Definitions and Concepts for AQA Psychology A-level

Topic 7: Research Methods

1. Research Methods

Acquiescence bias - A tendency for participants to agree with statements regardless of their actual opinion.

Case study - A detailed investigation of an individual, group or event using information from a range of sources.

Closed questions - Questions in which participants choose from a fixed set of response options.

Content analysis - A research method involving the analysis of material, such as media or documents, by coding it into categories.

Controlled observation - An observation carried out in a structured or controlled environment.

Correlation - A non-experimental research method used to investigate the relationship between two co-variables, without manipulating either variable.

Co-variable - One of the two variables measured in a correlation.

Covert observation - An observation in which participants are unaware that they are being observed.

Dependent variable (DV) - The variable that is measured to see whether it is affected by the independent variable.

Experimental method - A research method in which the researcher manipulates an independent variable to measure its effect on a dependent variable.

Field experiment - An experiment conducted in a natural environment in which the researcher manipulates the independent variable.

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Hawthorne effect - A change in participants' behaviour that occurs because they know they are being observed.

Independent variable (IV) - The variable manipulated by the researcher to investigate its effect on the dependent variable.

Laboratory experiment - An experiment conducted in a controlled environment where extraneous variables can be carefully controlled.

Likert scale - A scale in which participants indicate their level of agreement with a statement.

Natural experiment - An experiment in which the independent variable occurs naturally and is not manipulated by the researcher.

Naturalistic observation - An observation in which behaviour is recorded in the setting where it would normally occur.

Negative correlation - A relationship in which an increase in one co-variable is associated with a decrease in the other.

Non-participant observation - An observation in which the researcher observes a group without taking part in the situation.

Open questions - Questions that allow participants to answer in their own words rather than selecting from fixed options.

Overt observation - An observation in which participants know they are being observed.

Participant observation - An observation in which the researcher joins the group being observed and takes part in the situation.

Quasi-experiment - An experiment in which the independent variable is a pre-existing characteristic or difference between participants.

Questionnaire - A set of written questions used to collect information from participants.

Response bias - A tendency for participants to provide answers that are not accurate or truthful.

Self-report techniques - Research methods in which participants provide information about their own thoughts, feelings, experiences or behaviour.

Social desirability bias - A tendency for participants to give answers that present themselves in a socially acceptable way.

Structured interview - An interview using a fixed set of predetermined questions asked in the same way to each participant.

Unstructured interview - An interview without a fixed set of questions, allowing the conversation to develop through follow-up questions.

2. Scientific Processes

Aim - A general statement explaining the purpose of a study and what the researcher intends to investigate.

Behavioural categories - Specific, observable and measurable behaviours that a researcher records during an observation.

Bias - A systematic influence that causes research findings to be distorted in a particular direction.

Confidentiality - Protecting participants' personal information from being disclosed without permission.

Concurrent validity - The extent to which a new measure produces similar results to an established measure of the same construct.

Control group - A group that does not receive the independent variable or receives a standard comparison condition, providing a baseline for comparison.

Control variable - A variable that is kept constant so that it does not affect the dependent variable.

Counterbalancing - A method used in repeated measures designs in which participants complete conditions in different orders to control order effects.

Deception - Deliberately misleading participants or withholding information about the true nature or aim of a study.

Debriefing - Informing participants about the true aim and nature of a study after participation and giving them an opportunity to ask questions.

Demand characteristics - Cues from the researcher or research situation that allow participants to guess the aim of the investigation and may cause them to change their behaviour.

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Directional hypothesis - A testable prediction that states the expected direction of a difference or relationship.

Double-blind procedure - A procedure in which neither the participants nor the researchers directly involved in the study know which condition participants are in.

Ecological validity - The extent to which research findings generalise to real-life situations.

Empirical method - A scientific approach based on systematic observation and measurement of evidence.

Ethics - Principles that guide researchers to ensure psychological research is fair, safe and respectful to participants.

Event sampling - An observational technique in which the researcher records every occurrence of a particular behaviour.

External reliability - The consistency of a measure outside the original testing occasion.

External validity - The extent to which research findings can be generalised beyond the original study.

Extraneous variable - Any variable other than the independent variable that could affect the dependent variable.

Falsifiability - The principle that a scientific theory must make predictions that could potentially be shown to be false.

Face validity - The extent to which a measure appears to measure what it is intended to measure.

Generalisability - The extent to which findings can be applied beyond the original sample or study.

Hypothesis - A precise, testable prediction about the outcome of a research investigation.

Independent groups design - An experimental design in which different participants take part in each condition.

Internal reliability - The consistency within a measure, showing whether different parts of the same test consistently measure the same construct.

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Internal validity - The extent to which findings are genuinely caused by the variables being investigated rather than other factors.

Investigator effects - Unwanted influences of the researcher on participants or the results of an investigation.

Inter-observer reliability - The extent to which two or more observers agree when recording the same behaviour.

Matched pairs design - An experimental design in which participants are matched on relevant characteristics and different members of each pair take part in different conditions.

Non-directional hypothesis - A testable prediction that states there will be a difference or relationship but does not predict its direction.

Objectivity - The extent to which research is free from personal beliefs, expectations or opinions that could influence the findings.

Operationalisation - Clearly defining how a variable will be measured or manipulated so that it is specific, observable and measurable.

Opportunity sampling - A sampling method in which participants are selected because they are readily available.

Paradigm - A set of shared ideas, assumptions and ways of working accepted by scientists within a discipline.

Paradigm shift - A major change in accepted scientific assumptions, usually occurring when problems with an existing paradigm lead to a scientific revolution.

Participant reactivity - A change in participants' behaviour caused by their awareness that they are taking part in research.

Peer review - The assessment of scientific research by experts in the same field before publication.

Pilot study - A small-scale version of an investigation carried out before the main study to identify and correct problems with the procedure.

Population - The whole group of people that a researcher is interested in studying.

Qualitative data - Data presented in words or other non-numerical forms.

Quantitative data - Data presented in numerical form.

Random allocation - Assigning participants to different experimental conditions by chance, giving each participant an equal chance of being placed in each condition.

Random sampling - A sampling method in which every member of the target population has an equal chance of being selected.

Randomisation - The use of chance when making decisions during a study to reduce bias.

Replicability - The extent to which a study can be repeated using the same methods and produce similar findings.

Repeated measures design - An experimental design in which the same participants take part in every condition.

Sample - A group of participants selected from a population to take part in a study.

Sampling bias - A systematic difference between a sample and the wider population caused by the way participants are selected.

Single-blind procedure - A procedure in which participants do not know which condition they are in.

Split-half method - A method of assessing internal reliability by dividing a test into two halves and correlating the scores from each half.

Standardisation - Using the same procedures, instructions and conditions for all participants.

Stratified sampling - A sampling method in which the population is divided into relevant subgroups and participants are selected from each subgroup in proportion to its representation in the population.

Systematic sampling - A sampling method in which participants are selected using a fixed system or interval from a sampling frame.

Temporal validity - The extent to which research findings remain valid across different time periods.

Test-retest reliability - A method of assessing reliability by giving the same test to the same participants on two occasions and comparing the scores.

Theory construction - Using research evidence to develop general explanations of observations or behaviour.

Time sampling - An observational technique in which behaviour is recorded during specified time periods.

Validity - The extent to which a research method measures what it is intended to measure and produces accurate findings.

Volunteer sampling - A sampling method in which people choose for themselves whether to take part in a study.

3. Data Handling and Analysis

Bar chart - A graph used to display data from separate categories, with gaps between the bars.

Coding - The process of turning information into categories so that it can be systematically analysed.

Correlation coefficient - A numerical value between -1 and +1 showing the strength and direction of the relationship between two co-variables.

Descriptive statistics - Numerical methods used to summarise and describe a set of data.

Distribution - The way in which scores are spread across a dataset.

Frequency - The number of times a particular score or category occurs.

Histogram - A graph used to display continuous data, with touching bars representing intervals of values.

Interval data - Numerical data in which the differences between scores are equal and meaningful.

Line of best fit - A line added to a scattergram to show the overall direction of the relationship between two co-variables.

Mean - The arithmetic average of a set of scores, calculated by adding all scores together and dividing by the number of scores.

Measures of central tendency - Statistics that describe the typical or central value in a dataset, including the mean, median and mode.

Measures of dispersion - Statistics that describe how spread out or varied scores are within a dataset, including the range and standard deviation.

Median - The middle score when data is arranged in order from lowest to highest.

Meta-analysis - A method of analysing secondary data by statistically combining findings from multiple studies investigating the same topic.

Mode - The score or category that occurs most frequently in a dataset.

Negative skew - A distribution in which most scores are concentrated towards the higher end, with a long tail towards the lower end.

Nominal data - Data consisting of separate categories that have no meaningful order.

Normal distribution - A symmetrical, bell-shaped distribution in which scores are evenly distributed around the centre and the mean, median and mode are approximately equal.

Ordinal data - Data that can be placed in rank order, but where the differences between the ranks are not necessarily equal.

Positive skew - A distribution in which most scores are concentrated towards the lower end, with a long tail towards the higher end.

Primary data - Information collected first-hand by the researcher specifically for their investigation.

Range - The difference between the highest and lowest scores in a dataset.

Scattergram - A graph used to display the relationship between two co-variables, with each point representing a pair of scores.

Secondary data - Information collected by someone else but used by a researcher for their own investigation.

Skewed distribution - A distribution that is not symmetrical, with scores concentrated more towards one end and a longer tail towards the other.

Standard deviation - A measure of how much scores vary around the mean.

Zero correlation - A relationship in which there is no association between two co-variables.

4. Inferential Statistics

Alternative hypothesis (H_1) - A prediction that there will be a significant difference or relationship between the variables being investigated.

Calculated value - The value obtained by carrying out an inferential statistical test on the data.

Chi-Squared (χ^2) Test: A test of difference or association for independent groups with nominal data.

Critical value - The cut-off value that the calculated value must reach for a result to be statistically significant.

Degrees of freedom (df) - A value used in some statistical tests to determine the appropriate critical value.

Null hypothesis (H_0) - A prediction that there will be no significant difference or relationship between the variables being investigated.

One-tailed test - A statistical test used when the hypothesis predicts the direction of a difference or relationship.

p-value - The probability of obtaining a result at least as extreme as the one found, assuming the null hypothesis is true.

Probability - The likelihood that an event will occur by chance, ranging from 0 to 1.

Related design - An experimental design in which the same or matched participants take part in both conditions.

Related t-test / Unrelated t-test: Parametric tests of difference for related or unrelated experimental designs with interval data.

Sign Test: A simple non-parametric inferential test used to determine whether there is a significant difference between two related sets of scores when data is at least nominal.

Significance - The extent to which a statistical result is unlikely to have occurred by chance.

Significance level - The probability level used to decide whether a result is statistically significant, usually $p \leq 0.05$.

Spearman's Rho / Pearson's r: Inferential tests used to test for a significant correlation between two co-variables.

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Two-tailed test - A statistical test used when the hypothesis predicts a difference or relationship but does not predict its direction.

Type I error - Rejecting the null hypothesis when it is actually true, resulting in a false positive.

Type II error - Retaining the null hypothesis when it is actually false, resulting in a false negative.

Unrelated design - An experimental design in which different participants take part in each condition.

Wilcoxon / Mann-Whitney U: Non-parametric tests of difference for related (Wilcoxon) or unrelated (Mann-Whitney) designs with ordinal data.