

ASSESSMENT CHECK 24:

7.1–7.2 Research methods – Research methods & Scientific processes (page 275)

- 1 The independent variable is whether participants were interviewed using the standard police interview or the cognitive interview technique.
The dependent variable is the amount of accurate recall each participant produced.
- 2
 - (a) One confounding variable might be how much sleep participants had had the previous night, as this could affect their concentration levels when watching the fake assault.
 - (b) This confounding variable could be controlled by ensuring all participants had the same amount of sleep the night before, so that their concentration levels would be the same.
- 3
 - (i) Investigator effects might influence the findings by the physical characteristics of a researcher, such as their age or ethnic background. This could affect accuracy of recall given by participants.
 - (ii) Demand characteristics might affect the findings by participants trying to work out what answers they think the researcher requires and then giving these answers, which might not be their true recall of the fake assault.
- 4 That there will be a significant difference between the amount of accurate recall produced by participants interviewed using the standard police interview and the cognitive interview technique after witnessing a fake assault.
- 5 In a laboratory study a researcher manipulates an independent variable between the conditions of the experiment. In a natural experiment there is no manipulation of an independent variable, instead an independent variable is used that varies naturally.
- 6 The sample was self-selected, as participants volunteered themselves for the study.
One limitation of using a self-selected sample is that only a certain type of person may respond to the advert, making the results unrepresentative and thus not generalisable.
- 7
 - (i) The research shows a positive correlation.
 - (ii) One strength is that a correlational study would be ethical, as it would not be possible to deliberately subject participants to stress to see the effect on their health, as would be necessary with an experiment.

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One weakness of correlation would be that causality could not be established, as the study is not performed under controlled conditions in order that the effect of an independent variable on a dependent variable could be seen.

- (iii) A scattergram would be used to display the correlational data.
- (iv) That there will be a relationship between the amount of stress experienced and the number of days taken off sick over a 6-month period.
- (v) A systematic sample would be gained by selecting every n th person from a population.
- (vi) A strength of a systematic sample is that it is unbiased in selection and should thus produce a fairly representative sample.

A limitation of a systematic sample is that of periodic traits, which occur if the sampling technique coincides with the frequency of the trait. For example, if the sampling frequency was selecting people from every fifth property in a street and every fifth property happened to be student flats, then a non-representative sample of just students would be gained.

- (vii) One advantage of giving the stress scale as a questionnaire, as opposed to an interview, would be a lack of investigator effects, as a questionnaire could be completed without a researcher being present to possibly influence a participant's responses.

One weakness would be that as no researcher is present, follow-up questions could not be asked to pursue interesting answers further.

ASSESSMENT CHECK 25:

7.2 Research methods – Scientific processes (page 291)

- 1
 - (i) One behavioural category might be the degree to which the girl sought contact with her carer when reunited with him/her.

Another behavioural category might be the degree of distress the girl showed at separation.
 - (ii) The girl's behaviour could be recorded on a coding sheet, where, rather than writing descriptions of the observed behaviour, the observers record the behaviour using previously agreed scales.
 - (iii) A pilot study might be carried out to check for errors in the procedure, so that if any were identified they could be changed before the main study took place.
 - (iv) Inter-rater reliability would need to be established to ensure all observers were making consistent observations. This would mean that the researchers agreed with each other as to which categories the behaviour being observed fitted into.
 - (v) Inter-rater reliability could be established by setting up clearly defined, separate behavioural categories, with no overlaps between categories, before the study commenced.
- 2
 - (i) The IV was whether participants were moderately anxious or had low anxiety.

The DV was how many items participants recalled.
 - (ii) The experimental design was independent groups design.
 - (iii) A strength of the independent groups design is that order effects do not occur, as they would in a repeated measures design, where participants encounter a learning or fatigue effect by performing the procedure more than once.

A weakness of the independent groups design is that only one piece of data is generated by each participant, so twice as many participants are needed as with a repeated measures design.
 - (iv) One strength of the stratified sampling method is that it is unbiased, as random sampling is performed on the sub-groups of a population.

One weakness is it is time-consuming, as a population has to be divided into strata and then random sampling performed on each strata.

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- (v) Informed consent would have to be considered, where participants are given sufficient details about the aims and procedures of the study that they can make a considered decision as to whether to take part.

The right to withdraw would also have to be considered, where participants are informed that they are under no obligation to complete the study and that they can leave at any time they wish.

- (vi) Psychological research can benefit the economy if it improves the performance of people within the workplace. For example, ensuring people in the workplace were moderately aroused when learning information would make their level of recall more efficient and thus benefit the economy by making them more efficient workers.
- (vii) The validity of the data could be assessed through face validity, the degree to which the data looks like what it claims to measure.

- 3 Falsification involves scientific statements being capable of being proven wrong. This involves a hypothesis or theory being empirically testable through the making of unbiased observations under controlled conditions. The data produced should be capable of being subjected to statistical analysis to see whether or not the hypothesis or theory is refuted (falsified).
- 4 Research has to undergo peer review to ensure that it is scrutinised by experts to such an extent that it can be judged to be scientifically acceptable. This ensures that flawed research does not become accepted as fact.
- 5 Peer review might not always be unbiased; the social relationships that develop between individuals in the narrow social world that researchers exist in may affect the reviewers' impartiality and objectivity. Reviewers may not accept a piece of research if it argues against their own findings in the field, or they may even reject research so they can copy the findings and publish them as their own. There is also the accusation that peer review is performed by elite groups of scientists who may resist the publication of revolutionary ideas, even if they appear to be valid.
- 6 The major features of science include the scientific process and the concepts of replicability, objectivity and falsification.

The scientific process is a means of acquiring knowledge based on observable, measurable evidence. This involves the formation and testing of hypotheses (testable predictions) based on observations that have been made without bias. Hypotheses must be tested under controlled conditions in order that the hypotheses and the theories they represent can be validated.

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Replicability involves checking the validity of results by repeating research under exactly the same conditions as before. Research must also be written up in a conventional, full manner in order for replication to be possible.

Objectivity is an important part of empiricism, where observations are made through unbiased sensory experience and not from the biased viewpoints of researchers.

Falsifiability is part of the verification process, and means that scientific hypotheses and theories must be capable of being empirically tested in order to see if they are false or not. Replication is the accepted means of achieving this. For example, Freud's psychodynamic theory can be criticised for not being falsifiable, as it cannot be tested empirically and therefore does not have scientific validity.

ASSESSMENT CHECK 26:

7.3–7.4 Research methods – Data handling and analysis & Inferential testing (page 312)

- 1 Table showing concentration test scores (out of 10.0) for males and females.

	Males	Females
Total score	44.0	36.9
Number of participants	7	6
Mean score	6.334	6.15
Range	4.1	4.1

Total number of participants = 13

- 2 A bar chart would be appropriate, as the data are non-continuous and could show a comparison of mean male and female scores.
- 3 A Mann-Whitney statistical test would be appropriate.
- 4 The test would be appropriate as it is a test of difference, an independent groups design has been used and the data is of at least ordinal level.
- 5 One strength of the standard deviation is that it is a more sensitive measure of dispersion than the range, as all the scores in a set of data are used in its calculation. A weakness is that it is less meaningful if data are not normally distributed, that is to say if the scores in a set of data are not arranged in a symmetrical fashion either side of the mean.
- 6 (i) A Type I error occurs when a difference or relationship in a set of data is accepted as a real difference/relationships (seen as beyond the boundaries of chance), when it is not.
- (ii) A Type II error occurs when a difference or relationship in a set of data is rejected (seen as not beyond the boundaries of chance), but in fact actually does exist.
- 7 A 5 per cent significance level is the accepted level of significance in psychological research, as it strikes a balance between making a Type I and a Type II error.
- 8 Data that are normally distributed should have a similar mode, median and mean. The data should form a bell-shaped (Gaussian) curve when plotted on a histogram. The majority of scores should be centred on and around the mean. There should be a symmetrical distribution of scores either side of the mean.
- 9 Primary data is data collected specifically towards a research aim, which has not been published before, while secondary data is data originally collected towards another research aim, which has been published before.