

A-Level Psychology

Research Methods - Spec Cheat Sheet · Paper 3 (synoptic)

Edexcel Psychology (9PS0)

Paper 3 (synoptic)

73 spec points

Every specification point for **Research Methods**, in spec order - tick each one off as you revise. Codes match the official Edexcel specification. Nothing here is optional.

Experimental method and designs

- RM1** Designing and conducting experiments, including laboratory experiments and field experiments, and the strengths and weaknesses of each.
- RM2** Independent and dependent variables, and the operationalisation of variables so they can be manipulated and measured.
- RM3** Extraneous variables and confounding variables, and how they threaten the validity of an experiment.
- RM4** Situational variables and participant variables as sources of extraneous influence.
- RM5** Experimental and research designs: repeated measures, independent groups and matched pairs, with the strengths and weaknesses of each.
- RM6** Order effects, and the use of counterbalancing and randomisation to control them.
- RM7** Experimenter effects, demand characteristics and the control issues that arise from them.

Hypotheses and variables

- RM8** Aims and the formulation of hypotheses for an investigation.
- RM9** The experimental (alternate) hypothesis and the null hypothesis, and what each one predicts.
- RM10** Directional (one-tailed) and non-directional (two-tailed) hypotheses and tests, and when each is appropriate.
- RM11** The use of the independent variable and dependent variable in experiments, and co-variables in correlational research.

Non-experimental methods: self-report

- RM12** Designing and conducting questionnaires and interviews, considering researcher effects on responses.
- RM13** Unstructured, semi-structured and structured interviews, and the strengths and weaknesses of each.
- RM14** Open and closed questions, including ranked-scale (rating-scale) questions, in questionnaire and interview construction.
- RM15** Issues affecting self-report data, including social desirability and demand characteristics.

Non-experimental methods: observation

- RM16** The use of the observational research method, gathering both qualitative and quantitative data, including tallying, event sampling and time sampling.
- RM17** Types of observation: participant and non-participant, structured and naturalistic, and overt and covert, with the strengths and weaknesses of each.

Non-experimental methods: correlation

- RM18** The use of the correlational research method, including the idea of co-variables.
- RM19** Types of correlation: positive, negative and no correlation, and their representation on a scatter diagram (scattergram).
- RM20** Issues surrounding correlations, including that correlation does not establish cause and effect, and the possible role of other variables.

Non-experimental methods: case study and content analysis

- RM21** The use of case studies, including case studies of brain-damaged patients, and the use of qualitative data, with the strengths and weaknesses of the case study method.
- RM22** The use of content analysis as a research method, including summative content analysis of sources such as newspapers, magazines and interviews.

Other research approaches

- RM23** Cross-cultural research, including cross-sectional versus longitudinal designs and the nature–nurture issues it raises.
- RM24** The use of meta-analysis to combine findings across studies and draw broader conclusions.
- RM25** Animal research in laboratory experiments where results may be related to humans, including the relevant ethical regulation (Scientific Procedures Act 1986 and Home Office regulations).
- RM26** Brain-scanning techniques (CAT, PET and fMRI) as methods for investigating human behaviour.

Sampling techniques

- RM27** Identifying the target population and drawing a sample from it.
- RM28** Random sampling, including how it is carried out and its strengths and weaknesses.
- RM29** Stratified sampling, including how it is carried out and its strengths and weaknesses.
- RM30** Volunteer (self-selecting) sampling, including the technique and its strengths and weaknesses.
- RM31** Opportunity sampling, including how it is carried out and its strengths and weaknesses.
- RM32** Understanding the principles of sampling as applied to scientific data, and randomising participants to conditions or groups, including the use of control groups.

Reliability, validity and other research issues

- RM33** Objectivity in psychological research and why it matters for scientific credibility.
- RM34** Reliability of research, including replicability and consistency of measurement.
- RM35** Validity, including internal validity, predictive validity and ecological validity.
- RM36** Credibility of research, and the distinction between primary data and secondary data.
- RM37** The scientific status of psychology, including empiricism, hypothesis testing, falsification, use of controls, reductionism, replicability, reliability and validity.

Ethical guidelines

- RM38** The British Psychological Society (BPS) Code of Ethics and Conduct (2009), including the core ethical guidelines for working with human participants and risk management when carrying out research.
- RM39** Health and Care Professions Council (HCPC) principles for undertaking psychological formulation and intervention.
- RM40** Ethical issues in research with children, including children's rights and the UNCRC (1989), and issues around participation and protection.

- RM41** Ethical issues in the use of animals in research, including the Scientific Procedures Act (1986) and Home Office regulations.

Quantitative data: descriptive statistics

- RM42** Measures of central tendency - mean, median and mode - including how to calculate each and how to select the most appropriate measure for a set of data.
- RM43** Measures of dispersion - the range and the standard deviation - including calculation and selecting the more useful measure (for example where there is an outlying score).
- RM44** Using ratios, fractions and percentages, for example the percentage of cases falling into different categories.
- RM45** Expressing values to an appropriate number of significant figures, recognising and using decimal and standard form, making order-of-magnitude estimates and estimating results.
- RM46** Levels of measurement: nominal, ordinal and interval data, and distinguishing between them for a given study.
- RM47** The characteristics of normal and skewed distributions, including locating the mean, median and mode on each.
- RM48** Understanding the difference between qualitative and quantitative data, and how qualitative data may be converted into quantitative data for analysis.

Quantitative data: graphs and tables

- RM49** Constructing and interpreting frequency tables and other data tables.
- RM50** Graphical presentation of data using bar charts (bar graphs) and histograms, and selecting an appropriate form of display for a given data set.
- RM51** Using a scatter diagram to plot two variables and identify a positive correlation, a negative correlation or no correlation.
- RM52** Translating information between graphical, numerical and algebraic forms.

Inferential statistics: significance and decision making

- RM53** Understanding simple probability and the principle that findings may be due to chance.
- RM54** Levels of significance, including $p \leq 0.10$, $p \leq 0.05$ and $p \leq 0.01$, and explaining the difference between the 0.05 and 0.01 levels.
- RM55** Observed (calculated) values and critical values, using critical-value tables and sense-checking of data.
- RM56** Determining significance: comparing the observed value with the critical value, taking account of whether the test is one-tailed or two-tailed.
- RM57** Type 1 errors (a false positive) and type 2 errors (a false negative), and their relationship to the level of significance chosen.
- RM58** Expressing the outcome of an inferential test conventionally, using symbols such as $=$, $<$, $>$, $\leq$ and $\geq$ and stating the level of significance.

Inferential statistics: choosing and using a test

- RM59** Selecting an appropriate inferential statistical test for a given investigation, justified by the research design (test of difference or relationship), the level of measurement, and whether the design is related or unrelated (independent).
- RM60** The Mann-Whitney U test: a non-parametric test of difference for unrelated (independent groups) designs with at least ordinal data.
- RM61** The Wilcoxon signed-ranks test: a non-parametric test of difference for related (repeated measures or matched pairs) designs with at least ordinal data.

- RM62** Spearman's rank correlation coefficient (Spearman's rho): a test of correlation/relationship for ranked (ordinal) co-variables, including reasons for choosing it.
- RM63** The chi-squared (χ^2) test: a test of difference/association for nominal (frequency) data with an unrelated design, including reasons for choosing it and calculating degrees of freedom, $df = (r - 1) \times (c - 1)$.
- RM64** Substituting numerical values into the formula for a statistical test (for example inserting the N value of scores) and solving simple algebraic equations such as the degrees of freedom for chi-squared.
- RM65** Using statistical tables to determine whether a given observed value is significant, and recognising that the calculated value must be equal to or exceed the critical value for significance to be shown (with the reverse rule for tests such as Wilcoxon).
- RM66** Distinguishing non-parametric from parametric testing, including the link between normal or skewed distribution and choice of test.

Qualitative data and analysis

- RM67** The nature and use of qualitative data, including its strengths and weaknesses relative to quantitative data.
- RM68** Thematic analysis: identifying themes within qualitative data such as interview transcripts or observation notes, and drawing conclusions from them.
- RM69** Grounded theory: developing explanations and theory that emerge from the qualitative data itself.

Designing and reporting an investigation

- RM70** Making design decisions when planning a practical investigation, including method, experimental design, sampling, operationalisation, control, hypothesis construction, and managing experimenter effects and demand characteristics.
- RM71** Adhering to ethical principles in both the content and intention of an investigation.
- RM72** Writing up an investigation, including research question/hypothesis, method, sampling, ethical considerations, data-collection tools, data analysis, results and discussion.
- RM73** Drawing conclusions from data, and evaluating an investigation by considering its strengths, weaknesses and possible improvements (including reliability, validity, sampling and ethics).