INTRODUCTION

KEY IDEAS

- Empirical investigations in psychology may be experimental, quantitative observational, or qualitative.
- All investigation designs and methods of assessing psychological responses have advantages and disadvantages.
- All research involving humans has ethical dimensions.
- Different types of representation are appropriate for different types of data.

WORKSHEETS

1. A general introduction to the nature of psychology and psychological research.
2. The range of investigation designs that can be used to answer a particular research question and their advantages and disadvantages; the three investigation designs used in psychology; experimental, quantitative observational, and qualitative.
3. The three methods of assessing psychological responses: objective quantitative measures, subjective quantitative measures, and qualitative assessment of data.
4. Descriptive statistics (i.e. the ways in which quantitative and qualitative data may be represented and described); the generalisation of research findings.
5. Ethical issues associated with investigations; the ethical safeguards that have been incorporated in particular investigations.
Worksheet 1  Research in psychology

Investigations in Psychology are of three types:

- Experimental investigations
- Quantitative observational investigations
- Qualitative investigations

There are three main ways of assessing responses in Psychological investigations:

- Objective quantitative data
- Subjective quantitative data
- Qualitative data

Each type of investigation can yield one or more of the types of data

NOTE: Issues of ethics in research will be addressed in Worksheet 5. Make sure you are familiar with these.

---

PSYCHOLOGY

Psychology is the scientific study of behaviour and the processes that underlie it. It is a relatively new science, and much has been learned about how humans behave and why.

In some ways it is also a difficult area to learn about. This is for two reasons:

1. Everyone already ‘knows’ some psychology. This is because we are all humans ourselves, we all live among humans, we interact with humans – we observe human behaviour every day, and it is difficult not to make generalisations from that. We need to let go of some of these things we think we know as we learn Psychology formally.

2. The processes that underlie human behaviour – thinking and feeling, for example – cannot be seen or directly measured. They happen in the ‘mind’, which also cannot be seen. We can only infer what is happening in the mind from the behaviours we observe, and this has to be done formally through research to be acceptable.

Our introduction to Psychology in this first part of the course illustrates to us how the knowledge about behaviour has been accumulated, and that only through rigorous scientific research can we collect evidence to support hypotheses and theories.

As we begin our study of psychology we remind ourselves that it is a scientific study that is based on evidence - just as in chemistry or physics or biology, for example – and that this evidence must be derived from carefully managed research. We need to be careful not to base our conclusions on hearsay or folklore. Did anyone ever produce evidence, for example, that ‘you can’t teach an old dog new tricks’?

Through these first five worksheets we will look at the ways research through investigations can be set up, and how data is collected and interpreted.
Investigation Designs and Assessing Responses

Investigation Designs

Most research in psychology is conducted in one of three types of investigations.

Experimental Designs

In this type of research the person conducting the investigation decides which variable (the independent variable) is to be tested, and deliberately varies it to see what effect it has (by measuring the dependent variable). Participants are placed into groups, often randomly, to participate in the investigation. The experimental group is the one in which the variable is deliberately manipulated, and the control group is placed under ‘normal’ conditions for comparison. Often pre- and post-testing is used to measure the effect of the independent variable. All other possible extraneous variables are kept constant so the researcher can be confident that any differences between the groups are due to the one being manipulated, the independent variable. For example, to measure the effect of alcohol level on reaction time subjects could be given different amounts of alcohol (independent variable) and their reaction times measured (dependent variable) in a computer test – a no-alcohol group would be used as the control group.

Quantitative Observational Designs

Here the researcher measures the effect of the independent variable, just as in experiments, but instead of deliberately manipulating the variable by setting up different groups he/she simply observes naturally occurring behaviour. (It is often necessary to use this approach for practical or ethical reasons.) A situation is found in which the people already differ in the desired variable, and the behaviour that results is in some way measured. For example, to measure the effect of age on social play in children they might observe the behaviours of children of different ages in a playground.

Qualitative Designs

In this type of research the behaviour of the subjects is not observed or measured directly. Instead they are asked to discuss or describe their behaviour, thoughts or feelings in certain circumstances. The researcher is able to collect a large amount of information in a fairly short period of time, and analyse it to answer the research question. For example, a discussion group could be asked to discuss the ways in which teenagers’ behaviour is affected by social pressure – the researcher could raise various questions to explore different aspects of the issue, some of which he/she might not have even thought of before the discussion began. Commonly used methods are the Focus Group (a small discussion group run by a trained facilitator in which open-ended focus questions relate to aspects of the issue being investigated) and the Delphi technique (in which responses to open-ended written questions are sought from experts in the field, followed by further questions related to the issue that arise from their initial responses).

NOTE: Later in this worksheet, and again in Worksheet 2, there is information about the advantages and disadvantages of these three investigation designs.

This activity illustrates the different ways research can be conducted. Link each type of research design with the correct description in the table below – draw arrows linking them:
# Methods of Assessing Responses

This is the formal way of saying ‘ways of measuring what happens as a result of the variable we are looking at’. In other words, these are the three ways researchers can collect data in the research they do:

### Objective Quantitative

This is numerical data (quantitative), and the word ‘objective’ simply means that it is not based on opinion. In other words, it is measured directly, such as in measuring time, heart-rate, counting numbers, or any other measure that does not require opinion.

### Subjective Quantitative

This is also numerical, but is based on opinion. For example, if someone was asked to estimate how angry (on a scale from 1 to 10) they thought a person was, they would be giving subjective data.

### Qualitative

This is non-numerical data. It is either spoken or written verbal data, and includes notes taken during discussion groups, written responses from people, and any other form of non-numerical data.

Link the different methods of assessing responses with the correct descriptions:

<table>
<thead>
<tr>
<th>METHODS OF ASSESSING RESPONSES</th>
<th>link with arrows</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Objective quantitative</td>
<td>A</td>
<td>Numerical measurement that is based on opinion or personal input – such as self-reports (questionnaire on moods, for example), rating scales, checklists</td>
</tr>
<tr>
<td>2. Subjective quantitative</td>
<td>B</td>
<td>Numerical measurement that does not involve opinion – such as reaction time, blood pressure, score on a test, count from a discussion group, behaviour count</td>
</tr>
<tr>
<td>3. Qualitative</td>
<td>C</td>
<td>Verbal data (non-numerical) – such as self-reports (questionnaires, checklists), interviews, focus group records, Delphi technique records</td>
</tr>
</tbody>
</table>

(Check your answers with your teacher before continuing.)

---

### INVESTIGATION DESIGNS

<table>
<thead>
<tr>
<th>INVESTIGATION DESIGNS</th>
<th>link with arrows</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Experimental</td>
<td>A</td>
<td>A study is set up into whether our level of concentration varies at different times of the day at school. Students are observed in their normal classes.</td>
</tr>
<tr>
<td>2. Quantitative</td>
<td>B</td>
<td>Students are asked to give their opinions about when they think they do their best work at school.</td>
</tr>
<tr>
<td>3. Qualitative</td>
<td>C</td>
<td>Selected students are asked to sit either alone or with friends to explore in which situation they work better in class.</td>
</tr>
</tbody>
</table>
Putting this into practice

Here is a task to check that you will be able to use these ideas in the design of the two investigations you will do this year.

Imagine developing an investigation into some aspects of sleep, focusing on how it affects our performance or how drinking coffee affects our sleep. We could use any of the three investigation designs, with the responses assessed in any of the three methods indicated above.

The two tables below indicate how we would be able to do this. The first one shows three ideas that could be investigated—shown across the top in italics—one of each of the three design types. It then shows, for each of these design types, three ways the data could be collected. These illustrate the three methods of assessment. Read the nine sections carefully.

<table>
<thead>
<tr>
<th>DESIGNS</th>
<th>Experimental</th>
<th>Quantitative observational</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEASURES</td>
<td>Effect of caffeine consumption on the ability to sleep.</td>
<td>Effect of tiredness on performance in sport.</td>
<td>Importance of sleep in success at school.</td>
</tr>
<tr>
<td>Objective quantitative</td>
<td>Measure time taken to enter sleep after various amounts of caffeine.</td>
<td>Record race times (eg 1500m) and amount of sleep in 24 hours before race. Do this for several races.</td>
<td>Focus group: Record number of times sleep or tiredness is referred to (as a percentage of all factors).</td>
</tr>
<tr>
<td>Subjective quantitative</td>
<td>Rate sleepiness and other factors during effort to enter sleep. Estimate time taken to enter sleep.</td>
<td>Rate satisfaction with race and level of concentration during race.</td>
<td>Focus group: Rate each factor mentioned and place sleep on this scale.</td>
</tr>
<tr>
<td>Qualitative</td>
<td>Describe stages leading up to entering sleep.</td>
<td>Describe the stages in the race.</td>
<td>Focus group: Explain how satisfied you were with the group’s findings.</td>
</tr>
</tbody>
</table>

In this following table your task is to write in the twelve pieces of information (from the grid below it) in the correct place. There is only one way they will fit correctly.
<table>
<thead>
<tr>
<th>DESIGNS</th>
<th>Experimental</th>
<th>Quantitative observational</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DATA**

**Objective quantitative**

**Subjective quantitative**

**Qualitative**

---

<table>
<thead>
<tr>
<th><strong>The importance of sleep (Delphi technique)</strong></th>
<th><strong>Effects of sleep deprivation on skill levels of trainee pilots.</strong></th>
<th><strong>Effects of sleep deprivation in major road accidents.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the recollection of events leading up to the accident.</td>
<td>Describe performance on skill test – skills, control, feelings, etc</td>
<td>Vote to rate the different identified reasons why sleep matters.</td>
</tr>
<tr>
<td>Count number of different reasons listed, and identify the % referring to sleep.</td>
<td>Deprive of sleep for various times – record skill levels on training machine.</td>
<td>Rate alertness and other factors as compared to normal.</td>
</tr>
<tr>
<td>Analysis of common themes from different groups.</td>
<td>Record the number of hours of sleep in the 24/48 hours before accident.</td>
<td>Rate your alertness or tiredness in the moments before the accident.</td>
</tr>
</tbody>
</table>