Psychology

Planning your Personal Investigation

Introduction

The WJEC/Eduqas specification lists a number of areas that you need to cover in your investigation:

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Before you start undertaking your investigation your plan should ensure that you are able to cover all these areas in your research before you actually undertake it.

Using the title to come up with your research idea

Each year the WJEC/Eduqas will publish two titles for your investigation.

This booklet will guide you through the planning of the first investigation for 2018. You will then be able to apply the same process to your second investigation.

So where do you start? Let's consider the title of your first investigation:

An experiment on the effect of context on an individual's perception

What does context mean?

What different types of context can you think of?

What does perception mean?

What different sorts of things might we perceive?

Write down what context you have chosen to investigate:

Write down the perception you have chosen to investigate:

Now combine the two to make the aim of your research:

Hypotheses

No matter what research method we are using it is possible to create a hypothesis of what we think might happen in our research. The hypothesis is a testable statement that a piece of research attempts to support or reject.

In order to create our hypothesis psychologists often read books, journal articles or ask professionals to learn about the effect or area of study in order to make an educated guess about what their research will find.

In order to write a hypothesis you will need to identify the variables in your research. As this is an experiment you will be identifying two variables:

Independent Variable (IV) — The variable the psychologist manipulates and controls to see how it affects behaviour.

Dependent Variable (DV) — The variable which is measured (usually the participants' behaviour) by the psychologist.

So what are the variables in your research?

Independent Variable (IV) —What are you manipulating?	
Dependent Variable (DV) — What are you measuring?	

Hypotheses – Directional or Non-directional

Once you've spent some time thinking about your research question and variables, write down your initial idea about how the variables might be related as a simple statement:

Hypotheses can either be directional or non-directional. A non-directional hypothesis simply says that one variable affects the other in some way, but does not say specifically in what way. A directional hypothesis provides more information about the nature (or "direction") of the relationship, stating specifically how one variable affects the other.

If you have read around your topic area previous research may give you an indication of whether you should chose a directional or non-directional hypothesis.

Write your hypothesis here:

Hypotheses – Operationalisation

By operationalising your variables you are giving a precise definition of the behaviour being manipulated / observed/ measured (IV/DV). This allows for repetition and raises reliability as it is an agreed value that has been attributed to the measurement.

To make your hypothesis more specific you can specify the population (i.e. the people or things) about which you hope to uncover new knowledge.

State your population here:

A variable is operationalised when it has been turned in to something that can be measured.

How are you measuring your IV?

How are you measuring your DV?

Hypotheses – Null hypothesis

The null is a hypothesis that suggests there will be no difference/relationship between variables, any that does occur does so by chance.

Write a null hypothesis for your experiment:

Variables

Confounding variables are variables in a study that are not being measured or manipulated by the researcher, that affect SOME participants' behaviours but not others, having negative consequences for validity.

List all the possible confounding variables for your research:

Extraneous variables are variables in a study that are not being measured or manipulated by the researcher but affect the results (DV) of ALL participants' behaviour equally.

List all the possible extraneous variables for your research:

Methodology

For this investigation you are undertaking an experiment. You have three types of experiment to choose from. Place a tick by the methodology you have chosen:

Methodology	Tick
Experiments — A research method where cause and effect is measured, through the control and manipulation of key variables, and where the participants are randomly allocated to experimental/control groups.	
Quasi-Experiments — A research where the experimenter has NOT deliberately manipulated the IV and participants are NOT randomly allocated. Methods within this category include natural experiments and difference studies.	
Natural Experiments — A research method where the IV arises naturally, although the DV can still be measured in a laboratory or any other location of the researcher's choice. This method would be used when it is unethical to directly manipulate the IV.	

State why you have chosen this methodology:

Experimental design

Now you need to consider what experimental design you are going to follow:

Experimental design	Tick
Independent groups — An experimental design where participants take part in only one experimental condition.	
Repeated measures — An experimental design where participants take part in both the control and experimental conditions.	
Matched pairs — A form of independent groups design where the experimental and control participants are deliberately similar e.g. there is a balance between gender and IQ levels in each group/condition.	

State why you have chosen this experimental design:

Sampling

Now you have a good idea of how you're going to undertake your research you need to decide who your participants will be and how you will recruit them. First of all you need to consider your target population. This is the group of individuals that a researcher is interested in studying e.g. people in the UK. Who are your target population?

As it is unrealistic to study the whole target population you will need to identify a group/population as your sampling frame. For this investigation you have a number of different sampling methods you can use. Tick the one you think is best for your investigation:

Sampling method	Tick
Random Sampling — A sampling technique where participants are selected from the sampling frame, where everyone has an equal chance of being selected. E.g. Names are pulled out of a hat, or a computer is used to randomly select participants.	
Opportunity Sampling — A sampling technique where participants are selected at the researcher's convenience without knowing any details about the sample in advance e.g. picking people who were there at the time, in your specific location.	
Systematic Sampling — A sampling technique where every nth person on a list is selected by the researcher e.g. every 3rd house on a street, or 5th person on a register.	
Stratified Sampling — A sampling technique where the target group is divided into subgroups, e.g. by sex, and then the participants are selected randomly from each subgroup.	

Quota Sampling — A sampling technique where the target population is divided into subgroups, e.g. by sex, and the participants are chosen from each subgroup at the convenience of the researcher.	
Self-Selected Sampling — A sampling technique where participants volunteer (select themselves) for research e.g. they come forward/respond to the psychologist after reading an advertisement in a newspaper or on a notice board.	
Snowball Sampling — A sampling technique where participants are initially recruited by the psychologist and then those participants recruit further participants from people they know, therefore the sample group appears to 'snowball'.	

State why you have chosen this sampling method:

Descriptive statistics

When considering what descriptive statistics you can undertake in your research you have a number of areas to choose from. Look back at how you operationalised your IV and DV. What descriptive statistics would you be able to apply to the data you gather?

Descriptive statistic	Tick
Mean — The average that is shown by all scores in the data set when they are divided by n.	
Median — The mid-point in a set of data that has been placed in order.	
Mode — The most common value within a set of data.	
Range — A value which shows the spread of data, representing the difference between the lowest and highest scores.	
Standard deviation — A value which represents the amount of variation of results from the mean score.	

State why you have chosen this descriptive statistic:

Remember you could also consider analysing your sample using descriptive statistics.

Graphical representations

Now you have considered how you will start to analyse your data you can start to plan how you could display the data you have collected. Again there are a number of different options open to you. Which graphic would be the most appropriate for your data?

Graphical representation	Tick
Bar chart — A diagram that represents frequencies of non-continuous data.	
Line graph — A diagram that shows a linear representation of frequencies of data.	
Histogram — A diagram that represents the distribution of frequencies for discrete or continuous data.	
Pie chart — A diagram that represents data proportionately, as part of a whole picture of responses.	
Scatter diagram — A diagram that represents a relationship/correlation between two or more co-variables.	

State why you have chosen this graphical representation:

Inferential statistics

Your choice of inferential statistical test will be dependent on a number of conditions. First of all you will need to consider the levels of measurement you will gather in your research. Look back at the data you have said you will gather. What type of data is it?

Level of measurement	Tick
Nominal data — The level of measurement that shows categories of data represented by frequencies. The data sets have no relative numerical value e.g. boys and girls.	
Ordinal data — The level of measurement where data can be placed into ascending or descending order, but the intervals between data not necessarily equal e.g. the times for first, second and third in a race.	
The level of measurement that has equal numerical intervals between scores e.g. temperature. The interval between 1 and 2 degrees is the same as between 21 and 22 degrees.	
Ratio data — The level of measurement that has equal intervals between scores and has an absolute or true zero point e.g. speed (mph)	

Now look back at your chosen experimental design. Which design did you select?

To help you decide which statistical test to use have a look at the table below:

	Independent data (Independent Measures Design)	Related data (Repeated Measures or Matched Pairs Design)	Correlation
Nominal Data	Chi-squared test	Sign test 	
Ordinal Data	Mann Whitney U test 	Wilcoxon	Spearman's Rho 

This mnemonic may help you to remember the rules:

I Really Could Not Calculate Sums On Monday Without Smiling

Using the table state which test would be appropriate for your data and explain why:

Reliability

When considering how reliable your research will be there are two aspects to consider:

- Internal reliability — The extent to which a test or measure is consistent within itself e.g. the use of a standardised instructions and procedure for all participants.
- External reliability — The extent to which a test produces consistent results over several occasions.

There are a number of methods you can use to assess reliability. Tick a method that you could use in your research:

Method of assessing reliability	Tick
Inter-rater reliability — Where two or more psychologists produce consistent results by using a standardised procedure, agreed coding system, or correlation of their data.	
Test-retest reliability — Involves testing and retesting the same participants over time, with the same test, and comparing their scores. If the scores are the same the test has external reliability.	
Split-half reliability — Involves splitting a pp's test answers in half and seeing whether s/he got the same or similar scores on the two halves. If so, internal reliability is high; if not, it is low and individual questions would need to be redesigned.	

Explain how you could implement this method in your research:

Validity

When considering how valid your research will be there are two aspects to consider:

- Internal validity — The findings are accurate and the effects on the DV are caused by the IV. Therefore the study measures what it intends to measure (as confounding variables have been controlled and will not affect the results).
- External validity — Whether the study paints a true picture of real life behaviours (e.g. if the tasks have mundane realism) and whether the findings would apply to different places, different times, or different people (population validity).

There are some specific validity issues that may affect your research. Tick the issues that you think are possible to have an effect:

Potential validity issues	Tick
Researcher bias — Where the researcher either directly or indirectly influences the results of a study, through the process of designing the study or through the way the research is conducted/analysed.	
Demand characteristics — A type of confounding variable where participants unconsciously work out the aim and act differently (either through social desirability or the screw you effect).	
Social desirability — Where participants give the response that they think will show them in the best possible light. This may mean that they are not a true reflection of their real thoughts/feelings.	

As with reliability, there are methods of assessing validity. Tick a method that you could use in your research:

Method of assessing validity	Tick
Concurrent validity — Validating a measurement by comparing it with an established measurement that has known validity. If similar results occur on both tests, then this new test is valid. If not, then the new test would have to be redesigned and tested.	
Construct validity — The most sophisticated test of validity as it looks at whether the overall results reflect the phenomena as a whole (external validity). Checking the existing definitions of the behaviour being studied and redesigning the test if it measures a different construct.	
Content validity — This objectively checks the method of measuring behaviour is accurate and decides whether it is a fair test that achieves the aims of the study (internal validity). Ask an expert in that specific area of behaviour to check the test is valid.	
Predictive validity — The degree to which a test accurately forecasts a future outcome on a more broadly related topic. Do the findings apply in different and more varied situations? E.g. Do those with high IQ score gain higher grades in exams?	
Face validity — The least sophisticated measure of validity. This validity is simply whether the test appears to measure what it claims to, and hence is subjective. Tests where the purpose is clear, even to naïve respondents, are said to have this validity.	

Explain how you could implement this method in your research:

Ethics

Before you start an investigation you need to fully consider ethical issues surrounding your research. The specification clearly states that The British Psychological Society's Code of Ethics and Conduct (2009) must be adhered to in the implementation of the investigations.

Here are the important areas you must consider. Tick all that apply to your research:

Ethics	Tick
Confidentiality — Third parties should not be able to trace information back to individual participants. This is usually achieved through providing anonymity e.g. using participant numbers not names.	
Deception — Deliberately misleading or falsely informing participants about the nature of research.	
Risk of stress, anxiety, humiliation or pain — Research could induce more than minimal pain through repetitive or prolonged testing. Invasive testing, such as the administration of drugs, or vigorous physical exercise, would not usually be encountered in everyday life, thus is unethical.	
Risk to the participants' values, beliefs, relationships, status or privacy — Research that is likely to face this type of risk focuses on socially sensitive topics (e.g. sexuality) and includes potentially sensitive data (e.g. confidential documents).	
Valid Consent — Includes giving participants enough information (in a form they can understand) so that they can make an informed choice about whether they wish to participate.	
Working with vulnerable individuals (including children) — Children under the age of 16, those lacking in mental capacity, people in care, people in custody (prison) or on probation, and people engaged in illegal activities, such as drug use, would be categorised in this way.	
Working with animals — Research with non-human species is strictly controlled. Restrictions on type of animal, care, number of animals required etc. are all controlled by ethical guidelines and laws such as the Animals Act (1986).	

There are a number of ways of dealing with these ethical issues:

- Ethics committees — Provide a set of moral principles that guide research from its inception through to completion and publication of results.
- Ethical guidelines — The board that is in place to ensure that proposed research meets the standards of the current ethical codes of conduct and guidelines.
- Debriefing — A method which aims to ensure participants are aware of the true nature of the study (overcoming any deception). It should return the participant back to their original state.

State how you are going to deal with these ethical issues:

By working through this booklet you have now planned all the areas required by the specification for your investigation. Now, you are ready to undertake the research. Good luck and enjoy!