# Methodology

**Research methods**

Essentially there are two approaches to research: qualitative and quantitative. There is no hierarchy to the approaches. The method chosen will depend on the aims and objectives of an investigation. No method is perfect in itself and all methods have their individual strengths and limitations. A researcher will choose the method or methods that are most suitable for a specific research study.

Approaches to research in psychology may be reductionist or holistic. As behaviour is often the result of complex social, cultural, cognitive as well as biological interactions, a combination of approaches to researching behaviour is not only inevitable, but desirable.

**Qualitative Vs. Quantitative**

**Qualitative research**

*Qualitative research is exploratory and used to gain an insight into psychological phenomena of interest. Further research into the topic may well include quantitative studies with more data.*

**Case studies**

*A case study is a detailed analysis over time of an area of interest (a case) to produce context-dependent knowledge. A case study could also be an in-depth study of an individual.*

**Naturalistic observations**

*These are observations of naturally occurring behaviour in a natural setting. Several different recording techniques can be used but field notes are an important part of the data. Observations may be participant or non-participant observations. The ethical implications of covert observations need to be justified.*

***Interviews***

*Qualitative interviews include unstructured, semi-structured and focus group interviews. These are used to gain an insight into people's thoughts, opinions and feelings from their own point of view.*

*Qualitative interviews may be followed by surveys (a quantitative method) to collect data from a representative sample so that the findings can be generalized to a larger population. This could, for example, be a useful way to explore a psychological phenomenon in a case study.*

**Experiments**

*Experiments are designed with one clear Independent Variable and a Dependent Variable. All other factors that could affect the Dependent Variable are controlled as far as possible.*

*The Independent Variable may be graduated, resulting in a range of conditions on a scale. Alternatively there may be only two conditions for the Independent Variable: one is the control, the other the test condition. This is a simple experiment.*

**Field experiments**

*The researcher manipulates the Independent Variable but conducts the experiment in a real-life environment. As a result extraneous variables cannot be controlled.*

**Quasi-experiments**

*In the above experiments participants are randomly assigned to a condition on the Independent Variable. In quasi-experiments participants are grouped based on a characteristic of interest, such as gender, ethnicity, or scores on a depression scale.*

***Natural experiments***

*In a natural experiment researchers find naturally occurring variables and study them.*

**Correlations research**

*This has a focus on two variables, however, these are not termed Independent and Dependent Variables as the hypothesis is not based on a potential cause and effect, instead they are referred to as co-variables.*

**Research designs**

*Common designs include the following.*

*Matched pair designs randomly assign one of a pair to either the control or the experimental group. Researchers may match individuals on specific characteristics, such as ethnicity or age. Twin studies are an example of a matched pair design.*

*The independent samples/independent measures design uses two separate groups of participants. For example, one group of participants is assigned to the control group while the other group is assigned to the experimental or treatment condition.*

*The repeated measures design exposes participants to each condition making up the Independent Variable.*

**Hypotheses**

*A hypothesis is a statement that is testable and falsifiable based on the results of an experiment or observation. The null hypothesis (Ho) is a statement that the treatment had no effect while the alternate hypothesis (H1) is a statement that the treatment will have an effect on the Dependent Variable. One of the hypotheses is rejected and the other accepted depending on the outcome of the investigation.*

**Independent and Dependent Variables**

*The Independent Variable is the factor that the experimenter manipulates.*

*The Dependent Variable is the measurement generated by the manipulation of the Independent Variable.*

**Sampling technique**

*This involves selecting participants for a study. The following are common techniques.*

*Random sampling is the process where every member in the target population has an equal chance of being selected.*

*Convenience/opportunity sampling is the process of selecting people who are able to participate in the study at a given time.*

*Volunteer sampling is when individuals choose to participate in the study.*

**Purposive sampling**

*Participants are chosen because they possess characteristics salient to the research study.*

***Snowball sampling***

*Participants who are already in a study help the researcher to recruit more participants through their social network.*

**Standardization/control**

*This refers to eliminating or controlling any factor that could affect the results of the study, apart from the Independent Variable. When and how this is carried out will depend on the method chosen to generate the information needed.*

**Ethical considerations**

*These are paramount in any investigation of any kind in psychology. Please see the separate sections of the guide and teacher support material for more information on ethical considerations in psychology.*

Analysing data

**Data presentation**

*Raw data is the data collected from the investigation. This is then processed in a variety of ways and displayed so that possible trends in the results can be seen.*

*Please also see the section "Mathematical analysis in the internal assessment" in the teacher support material.*

**Inductive content analysis**

*This is used in qualitative research to determine the meaning or purpose of data as it appears in the transcript or field notes. The analysis of the transcript or field notes involves coding and categorizing data and organizing them into a hierarchy of themes.*

**Statistics**

*Descriptive statistics describe the spread and range of the data.*

*Inferential statistics attempts to highlight relationships and trends in the data.*

*Please see the section "Mathematical analysis in the internal assessment" in the teacher support material.*

Evaluating research

**Reliability and validity**

*Reliability is the consistency of a study in terms of the extent to which a test or measure produces the same results in repeated trials.*

*Validity is the degree to which the results accurately reflect what the research is measuring. There are two forms:*

*External validity is the extent to which the results of a study can be generalized or transferred to another sample or context.*

*Internal validity refers to the rigour of the study and the extent to which the researcher took alternative explanations into account.*

**Credibility**

*This term is used in qualitative research to indicate whether or not the findings of the study are congruent with the participants' perceptions and experiences.*

**Bias**

*Bias refers to factors that may affect the results of the study.*

*The following are common biases.*

*Researcher bias is when the researcher acts differently towards participants, which may influence or alter the participant's behaviour. In qualitative research, the researcher must assess personal biases in relation to the study (for example, topic, choice of participants and method) and should apply reflexivity to control for this.*

*Participant bias, or demand characteristics, is when participants act according to how the researcher may want them to act, for example, due to the social desirability effect.*

*Sampling bias occurs when the sample is not representative of the target population, whether the sample is based on selection criteria (qualitative research) or probability sampling (quantitative research).*

Drawing conclusions

**Correlation and causation**

*It is tempting to conclude that correlated data is an indication of causation. Although it may indeed be the case, it is good practice to approach a definitive conclusion with caution. Causality itself can take a variety of forms.*

**Replication**

*This is the degree to which the study can be repeated by the same or different researchers and achieve comparable results.*

**Generalization for quantitative research**

*This is based on probability sampling and the results are applicable to the whole target population.*

**Transferability for qualitative research**

*Findings from a study can be transferred to settings and/or populations outside the study only if the findings of a particular study are corroborated by findings of similar studies (for example, in multiple case studies).*

**Triangulation**

*Triangulation is an approach used to ensure enough evidence is available to make a valid claim about the results of a study.*

*Methodological triangulation tests a theory or a psychological phenomenon using different methods of inquiry. Data from a variety of methods (survey, interview, case study, experiments) is used to help validate the results of a study.*