Research Methods

Students should demonstrate knowledge and understanding of the following research methods, scientific processes and techniques of data handling and analysis, be familiar with their use and be aware of their strengths and limitations.

• Experimental method. Types of experiment, laboratory and field experiments; natural and quasi experiments.

• Observational techniques. Types of observation: naturalistic and controlled observation; covert and overt observation; participant and non-participant observation.

• Self-report techniques. Questionnaires; interviews, structured and unstructured.

• Correlations. Analysis of the relationship between co-variables. The difference between correlations and experiments.

• Content analysis.

• Case studies.

Scientific Processes

• Aims: stating aims, the difference between aims and hypotheses.

• Hypotheses: directional and non-directional.

• Sampling: the difference between population and sample; sampling methods including: random, systematic, stratified, opportunity and volunteer; implications of sampling methods, including bias and generalisation.

• Pilot studies and the aims of piloting.

• Experimental designs: repeated measures, independent groups, matched pairs.

• Observational design: behavioural categories; event sampling; time sampling.

• Questionnaire construction, including use of open and closed questions; design of interviews.

• Variables: manipulation and control of variables, including independent, dependent, extraneous, and operationalisation of variables.

• Control: random allocation and counterbalancing, randomisation, standardisation and control groups.

• Demand characteristics and investigator effects.

• Ethics, including the role of the British Psychological Society's code of ethics; ethical issues in the design and conduct of psychological studies; dealing with ethical issues in research.

• The role of peer review in the scientific process.

• The implications of psychological research for the economy.

• Reliability across all methods of investigation. Ways of measuring reliability: test-retest and inter observer; improving reliability.

• Types of validity across all methods of investigation: face validity, concurrent validity, ecological validity and temporal validity. Measurement of validity. Improving validity.

• Features of science: objectivity and the empirical method; replicability and falsifiability; theory construction and hypothesis testing; paradigms and paradigm shifts.

• Reporting psychological investigations. Sections of a scientific report: abstract, introduction, method, results, discussion and referencing.

Data Handling and Analysis

• Quantitative and qualitative data; the distinction between qualitative and quantitative data collection techniques.

• Primary and secondary data, including meta-analysis.

• Descriptive statistics: measures of central tendency – mean, median, mode; calculation of mean, median and mode; measures of dispersion; range and

standard deviation; calculation of range; calculation of percentages; positive, negative and zero correlations.

• Presentation and display of quantitative data: graphs, tables, scattergrams, bar charts, histograms.

• Distributions: normal and skewed distributions; characteristics of normal and skewed distributions.

• Analysis and interpretation of correlation, including correlation coefficients.

• Levels of measurement: nominal, ordinal and interval.

• Coding in content analysis.

Inferential Testing

Students should demonstrate knowledge and understanding of inferential testing and be familiar with the use of inferential tests.

• Introduction to statistical testing; the sign test. When to use the sign test; calculation of the sign test.

• Probability and significance: use of statistical tables and critical values in interpretation of significance; Type I and Type II errors.

• Factors affecting the choice of statistical test, including level of measurement and experimental design. When to use the following tests: Spearman's rho, Pearson's r, Wilcoxon, Mann-Whitney, related t-test, unrelated t-test and Chi-Squared test.