STATISTICS

Aggregated statistics – Information, written as numbers, about whole groups, not individuals in the groups; the term can also mean the study of this information.

Analysis of variance (ANOVA) – A statistical test showing the effects of an "independent variable" on a "dependent variable"; a technique to determine whether there are "statistically significant" differences of "means" between two or more groups.

Analytic Strategies- The choices in statistical procedures made by the investigators based on their values or what they consider important in a study.

Association (statistical) – A measure of whether and how closely certain values (numbers, amounts) in a study go up or down at the same time.

Bimodal distribution – A range of scores that has two most frequent scores instead of one.

Bottoms-up pooling - A statistical method that combines data from different groups by first comparing data across individual groups and then across the whole set. See "tops down pooling".

Chi-square – A statistical test that measures "significance" in the study of "frequency distributions."

Composite index- A combination of scores made of distinct factors or fundamental dimensions.

Computational formulas- A mathematical equation, of a fact or other logical relation, which helps to convey the conceptual basis of statistical tests

Confidence interval – A number (range) that shows how likely it is that the true amount is inside the listed range of amounts; for example, a 95% confidence interval of 25-45 would mean there is a 95% chance that the right amount (number, score, measurement) is somewhere between 25 and 45.

Correlation – A measure ranging from 0.00 to 1.00, of how well two or more things ("variables," values, scores, etc.) change together. Both things may get higher at the same time, or lower at the same time, or one may get higher while the other gets lower. For example, saving money and spending money are correlated (inversely), because the more money you save, the less you spend.

Covariate - A variable that may affect the relationship between two variables of interest, but is not of intrinsic interest itself. The researcher may choose to control for or statistically reduce the effect of a covariate.

Cronbach's Alpha – A number showing whether all the items on a scale or test are related and pulling in the same direction.

Degrees of freedom (df) – The number of values/amounts that are free to vary in one calculation. Degrees of freedom are used in the formulas that test hypotheses statistically.

Descriptive statistics – A way of sharing information by putting numbers into words so the information is easier to understand.

Distribution – The measure of how often something (for example, an age or a hair color) is found in the group being studied; or the range of those measures.

STATISTICS

Effect size - A measurement of the strength of a relationship between two variables. A statistical test may tell the researcher that a significant relationship may exist, but the effect size answers the question on how much one variable impacts the other (e.g., diet explains 80% of variance in weight gain).

Frequency distribution – A scale, drawing, or graph that shows how often something (a number, answer, percentage, score) is found in the total pool of information being studied.

F-test - A statistical test (also known as Analysis of Variance) used to compare two or more groups for significance of the statistical difference between/ among them. See ANOVA.

Hill and valley effect - The occurrence of several extreme scores when looking at the data, usually when there's excessive variability within groups or individuals (i.e. some individuals may score extremely high while others score extremely low).

Hit-rate – A measure of how often the cause (the "independent variable") predicts the effect (the "dependent variable").

Mean (arithmetic) – The average of a group of values (numbers, scores); the number you would get if you added the score of each person, for example, and then divided that by the total number of people.

Median – The exact middle; the point which divides a set of values (numbers, scores, amounts) so that exactly half the values are higher than the point and exactly half are lower.

Mode – The most frequent value (number, score, amount) in a group of values. For example, the mode in the group of "3, 5, 3, 100" is "3."

N – A measure of how many people or things in a group were studied by the researcher; followed by an equal sign and a numeral.

Non-parametric statistical procedures – Tests that don't need to make strong assumptions about characteristics of the people who take the tests.

Normal frequency distribution curve – A bell-shaped curve of values (amounts, numbers, scores) in which the average, the midpoint, and the most frequent score are all the same.

Null hypothesis – The idea that the causes, effects, amounts, or changes in question (the study "variables") are not really connected to each other at all. This hypothesis is the opposite of the research hypothesis.

Ordinal scale – A ranking of values (amounts, numbers, scores) from greatest to least, lowest to highest, first to last, etc., but by a category instead of a number. For example, social class could be grouped and ordered as lower class, working class, middle class, and upper class. Items (groupings) on this kind of scale are not equally spaced.

Outliers- Abnormal values in the data that are unusually large or unusually small compared to the others.

Parameter – Something that sets a group of people apart from other groups

Parametric statistical procedures – Ways to study information that is taken from a group of people who fit a "normal" range like the bell curve.

Percentage – A part of a whole, when the whole is divided in hundredths.

STATISTICS

Percentile – A number showing how many cases, out of every hundred, fall below the point (score, amount) in question.

Pie chart – A drawing of a circle that is divided into pieces like a pie. Each piece shows how much of the whole is taken up by that group, thing, process, etc.

Plot- A way of summarizing data and to illustrate the major characteristics of the distribution of the data in a convenient form

Probability – A measure of how likely something is. For example, probability could be written as "p<.05," which means that based on chance alone this thing should happen fewer than 5 times in 100.

Quadratic Model - A curve estimation "regression" model used when there's curvilinear a relationship between two variables. An example of a curvilinear relationship would be as dose of medicine rises, severity of illness goes down. But at some point, the patient begins to experience negative side effects associated with too high a dosage, and the severity of illness begins to increase again (in a graph the relationship is pictured as a curve).

Range – All the values (amounts, numbers, scores) from lowest to highest; the distance the whole group covers

Rank order – Putting items or people in order from lowest to highest, without numbers. For example, putting children in an order from shortest to tallest without including their heights measured in feet or inches.

Ranking scale – A way of ordering groupings from "more" to "less" or "low" to "high," but not by numbers; also called an "ordinal scale."

Rating scale – A way of ordering groupings from "more" to "less" or "low" to "high," with a number attached to each point on the scale.

Ratio scale – A scale with an absolute zero point and equal space between each point; for example, weight or height is measured on a ratio scale.

Regression analysis – A way of predicting one value/amount (the "effect" or "dependent variable") from other values/ amounts (the "causes" or "independent variables"); predicting the effect by what the cause looks like

Response rate – A number showing how many questionnaires were filled out, usually written as a percentage (of the total questionnaires sent or given).

Significance – A mathematical test of whether a study's results could be caused by chance or whether they really show what they seem to show.

Skewness - Refers to a lack of symmetry in a distribution represented in a "bell curve". Data from a positively skewed (skewed to the right) distribution have values that are bunched together below the average (lower scores are prevalent). Data from a negatively skewed (skewed to the left) distribution have values that are bunched together above the average (higher scores are prevalent).

Spurious correlation – What looks like a link between two things, when the "link" is really caused by a third thing. For example, doctors often own houses, but that is not just because doctors are doctors; it is also because doctors earn a lot of money.

STATISTICS

Standard deviation – A measure of how widely the values (amounts, numbers, scores) in a group of values are spread around the "mean" (midpoint). For example, all the scores may be very close to the midpoint, or many of them may be much higher or lower.

Tops down pooling - A statistical method that combines data from different groups by exploring the data downwards – that is first comparing data from the whole set and then looking at individual sites or groups. See "Bottom up pooling".

T-test – A statistical test of the difference between two "means."

Unit of analysis – What size or number is being counted as separate within a larger group in a study; for example, an individual person, a family, a city, or a school. This unit will be different for different studies

Univariate analysis – The study of only one thing that might change, not a group of different things that might each change.

Variance – The measure of how wide the range of values (amounts, sizes, or scores written in numbers) is; of how far apart these numbers are. It is a number found by multiplying the "standard deviation" by itself.

ETHICS OF RESEARCH

Anonymity – The state of having your individual identity protected, especially from researchers. For example, someone would be anonymous who answered a mail survey that didn't ask for the person's name or any other ID

Confidentiality – A promise from the interviewer to the person being interviewed that no information will be given to anyone except the researchers if it can show who the person being interviewed is. For example, an interviewer could promise an ex-patient that complaints the ex-patient makes about a doctor would never reach anyone not working on the study, unless the complaint were completely separated from the ex-patient who made it. There are almost always some limits to confidentiality; for example, if the person being interviewed is thought to be a "danger to self or others," then that information could be given after all. If an interviewer thinks a person is suicidal, the interviewer could tell a doctor so, even if the interview is confidential.

Distractors - Any questions or events, which diverts attention from what is being tested. Usually, items in a questionnaire to keep subjects from understanding what's being tested.

Eligibility criteria – The detailed rules for what kind of people a researcher will let into a certain study; for example, being over 60 and having a diagnosis of anxiety disorder could be eligibility criteria for a study about how a new medication works for elderly, anxious people.

Ethics of research – Questions and opinions about whether what the researcher is doing or trying to do, and how, are morally right. Some of these issues are confidentiality, human rights, and fair reporting.

Human subjects protections – Rules and laws to make sure the people being studied in a research project or experiment are treated fairly.

Informed consent - Agreement of a person being studied, based on the person's knowledge about the goals, methods, benefits, and risks of the study. Informed consent is given with the understanding that the person can change his or her mind about the study at any time.

Institutional Review Board (IRB) – The group who looks at the ethical standards of all research that involves studying people.

Instruments – Ways to find and measure information; for example, surveys, tests, scales, or ratings.

Interaction effects – Changes in a "dependent variable" that are caused by two or more "independent variables" that act together.

Internal consistency – A measure of how well items of a scale or test are linked to each other, whether they belong together and are pulling in the same direction.

Internal consistency reliability - A type of reliability estimation based on the scores obtained during one test administration. See reliability.

Internal validity - A measure of how well a study accounts for and controls all the other differences (that are not related to the study question) among the people being studied. An internally valid study usually requires a "control group" and "random assignment." In an experiment, this kind of validity means the degree to which changes that are seen in a "dependent variable" can be linked to changes in the "independent variable."

Interpretation – The way researchers explain results of a study, or the information found in the study.

ETHICS OF RESEARCH

Risks and benefits – What might go wrong because of a study and what good might come of a study (or treatment, program, etc.)

Special populations – Groups of people that can't be studied in the same way and by the same rules as other groups, for some reason.

Study blind policy - Guidelines designed to limit or prohibit access of data by non-authorized users in a study.

EVIDENCE

Anecdotal evidence – What people say about something; not proven by "hard" (experimental) research.

Multiple outcome domains- When the results of a study generate multiple areas of discussion and topics. Examples of multiple domains include mental health status; living situation; satisfaction with services, etc.

TYPES OF ANALYSIS RESEARCH

Bivariate analysis – The study of two things (amounts, values, "variables") and how they are connected.

Cluster analysis – A study that puts people or things into a small number of separate groups, so that there will be as much likeness within each group, and as much difference among the groups, as possible.

Cohort analysis – A study of a group of people who stay in that group over a long time. For example, all people born in 1960 are a cohort; or all students who will graduate from high school in 1999. The study follows this group over time, rather than looking at them once.

Content analysis – A kind of study that picks out themes by noticing the details of books, newspapers, movies, speeches, etc.; for example, counting the number of times a word or phrase is used in President Clinton's speeches.

Cross site analyses - A type of analyses that integrates data from a variety of sources, representing measurement at multiple levels (e.g. data on population, program model, local environment contexts, cost, etc.)

Exploratory analysis – A type of analysis that is used to understand an observable fact or event when there are no assumptions or expectations about

Exploratory factor analysis - A type of analysis conducted to discover what underlying factors are behind a set of variables or measures. For example, amount of "television watched", "radio listened", and "newspaper read" might be grouped together in a factor called "mass media exposure".

Meta-analysis - A technique that allows one to combine the findings from existing research studies on a particular topic to determine whether significant trends can be found.

Multivariate analysis – The study of two or more effects ("dependent variables") at one time.

Parametric statistical procedures – Ways to study information that is taken from a group of people who fit a "normal" range like the bell curve.

Regression analysis – A way of predicting one value/amount (the "effect" or "dependent variable") from other values/ amounts (the "causes" or "independent variables"); predicting the effect by what the cause looks like.

Secondary analysis – A way of studying information that has been found or written about by someone else

Tools – Ways of testing or measuring; for example, questionnaires, rating scales, etc.

RESEARCH PARTICIPANTS

Anonymity – The state of having your individual identity protected, especially from researchers. For example, someone would be anonymous who answered a mail survey that didn't ask for the person's name or any other ID.

Attrition – The "drop-out" rate among people who are being studied. People may quit because they want to, or they may not be able to stay in the study group (because of illness, lack of time, moving to another city, etc.), or they may not fit into the study anymore (if they get a job or marry, for example, in a study about single people who are not working).

Case - A single person, thing, or event being studied for which attributes have been assigned. (I AM NOT A CASE AND I DON'T NEED TO BE RESEARCHED)

Catchment area – The place near a certain organization, like a center or hospital, which includes a set of clients (patients, participants).

Cluster sampling - To select naturally occurring groups within a population (e.g. classes within a school).

Comparison group – See "control group."

Control group – The people being studied who are not getting the treatment or other "intervention"/change that the people in the "experimental" group are getting; for example, in a study testing a medication, the control group would not take the medication.

Crossover participants - A type of intervention assignment in which participants may receive different interventions during the life of the study.

Drop-out – A person who was being studied but who couldn't keep on with the study or didn't want to

Eligibility criteria – The detailed rules for what kind of people a researcher will let into a certain study; for example, being over 60 and having a diagnosis of anxiety disorder could be eligibility criteria for a study about how a new medication works for elderly, anxious people

Enrollment - When a subject enters a particular study WITH INFORMED CONSENT and is assigned to a condition.

Exclusion Criteria- When a subject does not meet the basic parameters for participation within the study because she/she doesn't have a certain characteristic or trait, they may be excluded from the sample.

Experimental group – The people who receive the treatment being studied. This group is compared with the "control group," in which people are as much like the experimental group as possible, except that the control group does not receive the treatment

Matching – Choosing a "control group" (the group who doesn't receive the treatment or other thing being tested) who is like the "experimental group" (who does receive the treatment); the groups would be alike in gender, age, race, and severity of disability, for example

Non-probability sampling – Choosing people from a larger group in a way that doesn't show what chance each person in the larger group had of being chosen

Parameter – Something that sets a group of people apart from other groups

Population – The total number, usually of people, in the group being studied. In some studies, the population may be organizations, records, or events instead of people.

RESEARCH PARTICIPANTS

Probability sampling – Also known as "random sampling." Choosing people to be studied, in such a way that each person (or thing, place, etc.) in the total pool has an equal chance of being chosen

Quota sample – A set number of people chosen for something being studied (for example, their religious practices or their work history) who all belong to one place (for example, one city neighborhood) that is chosen at random

Random assignment – The process of putting study participants into groups ("experimental" or "control") purely by chance

Random sample – A group of people (or animals or things) chosen from a larger group by chance. Sometimes this kind of sampling is done with a table of random numbers, or with a computer giving out random numbers, or by drawing lots.

Respondent – A person who is being interviewed or studied or who answers a questionnaire.

Sample – A part of a larger group of people. The sample may or may not be chosen by chance. This term can also be a verb, meaning to choose this smaller group

Scale respondent – The person filling out the survey or taking the test; for example, a parent, spouse, relative, or teacher of the participant

Self-selection – A way of choosing the people for a study by letting them set themselves apart from a larger group in some way; for example, by responding to a questionnaire or by going to a program

Snowball sampling – A way of finding people to study by asking them about each other; for example, choosing one person who was born in Germany, then asking that person for the name of a second person born in Germany, and so on, in a chain.

Stratification – A way of ordering individual people within a social system. The different rungs of the ladder depend on, for example, income, education, work, or power. The term can also mean ranking anything on different levels, by group or category.

Stratified sample – A group of people or things chosen so that certain levels or smaller groupings (like certain ages, incomes, or diagnoses) are kept together and a set number of people or things from each level are in the larger group. A stratified "random sample" chooses the people or things within each grouping or level by chance, but decides ahead of time how many people or things there will be within each level and what the levels will be.

TYPES OF RESEARCH DESIGN

Applied research – A kind of study that tries to make sense of the real world and to change what people actually do in the real world.

Crossover study design - The administration of two or more experimental therapies one after the other in a specified or random order to the same group of people.

Cross-sectional study – Research that compares people at one time only. Cause and effect can't be seen in this kind of study.

Cross-sectional - Studies in which participants are evaluated over short periods of time.

Demography – The study of a group of people, including its size, how old different members are, what sex and race different members belong to, how many people are married, how many years they went to school, etc.

Descriptive study – Research that finds out how often and where something (like a race or an age or a behavior) shows up; this kind of study doesn't look at "cause" and "effect," and is not "experimental."

Effectiveness study – A measure of change after treatment; not an "experimental" study having a "control group."

Efficacy study – A study comparing an "experimental group" (who receives the treatment or whatever is being tested) to a "control group" (who does not receive the treatment)

Empirical method – A kind of research that is based on believing that all real facts must come through the senses or a practical experiment, not just through reasoning. A conclusion must be proven by facts (results that can be measured, like blood pressure or body weight) rather than just "following" or "making sense."

Ethnography – A kind of study that looks at and describes a society's culture

Evaluation research – A study to see whether a program or a project is doing what it set out to do.

Experimental design – A kind of study that controls the circumstances of the research and measures the results exactly.

Explanatory study – A type of study that tries to understand causes and effects and relationships among them, instead of just reporting them.

Exploratory study – A beginning study of what will be looked at later in a more important, usually larger study.

Factor analysis – A type of study used to find the underlying causes and characteristics of something. The general purpose of this test is to take the information in a large number of "variables" and to link it with a smaller number of "factors" or causes.

Feasibility study – A first, small study to see if the larger study will be possible and to see what problems the larger study might have; also called a pilot study.

Field research – A kind of study that looks at people in their everyday world, not in a laboratory or other special setting. The everyday world is the "field." This research is usually not "experimental."

Hypothesis Testing - A hypothesis is a declarative sentence stating the best guess the investigator has as to what will happen when the research is completed. The steps in hypothesis include problem statement, a null hypothesis, an appropriate alpha level; assumptions about the data; and calculation using appropriate statistics

Longitudinal research design – A study lasting a long time (usually years), because the researcher is seeing how time affects the main question of the research

TYPES OF RESEARCH DESIGN

Observational Research - A type of research design in which there's no interaction between the investigator and the subject. Compare to "Participant observation"

Observational study - A study that records events occurring in a defined population without any intervention by the researcher.

PAR – See "participatory action research."

Participatory Action Research (PAR) – A type of study in which a researcher becomes a member of the group being studied and finds out information by doing what the group is doing

Pilot study – A small first study using the same methods that a researcher wants to use for a larger study; the pilot study shows how well those methods work.

Pre-post testing – Giving the same test before treatment and just after treatment.

Pretest – A test given to a small group of people to see how well the test works before giving it to more people.

Probe - To study subjects using comprehensive interview methods and asking several questions.

Qualitative studies – Research using what people say or write in words, rather than numbers or people's numbered answers; for example, studies based on short answers or personal histories.

Quantitative studies – Studies of information that people give in numbers or in a way that can be numbered.

Quasi-experimental design – A study that seems like an "experimental study" and is designed to be almost as powerful a test as if it were experimental, but the people studied are not put into their groups randomly and there is no "comparison or control group."

Randomized Complete Block Design- A design in which the subjects are put into groups (blocks) of the same size as the number of treatments. The members of each block are then randomly assigned to different treatment groups.

Research design – A plan for gathering and studying information.

Services research – The study of places or groups, like a mental health center, that offer services to people. The research usually focuses on how well the services work.

Survey research – A type of study that uses phone questions, mailed questions, interviews, or self-completed forms, and that does not use the "experimental method."

Test-retest method – A way of measuring something by first giving a test and then, after waiting a set time, giving the same test again to the same group of people

Time series design – A way of studying what researchers have noticed at set times; for example, studying how many cavities a group of children have every 6 months.

Tracking databases - Monitoring databases to select information randomly about subjects over a period of time in a consistent fashion so reports can be generated for further analysis.

METHODS OF RESEARCH

Concept mapping – Grouping ideas or results based on how alike they are and showing the groups in picture form.

Cross-cultural method (comparative method) – A way of studying different cultural groups (for example, Eskimos and Mennonites) to see how they are the same and how they are different.

Cross-validation - A method used to prove the validity of a test by administering it a second time on a new selected group from the same population.

Face-to-face interview – A meeting to ask and answer questions in person, not over the phone or by mail.

Field notes – Reports about things, people, or conversations being studied in the everyday world, not in a lab or other situation set up by the researcher. The everyday world is the "field."

Focus group – A group of people who have shared an experience (for example, who have all taken the same medication or who have all been sexually harassed) and who are asked about that experience.

Inductive method – A way of making general statements based on individual examples, rather than starting with the general statements and drawing examples from those

Interview schedule – Set questions used in an interview.

Item-Scale correlation – Usually the first step in drawing up a test or scale. The researcher gives the test to a number of people and then sees how well their responses to each item match their overall responses to the whole scale. This shows the researcher whether each item belongs in the scale

Mail survey – A questionnaire mailed to people or groups who fill out the form and mail it back to the researcher.

Methods – Ways of finding and studying information.

Non-parametric statistical procedures – Tests that don't need to make strong assumptions about characteristics of the people who take the tests.

Paper and pencil – Written (used to describe a test, survey, or rating); not automated.

Participant observation – A way of gathering information by becoming part of the group you are studying. Other members of the group may or may not know about the research.

Participant Observation - Investigation in which a researcher participates as a member of the group. The researcher may choose to inform the group of his role or in some cases omit his identity and act as an ordinary member of the group.

Poll – A survey that asks people questions about certain issues, topics, or candidates, either face-to-face, by mail, by phone, or by computer.

Pooling - Term used to describe the act of combining data from more than one group of subjects or combining scores from different variables to produce a single score.

Qualitative Methods - Methods used in research involving detailed, verbal descriptions of characteristics, cases, and settings. Qualitative research typically uses observation, interviewing, and document review to examine the quality, meaning, and context of people's answers.

Questionnaire – A set of questions written on a form.

METHODS OF RESEARCH

Random numbers – Numbers that allow a researcher to choose participants purely by chance; usually generated by a computer.

Sample frame – The methods for choosing the group of people to be studied; or the larger group from which that group is chosen.

Scale – A test; a group of linked questions that can be added together to form a measure of one thing.

Scaling – Giving numbers, in order, to information which was in words or ideas; for example, showing a person's opinion by a number from this list- 1) strongly agree; 2) agree; 3) disagree; 4) strongly disagree. Scaling always uses numbers.

Self-administered questionnaire (self-report) – A set of written questions which the person being studied fills out and returns to the researcher.

Structured interviews – Interviews that use a set list of questions the interviewer asks every person. The interviewer writes down each person's answers on the form with the questions.

Tools – Ways of testing or measuring; for example, questionnaires, rating scales, etc.

PRESENTING RESEARCH

Bar graph – A drawing that uses bars for various groupings. The height of the bar shows how many things or people are in that grouping.

Bell Curve – See "normal frequency distribution curve.

Constituency-Oriented Research and Dissemination – A type of "participatory action research," developed by NIDRR to encourage more cooperation in research within their agency

Graph - A diagram that shows the relationship between two variables.

Inferential statistics – A method that allows researchers to make judgments about a whole "population" by using examples from a smaller part (a "sample") of that population

Matrix of Categories- A method of displaying relationships among themes in analyzing case study data that shows whether changes in categories or degrees along one dimension are associated with changes in the categories of another dimension.

Measure of central tendency – A way of showing the values (numbers, scores, amounts) at or near the middle of a group of values; for example, the "mean" and the "median" are measures of central tendency.

Normal frequency distribution curve – A bell-shaped curve of values (amounts, numbers, scores) in which the average, the midpoint, and the most frequent score are all the same.

Pie chart – A drawing of a circle that is divided into pieces like a pie. Each piece shows how much of the whole is taken up by that group, thing, process, etc.

Plot- A way of summarizing data and to illustrate the major characteristics of the distribution of the data in a convenient form.

TOOLS FOR ASSESSING RESEARCH

Assessment – A test or other way of measuring something, such as a person's mental health or goals or needs; often the first test in a series of tests, or a test given before treatment starts.

Benchmark – A standard, test, or point of reference (often a number).

Coding – Putting answers into groups (usually numbered groups), so the answers can be counted and studied more easily.

Cross-comparability – The degree in which similarities and differences in the characteristics of participants from different groups can be assessed.

Specificity – The measure of how well a scale shows whether a certain person is a member of a certain group; for example, how well it shows whether a client has a phobia of books, rather than showing only whether that client has a high level of general anxiety.

Specificity – The measure of how well a scale shows whether a certain person is a member of a certain group; for example, how well it shows whether a client has a phobia of books, rather than showing only whether that client has a high level of general anxiety.

Spurious correlation – What looks like a link between two things, when the "link" is really caused by a third thing. For example, doctors often own houses, but that is not just because doctors are doctors; it is also because doctors earn a lot of money.

Stability – A kind of "reliability"; it shows how alike measurements are at different times with the same test or scale

Test-retest method – A way of measuring something by first giving a test and then, after waiting a set time, giving the same test again to the same group of people.

Test-retest reliability - A way of assessing the consistency of a research instrument by calculating the correlation between scores obtained on repeated administrations.

Variance – The measure of how wide the range of values (amounts, sizes, or scores written in numbers) is; of how far apart these numbers are. It is a number found by multiplying the "standard deviation" by itself.

ISSUES, EFFECTS & ERRORS IN RESEARCH

Bias – Something that may lead a researcher to wrong conclusions; for example, mistakes or problems in how the study is planned, or how the information is gathered or looked at. If two different interviewers had different styles that caused people with the same thoughts to give different answers, but the answers were all put together in one pool, there would be a bias. It is impossible to conduct completely bias-free research.

Cannibalize - When the investigator chooses to eliminate or sacrifice "variables" or "cases" being studied to simulate earlier phases of clinical trials.

Ceiling effects - A term used to describe what happens when a group of subjects in a study have scores that are close to or at the upper limit (ceiling) of a variable. For example, the majority of subjects score 100% correct because the task is too easy.

Floor effects - A term used to describe what happens when a group of subjects in a study have scores that are close to or at the lower limit (floor) of a variable. For example, the majority of subjects score very poorly because the task is too difficult.

Legitimate peeking - When researchers agree to analyze data before stating their "hypothesis" in an effort to maximize the likelihood of finding statistical significance.

Non-response bias – A research fault based on the people who didn't agree to be studied, although they were chosen. People who didn't agree may have been different in other important ways from people who did, and so the study's results might be true for only part of the chosen group. For example, if the chosen group is depressed people and the more depressed ones were too tired or hopeless to answer a survey, then any answers about the amount of energy or hope in depression would not be giving a full picture.

Simpson paradox - A problem created when one combines small data sets from different sites into a large one. The paradox is that conclusions from the large data set are exactly the opposite of conclusion from the smaller sets.

Type I error – A mistake based on saying there is a difference when there is not.

Type II error – A mistake based on saying there isn't a difference when there is.

BASICS OF RESEARCH

Categorical variable – A piece of information that can be put in a single category, instead of being given a number- for example, the information about whether a person owns a car or about whether the person belongs to a certain race can be put in the category of "yes" or the category of "no."

Causality – The link between causes and their effects. For example, smoking (the cause) leads to lung cancer (the effect), and studying how often this happens and why would be studying causality. In most research about how people behave, causality can't be proven, and ideas are tested by whether things ("variables," amounts) change together.

Census – A count and record of how many people live in a certain area. A census taker often asks for information like address, age, birth date, sex, etc., for each person.

Classification – A way of putting facts, things, people, etc. into groups based on something they have in common.

Concepts – Thoughts or ideas, especially about how to organize things or about how things are alike or different.

Concurrent validity – The measure of how well the test being studied and the "gold standard" test measure the same thing at the same time.

Confounding Factors - The inability to tell between the separate impacts of two or more factors on a single outcome. For example, one may find it difficult to tell between the separate impacts of genetics and environmental factors on depression.

Construct – A general idea that tries to explain something; for example, social status is a construct

Construct validity – The measure of how well the test fits the ideas behind the study and the way the topic has been set out. Usually such a test separates 2 groups that are known to be opposite extremes.

Content validity – The measure of how fully the whole topic of the study is covered by the test . For a test to have content validity, every piece of the topic should also be part of the test. This is sometimes called "Face validity."

Continuous variable – Something that has an unlimited number of possible values; for example, height, weight, and age are all continuous because a person's height, weight, or age could be measured in smaller and smaller fractions between the numbers of the whole inches,

Control group – The people being studied who are not getting the treatment or other "intervention"/change that the people in the "experimental" group are getting; for example, in a study testing a medication, the control group would not take the medication.

Convergent validity – The measure of how well the test matches up with other tests of the same thing

Criterion validity – The measure of how well the test matches an accepted test ("gold standard") outside the study. There are two types of criterion validity-

Data – Information taken from the study records, questionnaires, interviews, etc.

Data collection – The gathering of information through surveys, tests, interviews, experiments, library records, etc.

BASICS OF RESEARCH

Data matrix- A table where the variable name is entered at the tops of the columns that will contain the data for that variable, and the case records are entered across the rows.

Databases – Groups of information recorded in a standardized (set, official) way.

Dependent variable – The "effect" that depends on changes in the "cause" (or "independent variable"). In an experiment, the dependent variable is the one the researcher measures. For example, better sleep might be dependent and a change in medication would be independent.

Descriptive statistics – A way of sharing information by putting numbers into words so the information is easier to understand.

Determinant – Something that makes something else change. For example, what you eat can make you have more red blood cells, and if red blood cells were being studied, the food you ate would be a determinant.

Direct observation – The study of things you have actually seen, rather than things you have heard about or read about.

Discrete variables – Separate values or groupings, with no possible values (numbers, measurements) between them. The only choices are separate categories; for example, "male" and "female" are discrete variables.

Domain – An area or topic or focus of a study

Dummy variable – A piece of information that has only one of only two possible values. For example, the answer to "Do you own a car?" would be either "1" for yes or "0" for no.

Effect – A result, usually of a "cause." Feeling tired is a common effect of not sleeping.

Effectiveness – The measure of how well something does what it's supposed to do for a certain group of people under normal conditions.

Efficacy – The measure of how well something does what it's supposed to do under ideal conditions, for example in a lab instead of in the patients' everyday lives

Eligibility criteria – The detailed rules for what kind of people a researcher will let into a certain study; for example, being over 60 and having a diagnosis of anxiety disorder could be eligibility criteria for a study about how a new medication works for elderly, anxious people.

Empirical- Anything that is based on observation and experimentation.

Epidemiology – The study of how common a disease or state is among a group of people.

Expected Outcome - The effects and unique contributions attributed to an intervention or specific treatment that the investigator expects to find.

External validity – A measure of how well the results of a study apply to other people in other places.

Face validity – A measure of whether a study's results seem to make sense and whether they are clear.

Factor – Something that causes a change in something else; a factor is also called an "independent variable" or a "cause."

BASICS OF RESEARCH

Factor validity – The measure of whether a test or scale based on a factor analysis makes sense for working with real patients in a clinical setting (not an experimental setting)

Fidelity- The observance of the actual treatment delivery to the set of rules originally developed; fidelity assessment considers to what degree the program was implemented as planned. Alternatively referred to as "treatment integrity".

Field notes – Reports about things, people, or conversations being studied in the everyday world, not in a lab or other situation set up by the researcher. The everyday world is the "field."

Field research – A kind of study that looks at people in their everyday world, not in a laboratory or other special setting. The everyday world is the "field." This research is usually not "experimental."

Generalization – A conclusion (statement) based on only a few examples.

Global – Covering everything.

Independent variable – Something that causes change in something else (the "dependent variable"). The independent variable is the one changed by the researcher to see what will happen to the dependent variable(s).

Index – A measure of something or how strong something is, how often it happens, or when it changes. The darkness of circles under a person's eyes can be an index of how he or she is sleeping.

Indicator – A characteristic something has that lets you tell that thing apart from something else. For example, pregnancy is an indicator that a person is female, but having long hair is not.

IRB – See "institutional review board."

Linear relationship - A relationship between two variables that are directly related.

Longitudinal data- Data collected overtime from a variable or group of subjects.

Longitudinal research design – A study lasting a long time (usually years), because the researcher is seeing how time affects the main question of the research

Management Information System (MIS) – A way of storing, accessing, and managing data in electronic form; also the database of that information

Nominal scale – A scale that uses groupings instead of ranking (scoring, numbering). For example, eye color could be grouped by "blue," "brown," or "green," not given different numbers. Other groupings used on a nominal scale could be by diagnosis, age, sex, or race.

Non-linear relationship- A relationship between two variables that are not directly related to each other

Objective measures - Any measure that is based on fact rather than opinion.

Observational Research - A type of research design in which there's no interaction between the investigator and the subject. Compare to "Participant observation

Outcome – The way something, often a treatment or a program or a study, turns out; the effect it has on people; or the record or measure of the effects.

Outcome measure – The measure of a change (usually the difference in scores before and after treatment).

BASICS OF RESEARCH

Outcome variables - Variables that are used to measure the overall impact of the study.

Outliers- Abnormal values in the data that are unusually large or unusually small compared to the others

Percentage – A part of a whole, when the whole is divided in hundredths.

Percentile – A number showing how many cases, out of every hundred, fall below the point (score, amount) in question.

PI – See "principal investigator."

Pie chart – A drawing of a circle that is divided into pieces like a pie. Each piece shows how much of the whole is taken up by that group, thing, process, etc.

Population – The total number, usually of people, in the group being studied. In some studies, the population may be organizations, records, or events instead of people.

Predictive validity - The measure of how well the test being studied predicts some practical result that the "gold standard" will find later.

Principal Investigator (PI) – The main person running a research study.

Protocol – The way a study should be done or how it was done; sometimes the test or other measurement used.

Provisional hypothesis - A temporary hypothesis that is constantly being interpreted in light of new facts

Qualitative Methods - Methods used in research involving detailed, verbal descriptions of characteristics, cases, and settings. Qualitative research typically uses observation, interviewing, and document review to examine the quality, meaning, and context of people's answers

Qualitative studies – Research using what people say or write in words, rather than numbers or people's numbered answers; for example, studies based on short answers or personal histories.

Quantitative studies – Studies of information that people give in numbers or in a way that can be numbered.

Quasi-experimental design – A study that seems like an "experimental study" and is designed to be almost as powerful a test as if it were experimental, but the people studied are not put into their groups randomly and there is no "comparison or control group."

Range – All the values (amounts, numbers, scores) from lowest to highest; the distance the whole group covers

Reliability – A measure of whether the answers or results will be the same if the test or experiment is repeated.

Replication – Repeating a study to check the results; or a study that repeats an earlier one.

Representative sample – People chosen because they can stand for a larger group, so that the researcher can link the findings about the sample to the larger group.

Sample – A part of a larger group of people. The sample may or may not be chosen by chance. This term can also be a verb, meaning to choose this smaller group

Secondary Data - The term refers to data that was collected for other studies. For the first researcher they are primary data, but for the second researcher, they are secondary data.

SES– See "socioeconomic status.

BASICS OF RESEARCH

Significance – A mathematical test of whether a study's results could be caused by chance or whether they really show what they seem to show.

Socioeconomic status (SES) – Also called "**socioeconomic position" (SEP)**. A measure that combines a person's education, work history, income, etc. into a single rating that tries to show where that person is placed in his or her society, and what larger group (for example, the "middle class") that person is part of.

Specificity – The measure of how well a scale shows whether a certain person is a member of a certain group; for example, how well it shows whether a client has a phobia of books, rather than showing only whether that client has a high level of general anxiety.

Spurious correlation – What looks like a link between two things, when the "link" is really caused by a third thing. For example, doctors often own houses, but that is not just because doctors are doctors; it is also because doctors earn a lot of money.

Stability – A kind of "reliability"; it shows how alike measurements are at different times with the same test or scale.

Stakeholders – People who have a share or an interest in something; for example, people who receive some of the profits of a hospital because they have helped to set up the hospital or have given money to it in the past. Stakeholders can be clients, relatives, professionals, community leaders, agency administrators, volunteers, etc

Standardized – A term that describes a way of giving, scoring, or reading tests or surveys; if a test is standardized, it is like other tests and the information taken from all of them can be compared

Statistics – The study (usually mathematical analysis) of information that is in the form of numbers or can be given numbers; the term can also mean that information itself.

Theory – A way of explaining or trying to explain a set of facts.

Tools – Ways of testing or measuring; for example, questionnaires, rating scales, etc.

Trend – A steady change in one direction over time; for example, more and more parents letting their children have later and later bedtimes over several years would be a trend.

Typology – A system that groups information into different types.

Unit of analysis – What size or number is being counted as separate within a larger group in a study; for example, an individual person, a family, a city, or a school. This unit will be different for different studies.

Validity – The measure of how well a scale or test shows what it's supposed to show. There are several different types of validity and each type must be tested separately-

Variable – Anything that can have different values (be different sizes or amounts) at different times; what is being measured in a study.

FUNDERS OF RESEARCH

Center for Mental Health Services (CMHS) – A part of the "Substance Abuse and Mental Health Services Administration" (within the federal government's Department of Health and Human Services). CMHS focuses on mental health services, evaluation, and exchanging knowledge and information.

HHS – Health and Human Services; a major branch of the executive government, including many agencies and organizations, such as SAMSHA, related to mental health services..

National Association of State Mental Health Program Directors (NASMHPD) – A national organization that represents the policy interests of state departments of mental health.

National Institutes of Mental Health – A federal institution for research (especially biomedical research) related to causes and treatments of mental illness.

NIMH – See "National Institutes of Mental Health

Request for proposal – An announcement that a grant or other funding is available; it also asks for responses (applications, descriptions of projects) from people who want to get that funding

RFP – See "request for proposal."

SAMHSA – See "Substance Abuse and Mental Health Services Administration."

Substance Abuse and Mental Health Services Administration (SAMHSA) – An organization of the federal government, within U.S. Health and Human Services, which focuses on substance abuse (issues related to drug or alcohol dependence) and on mental health.

QUESTIONS OF RESEARCH

Close-ended questions – Questions that list the possible answers; for example, "multiple-choice" questions or "true-false" questions

Double-barreled questions – Two different questions asked as if they were only one question; for example, "Did you take this medication and was it helpful?" which should be "Did you take this medication?" (first) and "Was it helpful?" (second).

Hypothesis – An idea that needs to be tested in an experiment; a hypothesis may or may not be true. For example, "The sun causes rain" and "The sun causes sunburn" are both hypotheses.

Open-ended questions – Questions which let people answer in their own words instead of having to choose from set answers like "a" or "b" or "true" or "false."

Research question- A clear statement in the form of a question of the specific issue that a researcher wishes to answer in order to address a research problem.

USES OF RESEARCH

Continuous quality improvement CQI – The use of date from "evaluation research" to make sure that mental health services and processes keep improving over time.

MEASURES OF RESEARCH

Differential scale – A kind of measurement in which possible answers or things are ordered from lowest to highest; for example, if possible answers ranged from "1—completely agree" to "10—completely disagree," someone taking the survey could choose any number from 1 to 10.

Index – A measure of something or how strong something is, how often it happens, or when it changes. The darkness of circles under a person's eyes can be an index of how he or she is sleeping.

Interval scale – A scale with points that are equally distant from each other, but without an absolute zero point; for example, the Celsius temperature scale.

Intra-class correlation – The best measure of "inter-rater reliability

Likert Scale – A scale to show how a person feels about something; it usually includes a range of possible answers, from "strongly agree" to "strongly disagree," which each have a number. The total score is found by adding all these numbers.

Measure – A test; or how an amount or a thing is shown.

Measurement scales - Measurement of a trait or event by assigning a number or category to represent it. The methods used to display data will depend on the type of scale used to measure the variable(s). There are four scales of measurement- nominal, ordinal, interval or ratio

Nominal scale – A scale that uses groupings instead of ranking (scoring, numbering). For example, eye color could be grouped by "blue," "brown," or "green," not given different numbers. Other groupings used on a nominal scale could be by diagnosis, age, sex, or race.

Operational definition – A way of showing something which can't be seen or measured, like social class, by something that can be measured, like the amount of money you make or how many years you have gone to school. This kind of definition explains an idea by telling how the idea is measured.

Outcome measure – The measure of a change (usually the difference in scores before and after treatment).

Outcome variables - Variables that are used to measure the overall impact of the study.

Probability – A measure of how likely something is. For example, probability could be written as "p<.05," which means that based on chance alone this thing should happen fewer than 5 times in 100.

Propensity scores - Measure of an individual's predicted probability of being a program participant given his/her observed characteristics.

Process measure – A measure of things that matter during actual treatment. These might include whether the client had easy access to services, whether the client was involved in treatment planning, etc.

Ranking scale – A way of ordering groupings from "more" to "less" or "low" to "high," but not by numbers; also called an "ordinal scale."

Rating scale – A way of ordering groupings from "more" to "less" or "low" to "high," with a number attached to each point on the scale.

Ratio scale – A scale with an absolute zero point and equal space between each point; for example, weight or height is measured on a ratio scale.

Reliability – A measure of whether the answers or results will be the same if the test or experiment is repeated

MEASURES OF RESEARCH

Sensitivity – A measure of how well a scale shows differences among people

Specificity – The measure of how well a scale shows whether a certain person is a member of a certain group; for example, how well it shows whether a client has a phobia of books, rather than showing only whether that client has a high level of general anxiety.

Split-half reliability – A measure of how well the different parts of a scale are working together; found by comparing half the items with the other half (for example, the odd-numbered items with the even-numbered items)

Standardized scales - Any scale or testing instrument that has been proved to be valid and reliable through experimentation and trial.

Subjective inclusion scales - A set of items in a questionnaire designed to measure personal impressions or feeling about a subject. An example of a question would be- "how do you feel about other people?"

Subjective measures - Any measure that is based on the researcher's feelings of intuitions about the topic being studied.

Tools – Ways of testing or measuring; for example, questionnaires, rating scales, etc.

Cultural Competence in Research

Cultural competence – Skills that help researchers to understand and appreciate cultural differences among different groups. Cultural competence requires that researchers draw on values and customs within the community they are studying and that they work with people of and from that community [Adapted from SAMHSA definition.]

Cultural diversity – Differences (for example, in race, language, or religion) in one community, organization, or nation. [Adapted from SAMHSA definition.] A city would be called culturally diverse if African-American, Hispanic, white, Italian, and Asian groups all lived there.

Culture – Shared beliefs, values, goals, norms, traditions, arts, history, religion, folklore, experience, and institutions of a group of people. [Adapted from SAMHSA definition.]

Ecological Fallacy – A mistake based on believing that what is true for a group must also be true for each individual in the group.

Ethnic group – A group of people, usually linked by race, who share a culture. [Adapted from SAMHSA definition.]

Gender – A category of "male" or "female" as defined and created by society; not the same as the biological sex of male or female. Sometimes "sex" and "gender" are both used to mean biological sex, but "gender" really means how a society teaches a person to look, act, and think, based on whether the person is biologically male or biologically female. I DON"T LIKE THIS DEFINITION AND IT SHOULD INCLUDE TRANS

Mainstream – the "general market"; usually white and middle class.

Multicultural – Having to do with two or more different groups of people, when each group has their own traditions, history, norms, and often language. [Adapted from SAMHSA definition.

Nationality – A label showing the country where someone lives or which someone calls a homeland; for example, American and Mexican are nationalities, and a woman who was born and raised in Mexico could give her nationality as Mexican even if she is legally an American citizen.

Race – A group of people who share certain inherited physical characteristics [adapted from SAMHSA definition]; for example, African-Americans and Native Americans are usually called races, but Southern Baptists are not. I HATE THIS DEFINITION

VALIDITY

Concurrent validity – The measure of how well the test being studied and the "gold standard" test measure the same thing at the same time.

Construct validity – The measure of how well the test fits the ideas behind the study and the way the topic has been set out. Usually such a test separates 2 groups that are known to be opposite extremes.

Content validity – The measure of how fully the whole topic of the study is covered by the test . For a test to have content validity, every piece of the topic should also be part of the test. This is sometimes called "Face validity."

Convergent validity – The measure of how well the test matches up with other tests of the same thing

Criterion validity – The measure of how well the test matches an accepted test ("gold standard") outside the study. There are two types of criterion validity-

External validity – A measure of how well the results of a study apply to other people in other places.

Cross-validation - A method used to prove the validity of a test by administering it a second time on a new selected group from the same population

Face validity – A measure of whether a study's results seem to make sense and whether they are clear.

Factor validity – The measure of whether a test or scale based on a factor analysis makes sense for working with real patients in a clinical setting (not an experimental setting)

Predictive validity - The measure of how well the test being studied predicts some practical result that the "gold standard" will find later.

Validity – The measure of how well a scale or test shows what it's supposed to show. There are several different types of validity and each typ

VARIABLES

Categorical variable – A piece of information that can be put in a single category, instead of being given a number- for example, the information about whether a person owns a car or about whether the person belongs to a certain race can be put in the category of "yes" or the category of "no."

Causality – The link between causes and their effects. For example, smoking (the cause) leads to lung cancer (the effect), and studying how often this happens and why would be studying causality. In most research about how people behave, causality can't be proven, and ideas are tested by whether things ("variables," amounts) change together.

Continuous variable – Something that has an unlimited number of possible values; for example, height, weight, and age are all continuous because a person's height, weight, or age could be measured in smaller and smaller fractions between the numbers of the whole inches,

Data matrix- A table where the variable name is entered at the tops of the columns that will contain the data for that variable, and the case records are entered across the rows.

Dependent variable – The "effect" that depends on changes in the "cause" (or "independent variable"). In an experiment, the dependent variable is the one the researcher measures. For example, better sleep might be dependent and a change in medication would be independent.

Discrete variables – Separate values or groupings, with no possible values (numbers, measurements) between them. The only choices are separate categories; for example, "male" and "female" are discrete variables.

Dummy variable – A piece of information that has only one of only two possible values. For example, the answer to "Do you own a car?" would be either "1" for yes or "0" for no.

Factor – Something that causes a change in something else; a factor is also called an "independent variable" or a "cause."

Independent variable – Something that causes change in something else (the "dependent variable"). The independent variable is the one changed by the researcher to see what will happen to the dependent variable(s)

Linear relationship - A relationship between two variables that are directly related.

Longitudinal data- Data collected overtime from a variable or group of subjects.

Non-linear relationship- A relationship between two variables that are not directly related to each other

Outcome variables - Variables that are used to measure the overall impact of the study.

VARIABLES

Transformed variables - A change made to the scores of all cases on a variable by the application of the same mathematical operation(s) to each score (common operations include addition, multiplication, and ranking)

Variable – Anything that can have different values (be different sizes or amounts) at different times; what is being measured in a study.