

# Research Methods Knowledge Organiser



**Aim:** Statement of the research purpose  
**Hypothesis:** An informed prediction of what the researcher expects to find.  
**Null hypothesis:** A statement predicting no difference between conditions.  
**Directional hypothesis:** States there will be a difference between conditions/people and states the direction.  
**Non Directional hypothesis:** States there will be a difference between conditions but does not state the direction.  
**Independent Variable:** The variable that the researcher alters or manipulates to look for the effect on another variable.  
**Dependent Variable:** The variable that the researcher measures.  
**Extraneous variable:** Unwanted variable that could affect the DV.

## Experimental designs – the way that we organise the participants into conditions

<b>Independent groups</b>	Participants take part in only one condition of the experiment	+ no order effects - Participant variables - More participants needed
<b>Repeated measures</b>	All participants take part in all conditions of the experiment	+ no participant variables + fewer participants needed so cheaper - Order effects present
<b>Matched pairs</b>	Participants are tested on variables relevant to the study and then matched and one person from each pair completes one condition (random allocation)	+ no order effects + Less participants variables - Time consuming to match participants - Not all participant variables are controlled

Issues in experiments

**Demand characteristics** – participants change behaviour due to working out the aim of the experiment

Investigator **effects** – the effect of the investigator on the DV through their design or interaction with participants.

**Laboratory experiments**  
High control over variables, artificial setting

**Strengths**  
EVs can be controlled so cause and effect can be established.  
Uses standardised procedures – replicable.

**Weaknesses**  
Hawthorne effect- participants may change behaviour  
Artificial setting – low ecological validity

**Field Experiments**  
take place in a natural setting  
IV manipulated by the experimenter.

**Strengths**  
More realistic behaviour than a lab as in natural environment  
Higher ecological validity  
Less chance of demand characteristics

**Weaknesses**  
May lose control of EVs so difficult to establish cause and effect.  
Ethical issues such as deception or consent more likely.

**Natural experiments** IV is not changed by the experimenter it varies naturally.

**Strengths**  
May have higher validity because  
Can use standardised procedures so less EVs

**Weaknesses**  
Few opportunities to carry out as behaviours may be rare – may also lead to small samples

Reliability – a measure of consistency. Types – test re-test and inter-rater.  
Validity – a measure of accuracy. Types – internal (face, concurrent), external – ecological, temporal)

Primary data – obtained first hand by research  
Secondary data – data from other studies or government stats.

+ useful as suits aims of researcher  
- Time & effort to collect

+ Easy and convenient to use  
- May not fit with researcher aims

**Ethics**  
BPS guidelines are a code of conduct all professional psychologists should follow.  
**Informed consent:** Participants should be told of the purpose of the research and requirements of participation  
**Deception:** participants should not be lied to or misled about aims.  
**Right to withdraw:** participation and data  
**Confidentiality:** Personal data must be protected and respected.

Dealing with ethical issues

Informed consent – sign a form that tells them what is expected  
Deception – full debrief to explain true aims.  
Protection from harm – Debrief and follow up.  
Privacy and confidentiality – keep details anonymous (give numbers or use initials).

- Ways to control variables/ deal with issues in experimental designs**
- Random allocation of participants to conditions – reduces investigator bias
  - Counterbalancing (AB / BA) – reduces order effects
  - Randomisation of the task – reduces investigator bias
  - Standardisation of materials/instructions

**Sampling**  
**Target Population**  
The large group of people the researcher wishes to study.  
**Sample**  
The small group of people who represent the target population and who are studied.  
**Representative**  
The sample of participants is made up of people who have the same characteristics and abilities as the target population.  
**Generalised**  
The results from the sample can be said to apply to the target population.

## Sampling methods

Random	Opportunity	Systematic	Stratified
Each person has equal chance of being selected,	Selecting people available at time e.g. who is present in the shopping mall	Selecting every nth person from a list of target population	Selecting participants from sub groups
+ no bias - Takes time	+ Quick and easy - Researcher bias - Less representative	+ avoids researcher bias - Sample may be unrepresentative	+ most representative - Very time consuming

## Observations

Researcher watches or listens to participants and gathers data.

Types of observations

**Natural:** record behaviour where it normally occur.

**Controlled:** researcher manipulates aspects of the environment

**Covert:** Participants not aware behaviour is being recorded

**Overt:** Told in advance

**Participant:** Researcher is involved

**Non-participant:** Researcher remains separate

**Behavioural categories:** Target behaviours are selected and broken down into observable categories e.g. using mobile phone.

**Inter-observer reliability:** Two observers record data at same time with same mark sheet, results are compared.

**Time sampling** – recording behaviours at certain time intervals during the observation e.g. every 10 minutes.

**Event sampling** – recording all behaviours during the period of an observation e.g. one hour.

+ When participants not aware higher ecological validity

+ controlled observations easier to replicate

- Ethical issues of consent if observing in a public place

- Observer Bias – researchers can be subjective

- When ppts know they are being watched behaviour may change

## Interviews

Face to face, real-time contact. Can also be phone.

**Structured:** pre-planned list of questions to ask, interviewer does not deviate.

**Un-structured:** No pre-set questions, a general aim is decided and questions are devised as the interview progresses.

+ easy to compare responses between participants

- prevent the opportunity for more depth to be obtained from follow up questions.

+ Insight gained into thoughts and feeling – high in validity

+ allows interviewer to build rapport

- Difficult to compare responses between participants

- Higher chance of interviewer bias

Questionnaires – prepared list of questions that can be answered in writing, over the phone, internet etc.

Open questions- tend to produce qualitative data. More detailed responses

Closed questions – fixed range of answers e.g. rating scale or yes/no.

(+) gather information from many people (+) closed questions easy to analyse

(-) leading questions cause issues with validity

(-) social desirability bias

**Case studies:** An in-depth investigation of an individual, group, event or institution.

+ Research lacks specific aims so researcher more open-minded

- Focus on one individual or event so cant be generalised

+ Best way to study rare behaviours - Can be subjective

**Quantitative data** – information in form of numbers

Evaluation

+ Easy to analyse and draw conclusions / compare between pps.

- Lacks depth – may not find out insight/meaning

**Qualitative data** – non-numerical data

Evaluation

+ more depth and detail – can gain meaning and insight

- Time consuming to analyse

- Difficult to compare between participants

## Descriptive stats

**Range:** Spread of data.

Arrange in order and subtract lowest from highest score

**Standard deviation:** Spread of scores around the mean.

**Mean:** mathematical average

Add up all scores and divide by the number of scores

**Median:** Middle value.

Data put in order from lowest to highest

**Mode:** Most common score

## Evaluation

(+) easy to calculate

(-) Can be distorted by extreme scores

(+) should be more representative

(+) Uses all of data so most sensitive measure

(-) distorted by extreme values

(+) Not effected by extreme scores

(-) less sensitive than the mean to variation in values

(+) very easy to calculate

(-) can be unrepresentative

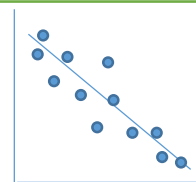
## Correlations

Show a relationship between two variables. Shows link or association but NOT cause and effect.

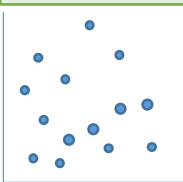
Positive: as one variable increases so does the other



Negative: as one variables increases the other decreases



Zero: There is no relationship between the two variables



## Displaying quantitative data

**Scatter diagrams** Display correlation one co-variable is place on X axis one is place on the Y axis. A dot is placed where they meet.

**Histogram:** continuous categories/data, no spaces between bars.

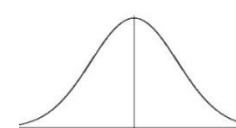
**Bar chart:** bars can be in any order data is not continuous e.g. favourite colour.

## Normal distribution

Symmetrical spread of data forms a bell shape with mean, median and mode at peak.

**Positive skewed distribution** – scores cluster to the left (lots of low scores)

**Negative skewed distribution** – scores cluster to the right (lots of high scores)



You should also know how to calculate fractions, decimals and percentages.