.

Yea-sayers Participants who tend to answer yes to all questions.

Zero correlation Two variables under consideration are not related.