

Glossary

This glossary briefly sets out the meaning of selected key research-related terms used in the text.

Action research is a participative method of research that aims both to gain more knowledge and to change people's circumstances for the better by engaging them in the research process.

Bivariate analysis addresses the possible relationship between two variables. To facilitate this form of analysis, devices are employed such as the *stacked bar chart* and the *bivariate table* (see also measures of association and correlation).

Case-control studies use a descriptive method to compare the characteristics of a particular phenomenon or group of interest to a control or reference group.

Case study is the selection of one or more examples of a phenomenon that are taken as illustrative of a wider process or structure.

Cochrane Collaboration is an international non-profit and independent organization set up in 1993 to ensure that up-to-date, accurate information about the effects of health care interventions is readily available worldwide. Systematic reviews, which contribute to practice through assessments of the efficacy of particular interventions, are published in the *Cochrane Library* on the Internet.

Cohort studies are where particular populations are studied over time to investigate the effect of a particular variable.

Comparative research examines a specific unit of analysis across countries (or other entity). *Exploratory comparative research* investigates the same phenomenon in different countries, asking questions about why differences and similarities have occurred.

Concept is an abstract summary of a set of behaviours, attitudes and characteristics which have something in common.

Confounding occurs when the outcome of an intervention is affected as a consequence of an unknown factor or intervening variable.

Content analysis refers to all forms of textual analysis, but can also apply more narrowly to the identification of specific information such as recurring themes.

Covert research refers to research that takes place without the participant/subject's knowledge or consent.

Critical reflection by an individual or group refers to the process of identifying and examining the assumptions that underpin daily activity, and asking whether, and how, ideologies and attitudes influence interpretation and practice.

Data analysis refers to what is done with qualitative and quantitative research information once it has been gathered.

Descriptive statistics are the numerical, graphical and tabular techniques for organizing, analyzing and presenting data.

Documentary research is based on records relating to individuals or groups that have been generated in the course of their daily life.

Epistemology refers to the nature of knowledge or how we come to know certain things about the world. Different research methods draw on different traditions and produce different understandings of the world and different forms of knowledge.

Equipoise refers to a situation where there is an equal belief (or disbelief) on the part of a research participant and the researcher about the likely outcome of, or benefit from, one or more interventions associated with a health care research study.

Ethical guidelines address questions of justice, respect, harm and benefit. *Principles of ethics* are based on respect for autonomy, justice, doing no harm and using resources fairly and efficiently. *Rights* provide for basic needs with the best available service; protect people from harm, abuse, neglect and discrimination; respect their freedoms, of information, expression, thought and conscience; and promote social inclusion and self-determination.

Ethical outcomes aim to avoid or reduce harm and costs and to promote benefits.

Ethnography is an approach to research that includes methods such as observation, the ethnographic interview and the analysis of cultural artefacts.

Experimental methods include a wide variety of techniques, which are used to maintain scientific rigour in situations where it is not possible to set up controls. In an experiment, the relationship between two (or more) things is investigated by deliberately producing a change in one of them and examining the change in the other. Experiments test hypotheses as opposed to the strength of associations between variables, and may be randomized or non-randomized. *Pre-experimental designs* are non-randomized experiments where a particular outcome of interest is measured only in the intervention group. *Quasi-experimental designs* include the non-randomized control group before and after study, and the interrupted time series design.

Explanatory trials are used to discover which specific component of an intervention produces the outcome, by examining factors such as time, the active intervention and the setting.

Focus groups involve a researcher bringing together a group to discuss a topic in a focused way. This may be either a group of strangers or a group of people who already know each other.

Frequency tables enable a more precise understanding of data than can be gleaned from a chart – providing a detailed breakdown of a distribution by tallying the number of times each value of a variable appears. *Relative frequencies* express the number of cases within each value of a variable as a percentage or proportion of the total number of cases. *Cumulative frequencies* and *cumulative relative frequencies* are represented by columns on a frequency table indicating the number and/or percentage of cases that fall above or below a certain point on the scale. *Class intervals* that group together a range of values for presentation and analysis are used to construct *frequency distributions*, which are employed if the range of values that appears in the distribution is so large that this is difficult.

Generalization is the extrapolation of findings from a smaller to a larger population. In quantitative studies, generalization is based on statistical techniques to extrapolate from a sample to a larger population. *Theoretical generalization* refers to studies ranging from those designed to replicate previous research to those designed to disconfirm, or support, the theoretical propositions generated by earlier case studies. In qualitative research, theoretical or conceptual

generalizations about perceptions, beliefs and experiences in everyday life are usually based on a smaller number of informants, but are indicators of larger socio-cultural features or generic social processes.

Graphs (or charts) are the simplest method for describing data. A *pie graph* presents the distribution of cases in the form of a circle, in which the relative size of each slice of the pie is equal to the proportion of cases within the category represented by the slice. *Bar graphs* and *histograms* emphasize the frequency of cases in each category relative to each other. Along one axis of bar graphs are the categories or values of the scale and along the other are the frequencies. The main difference between bar graphs and histograms is that the former are constructed for discrete variables, which are usually measured on a nominal or ordinal scale.

Grounded theory (or analytical induction) refers to a method of analysis used in qualitative research. Researchers begin their research with a general orientation towards the research topic rather than a hypothesis to be tested. In the initial phase of data collection, relevant problems and concepts are identified, and theoretical propositions for further investigation formulated. Analysis goes on as data are collected and further data collection takes its direction from the provisional analysis to generate theory.

Hypothesis is a proposition to be tested. A *null hypothesis* is a proposition that suggests that statistically it is unlikely that the intervention will be shown to have an effect. A *hypothesis of cause* is when one variable (the independent variable) may lead to a corresponding change, or effect, in another (the dependent) variable.

Ideal type is a construct based on identifying the basic variants of a particular phenomenon and can be used in research as a tool to look for similarity and difference (see also typology).

Inclusion and exclusion criteria are based on the definition of the boundaries of the group or phenomenon to be studied.

Interpretivist/constructivist paradigm enables the researcher to understand people's lives, experiences and their subjective meanings through an inductive process of data gathering, which then draws on theory to establish shared patterns of meaning. The assumption is that realities are constructed rather than 'set in stone'. These are sought out by the researcher and are not seen as objectively measurable.

Measures of association and correlation are used to assess the strength of a relationship.

Measures of central tendency indicate the typical or average value for a distribution. There are three common measures of central tendency: mode, mean and median. The *mode* is the value in a distribution that has the highest frequency. The *mean* is the sum of all scores in a distribution divided by the total number of cases. An alternative measure of central tendency is the *median*, which is the score in the middle of a given sequence of numbers.

Measures of dispersion are descriptive statistics that indicate the spread or variety of scores in a distribution. The simplest measure of dispersion is the *range*, which is the difference between the lowest score and highest score. The *inter-quartile range* is the range for the middle 50 per cent of cases in a rank-ordered series, ignoring the extreme ends of the distribution. The *standard deviation* is a more complex measure of spread, the value of which captures the average distance each score is away from the mean.

Methodology relates to the broader principles and philosophies governing research.

Methods are the means of gathering and analyzing qualitative and quantitative research data.

Mixed methods are increasingly being used in research based on data collected through different methods, which often involves the application of multidisciplinary perspectives (see also triangulation).

Narrative analysis identifies the ways in which the narrator or author of a text structures and uses a particular narrative and the devices they employ.

Narrative literature review places emphasis on identifying the key concepts or specific terms used in the literature about a topic and the theoretical approaches adopted by different authors.

Naturalistic setting refers to events or discussions as they happen in everyday life.

Open coding refers to the process of breaking down, examining, comparing, conceptualizing and categorizing data.

Paradigm is an overarching philosophical or ideological framework – a system of beliefs about the nature of the world, or, in a research setting, the assumptive base from which researchers go about producing knowledge.

Participant observation involves gathering data through observing, interacting with and listening to the human subjects under study.

Participants/subjects/informants/respondents are terms used to refer to those taking part in research programmes.

Placebo is a dummy intervention used so that research participants, and ideally the researchers, do not know who is receiving the active and inactive ingredient or procedure.

Positivist paradigm is based on a deductive, quantitative approach and involves the researcher testing an existing theory or hypothesis. A positivist assumes that reality is concrete and objectivity is achievable; the researcher can collect and interpret social facts objectively; and can produce laws and models of behaviour from social facts to predict future outcomes.

Pragmatic trials study the policy context in which an intervention will be used and raise the question of whether it will work in everyday practice.

Protocol is a proposal required for research. It provides a road map or process for a trial setting out such aspects as the aims and rationale, a detailed methods section covering recruitment, the process of the research over time, the end points for measurement, any risks to participants, the statistical advice received and concludes with a consent form for the subjects of research.

Randomized controlled trial evaluates the effects of a particular intervention or management strategy in a population where it is introduced, by comparing the outcome with a control group where no intervention has been made. It is based on the analysis of dependent and independent variables. Randomization controls for anticipated and unknown intervening variables. When the population is well defined, carefully selected and the trial is double blinded this traditionally ranks very high in the hierarchy of evidence. A *double-blind trial* is where both the investigating researchers and the trial participants are unaware whether they are receiving or delivering active or placebo intervention, thus removing expectations of outcome and bias. A *single-blind trial* is where the person delivering the intervention knows which is the placebo and which is the active treatment, but the subject thinks that both interventions are equally likely to be effective. A *cross-over study* is where an intervention is introduced

in a first phase, followed by a washout period with no intervention, and then a second randomized intervention occurs with a control group in a further phase. Every individual takes part in both phases, but the order of interventions is randomized.

Regression analysis seeks to depict the relationship between an independent variable and one or more dependent variables in the form of a regression equation. Regression analysis can be extended to take into account even more complex relationships involving three or more variables.

Reliability refers to the extent to which research instruments yield a measurement that does not vary in quantitative or qualitative research. In the former, *test-retest reliability* measures show the same result when repeated after a short interval. *Internal reliability* relates to the degree of rigour or consistency in a measure. In the latter, *synchronic reliability* refers to the similarity of observations within the same time period – thus in an unstructured interview, for example, the words informants use may vary, but the concepts employed are consistent.

Replication refers to a study or experimental procedure that can be completely duplicated by any other interested and trained researcher.

Sampling is the practice of selecting information from populations in a manner that allows defensible inferences to be drawn from the data. *Sampling error* relates to situations where the overall sample statistics are different from those researchers would have obtained if they studied the whole population. This is addressed through inferential statistics, including significance tests and confidence intervals. *Quota sampling* involves selecting a sample according to a predetermined distribution across certain defined categories. *Convenience sampling* is where selection is based on the ease of recruitment. *Snowball sampling* is when the convenience method is used, but there are criteria for the inclusion of an initial group who help to recruit others with similar characteristics. *Purposive sampling* increases the deliberative or judgement element by selecting the entire sample according to defined criteria. *Theoretic or theoretical sampling* is a method of selection in qualitative research where the researcher collects, codes and analyzes data, and decides what data to collect next to develop theory (see grounded theory).

Scales come in various forms and are used as a level of measurement. A *nominal scale* classifies cases into categories that have no quantitative ordering. An *ordinal scale* enables cases to be ranked according to their quantity or intensity. An *interval/ratio scale* (sometimes called a *metric scale*) allows the differences (or intervals) between cases to be measured.

Stratification is a technique used to structure the population of interest in advance in the design of the sample.

Structural analysis is a method that involves identifying the structure of each text; the similarities and differences between the structures of the text; an explanation of why a particular structure exists; and how this is used to create a form of social reality.

Survey is a method for collecting data based on a set of characteristics, analyzing the similarities and differences and, in certain circumstances, identifying the causal factors to explain the findings.

Theoretic saturation is achieved in qualitative research when no new information is generated by subsequent interviews.

Triangulation is a navigational term based on using two bearings to locate an object. The parallel aggregation of data from different sources in research has been used to validate particular accounts or findings. Similarly, different methods have been used to gain a greater understanding and/or a more rounded picture of particular phenomena from a number of perspectives.

Typology is an abstraction drawn from the real world that simplifies, but helps to clarify, complexity.

Univariate analysis refers to the methods used for describing the distribution of a single variable.

Validity refers to the 'truthfulness' or accuracy of research findings. *Face validity* refers to the relevance of the outcome measure or finding to the study questions. *Content validity* is the outcome measure or finding that includes the range of issues considered important by participants and experts in the field. *Construct validity* is the outcome measure or finding that has been confirmed in previous studies. *Criterion validity* is the outcome measure that is congruent with accepted best research practice in the field.