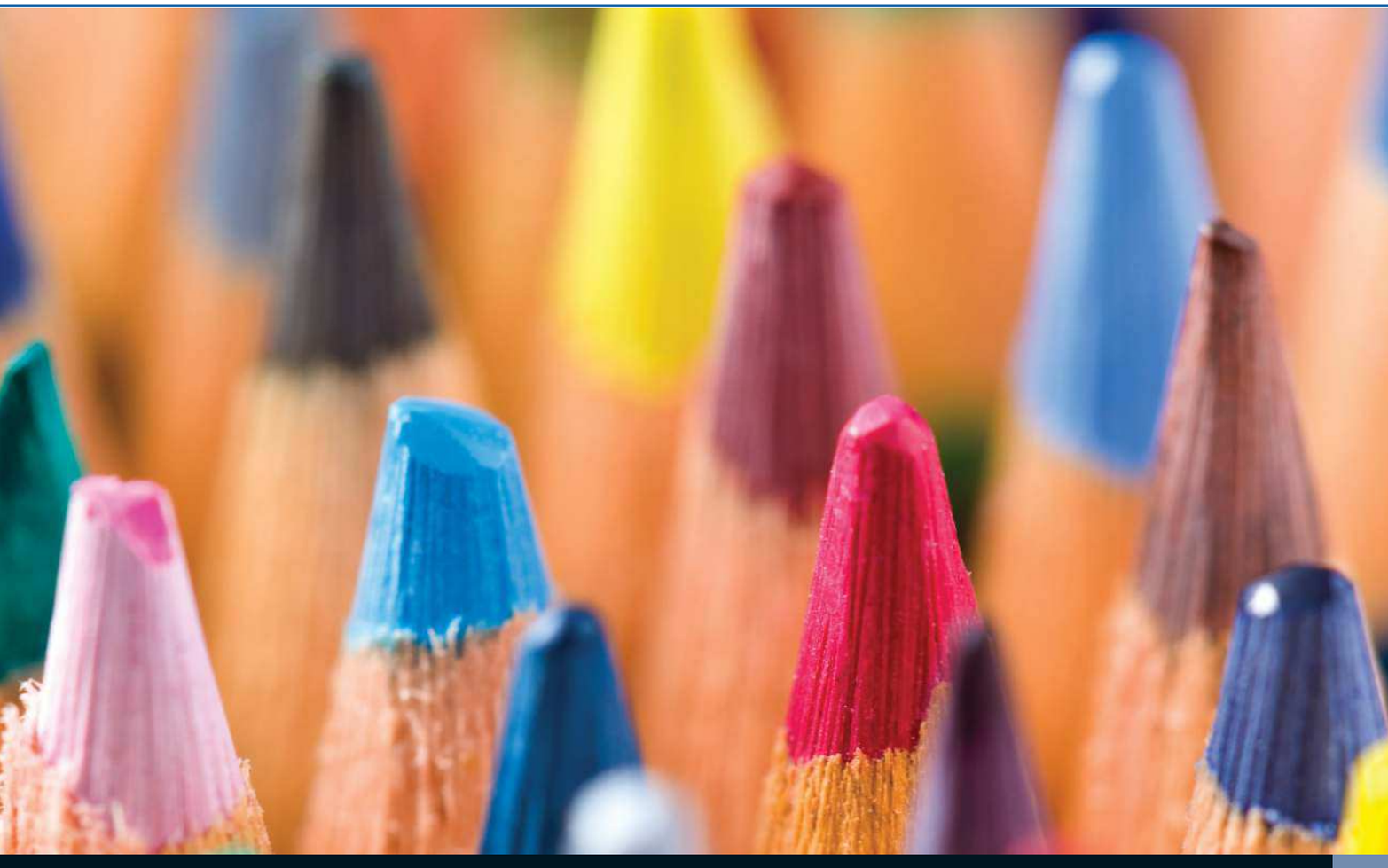


Chapter 1
Research methods

Introduction

Psychology is a science, so the way psychological phenomena are explored is a research process. The methods used to investigate questions in psychology are called 'research methods'. This chapter will help you to understand how those methods are used by psychologists to find out about human (and animal) cognition, emotions and behaviour.

The chapter is divided into several sections, covering the basic research methods that you need to understand: experiments, self-reports, case studies, observations and correlations.

In addition, you will learn about features of the research process (hypotheses, variables, designs and sampling) and data and data analysis. There are also two further topics, which you will also consider within issues and debates: ethical and methodological issues. Together, these will help you to understand and be able to evaluate all aspects of research methods and to be able to apply your knowledge of research methods to novel research situations.

Why do psychologists do research?

As students, you may be bombarded with 'facts' about how to improve your learning. Perhaps you have heard of different learning styles, or the benefits of repetition or mind maps to help you to revise. Each of these methods should have been tested to see if they actually work (although many haven't!). The process of research allows scientists such as psychologists to test ideas in order to discover whether there is evidence to support them. This is how we decide which drugs or therapies work best for mental illnesses, whether different displays or music help to sell products in shops, and how we should organise work schedules to help factory workers to be efficient and healthy.

To be trustworthy, research needs to be planned well and conducted effectively. Imagine an investigation into new classroom techniques. If the researcher didn't know how hard the children worked, and compared the new techniques on a lazy class and a highly motivated class, this would produce false results. Consider a study into consumer psychology that compared how many goods were sold with and without music playing in the store. The researcher only played music at the weekends and played no music on weekdays. Would you believe the findings of studies such as these?

1.1 Where do we focus when we concentrate on a problem?

Reflections: Next time you see someone thinking really hard, perhaps trying to remember a name or work out the answer to a question, watch their eyes. It has been suggested that in such situations our eyes tend to look upwards and to the left (Figure 1.1). Consider how you might test whether this is true. Would you wait for people to get confused and then look at what they do, or would you give them a puzzle to make them think? How would you decide where they are looking? What would you do to be sure that they aren't just looking around the room for clues? Being able to decide on the answers to questions such as these is the basis of designing experiments in psychology.

1.1 Experiments

An **experiment** is an investigation which is looking for a cause-and-effect relationship. The researcher investigates the way one variable, called the **independent variable**, is responsible for the effect in another, the **dependent variable**. To test this, the researcher manipulates the independent variable (IV) to produce two or more conditions, such as 'high' or 'low' light levels or 'early' and 'late' in the day. The effect of these conditions on the dependent variable (DV) is measured. For example, an IV of light level might affect attention, with people being better at paying attention when the light levels are high. How well people pay attention would be the DV. If there is a big difference in the DV between the conditions, the researcher would conclude that the IV has caused the difference in the DV, i.e. that light levels affect attention (Figure 1.2).

KEY TERMS

experiment: an investigation looking for a causal relationship in which an independent variable is manipulated and is expected to be responsible for changes in the dependent variable.

independent variable: the factor under investigation in an experiment which is manipulated to create two or more conditions (levels) and is expected to be responsible for changes in the dependent variable.

dependent variable: the factor in an experiment which is measured and is expected to change under the influence of the independent variable.

1.2 An experiment can investigate whether the light level affects how well we concentrate

In order to be more certain that the difference between the conditions is caused by the IV, the researcher needs to control any other variables that might affect the DV. For example, people might find it harder to be attentive if they have eaten, exercised or sat through a very dull class. Such **extraneous variables** should therefore be controlled, i.e. kept the same in each condition (or 'level of the IV').

The levels of the IV being compared may be two or more **experimental conditions** (such as bright and dull artificial lights) or there may be one or more experimental conditions which are compared to a **control condition** (for example, artificial light compared to daylight). The control condition is simply the absence of the experimental variable. For example, in a comparison of the effect of eating chocolate on paying attention, we might compare either the effect of eating one bar or two bars (two experimental conditions) or the effect of eating one bar to no chocolate at all (one experimental and one control condition).

KEY TERMS

extraneous variable: a variable which either acts randomly, affecting the DV in all levels of the IV or systematically, i.e. on one level of the IV (called a confounding variable) so can obscure the effect of the IV, making the results difficult to interpret.

experimental condition: one or more of the situations in an experiment which represent different levels of the IV and are compared (or compared to a control condition).

control condition: a level of the IV in an experiment from which the IV is absent. It is compared to one or more experimental conditions.

laboratory experiment: a research method in which there is an IV, a DV and strict controls. It looks for a causal relationship and is conducted in a setting that is not in the usual environment for the participants with regard to the behaviour they are performing.

RESEARCH METHODS IN PRACTICE

A researcher might conduct a **laboratory experiment** to test the effect of the **independent variable** of time of day on the **dependent variable** of happiness of students. They might choose to control **extraneous variables** such as which lessons the students were in and whether they had recently eaten since these might affect happiness too. This would be a comparison between two **experimental conditions**.

Reflections: Look at the Research methods in practice box. Can you suggest:

- two different times of day to use as the levels of the *independent variable*
- how the *dependent variable* might be measured
- one other *extraneous variable* that it would be important to control?

Experimental design

The way that participants are used in different levels of the IV is called the **experimental design**. They may be allocated to all, or only one, of the levels of the IV.

The three experimental designs are:

- independent measures design
- repeated measures design
- matched pairs design.

Independent measures design

In an **independent measures design**, a separate group of participants is used for each experimental condition or level of the IV. This means that the data for each level of the IV is 'independent' because it is not related to any other data – it has come from different people. Note that this is a different use of the word 'independent' from that in the 'independent variable'.

If we wanted to know whether seeing aggressive models on television had long-term effects, we could (rather unethically) expose a group of young people to aggressive television and then wait for them to grow older. However, it would much quicker to compare two groups of adults, one group who had been allowed to watch aggressive TV as children and one group who had not been allowed to. This second example would be an independent measures design.

This design is good because the participants only encounter the experimental setting once. They are therefore unlikely

KEY TERMS

experimental design: the way in which participants are allocated to levels of the IV.

independent measures design: an experimental design in which a different group of participants is used for each level of the IV (condition).

to notice or respond to clues that might tell them the aims of the experiment (**demand characteristics**). One problem is that there might be individual differences between participants that could influence the findings. For example, in a study on the effect of noise on dreams, all the people who normally remember their dreams well might end up in the 'no noise' group. If so, it might look as though noise prevented dream recall when in fact it had little effect. This risk can be reduced by the **random allocation** of participants to different conditions. This spreads possible differences between individuals across the levels of the IV. To randomly allocate participants, each person is given a number, and the numbers are then randomly divided into two groups. This can be done by telling each participant a number, putting numbers into a hat and drawing out two sets, or using a random number generator (e.g. on a computer) to do the same thing.

Repeated measures design

In a **repeated measures design** the same group of people participate in every level of the IV. To help you to remember, think of the participants 'repeating' their performance under different conditions. For example, in a study looking at the effects of doodling on learning, we could count the number of words recalled in the same group of people when they did doodle and when they did not.

The main advantage of a repeated measures design is that each person acts as their own baseline. Any differences between participants that could influence their performance and therefore the DV will affect both levels of the IV in the same way. Individual differences are therefore unlikely to bias the findings. Imagine that in our experiment on doodling, one person was generally very quick to learn and another quite slow. In an independent measures design this might cause a problem if they were in different groups, but using a repeated measures design makes the differences between them less important, as both could show an improvement with doodling. Individual differences between participants are called **participant variables**. These variables, such as age, gender, personality or intelligence, can affect scores on the DV. It is therefore important to make sure that these variables do not hide, or exaggerate, differences between levels of the IV.

As each individual participates in every level of the IV they will perform the same or similar tasks two or more times. This can lead to a problem called the **order effect**. Repeated performance could cause participants to improve because they have encountered the task before – a **practice effect**. This matters because participants who were tested on a condition second would perform better than those who did it first. Alternatively, repetition might make performance worse, perhaps if they were bored or tired – a **fatigue effect**. In addition, the participants see both levels of the IV and have more opportunity to work out what is being tested, so are more likely to respond to demand characteristics.

Order effects can be solved in two ways: by randomisation or counterbalancing. Imagine an experiment with two conditions: learning while listening to music (M) and learning with no music (N). In randomisation, participants are randomly allocated to do either condition M followed by N, or vice versa. As some will do each order, any advantage of doing one of the conditions first will probably be evened out in the results. To be more certain that possible effects are evened out, **counterbalancing** can be used. Here, the group of participants is divided into two and one half will

KEY TERMS

demand characteristics: features of the experimental situation which give away the aims. They can cause participants to try to change their behaviour, e.g. to match their beliefs about what is supposed to happen, which reduces the validity of the study.

random allocation: a way to reduce the effect of confounding variables such as individual differences. Participants are put in each level of the IV such that each person has an equal chance of being in any condition.

repeated measures design: an experimental design in which each participant performs in every level of the IV.

participant variables: individual differences between participants (such as age, personality and intelligence) that could affect their behaviour in a study. They could hide or exaggerate differences between levels of the IV.

order effects: practice and fatigue effects are the consequences of participating in a study more than once, e.g. in a repeated measures design. They cause changes in performance between conditions that are not due to the IV, so can obscure the effect on the DV.

practice effect: a situation where participants' performance improves because they experience the experimental task more than once, e.g. due to familiarity or learning the task.

fatigue effect: a situation where participants' performance declines because they have experienced an experimental task more than once, e.g. due to boredom or tiredness.

randomisation:

counterbalancing: counterbalancing is used to overcome order effects in a repeated measures design. Each possible order of levels of the IV is performed by a different sub-group of participants. This can be described as an ABBA design, as half the participants do condition A then B, and half do B then A.

do M followed by N, the other half N followed by M. If on the second test there was a risk of participants accidentally including items learned in the first test, this would be a problem for exactly half the participants in the 'music' condition, and exactly half in the 'no music' condition. Alternatively, a different design could be used.

The problems associated with both independent measures and repeated measures designs are overcome in a **matched pairs design**. Participants are matched into pairs who are similar in ways that are important to the experiment, such as age, gender, intelligence or personality (Figure 1.3). This matching is done on variables relevant to the study, so in a study on the effects of playing a violent computer game, participants might be matched on their existing level of aggression. Identical twins make ideal matched pairs as they are both genetically the same and are likely to have had very similar experiences. Different groups of participants are then used for each level of the IV, with one participant from each pair being in each level of the IV. By using different participants in each group order effects are avoided and the matching of participants minimises the influence of individual differences.

KEY TERM

matched pairs design: an experimental design in which participants are arranged into pairs. Each pair is similar in ways that are important to the study and one member of each pair performs in a different level of the IV.

1.3 Identical twins are perfect participants for a matched pairs design

Experimental design			
	Independent measures	**Repeated measures**	**Matched pairs**
Strengths	Different participants are used in each level of the IV so there are no order effects Participants see only one level of the IV, reducing the effect of demand characteristics Random allocation to levels of the IV can reduce the effects of individual differences	Participant variables are unlikely to distort the effect of the IV, as each participant does all levels Counterbalancing reduces order effects Uses fewer participants than repeated measures so is good when participants are hard to find or if participants are at risk	Participants see only one level of the IV, reducing the effect of demand characteristics Participant variables are less likely to distort the effect of the IV than in an independent measures design as individual differences are matched No order effects
Weaknesses	Participant variables can distort results if there are important individual differences between participants in different levels of the IV More participants are needed than in a repeated measures design so the study may be less ethical if participants are harmed and less effective if there is a small sample because participants are hard to find	Order effect could distort the results As participants see the experimental task more than once, they have greater exposure to demand characteristics	The similarity between pairs is limited by the matching process, so the right matching criteria must be chosen in advance for this to be effective Availability of matching pairs may be limited, making the sample size small (although some studies conducted on twins use very large numbers of pairs)

Table 1.1 Strengths and weaknesses of experimental designs

RESEARCH METHODS IN PRACTICE

A child psychologist conducted an experiment to look at the effect of violent computer games (Figure 1.4). There were two experimental conditions (violent and non-violent). The **dependent variable** was the children's subsequent violent behaviour. The **experimental design** chosen was an **independent measures design**, with different children in each of the experimental conditions. If a **repeated measures design** had been used, in which the same children played each type of game, there could be **order effects**. For example, aggression caused by playing the violent game could still affect children in the non-violent game condition if they did this second. If this were the case, the problem could be reduced by using **counterbalancing**.

1.4 Are children more violent after they have played a violent computer game than before?

However, the use of an independent measures design risks **participant variables**, such as the original level of violence of each child, affecting the results. This could be reduced by either using **random allocation** of participants to each condition or by using a **matched pairs design**. In this case, children with similar aggression levels would be put in the different conditions. To avoid **demand characteristics**, the children would ideally be unaware that they are in an experiment, perhaps by telling them that they are in a computer games competition.

KEY TERMS

standardisation: keeping the procedure for each participant in an experiment (or interview) exactly the same to ensure that any differences between participants or conditions are due to the variables under investigation rather than differences in the way they were treated.

reliability: the extent to which a procedure, task or measure is consistent, for example that it would produce the same results with the same people on each occasion.

Reflections: Look at the Research methods in practice box. Think about the following:

- It would be a good idea to have another level of the IV that did not use a computer game but did use a computer, such as looking at non-violent pictures. Would this be a control condition or another experimental condition?
- One potential order effect that could arise if a repeated measures design was used for this experiment is that the children might get fed up with playing computer games by the second condition. Is this a practice effect or a fatigue effect?
- Suggest a *participant variable* other than initial level of violence that could affect the results of this study.

Types of experiments

Laboratory experiments

Many experiments in psychology are conducted in artificial surroundings, such as a laboratory. Experiments conducted in this way are called laboratory experiments; the participants are not in their usual environment for the behaviour they are performing, and there are strict controls over the situation. For example, a laboratory experiment on the attention of schoolchildren in high and low light levels could be conducted. It might be investigated by testing the children on a computerised attention task conducted in a psychology room in a university.

Evaluating laboratory experiments

Laboratory experiments use many controls. In addition, researchers in laboratory experiments can use **standardisation**, which means that the procedure for each participant can be kept exactly the same. Both controls and standardisation help to make the findings of the experiment **reliable**, that is the researchers would be more certain that the procedures and measures they are using are consistent. Controlling variables also improves **validity** – how certain the researcher can be that they are testing what they claim to be testing. By keeping the situation the same, the researcher can be more certain that any differences in the DV really are due to the differences between levels of the IV rather than due to any extraneous variables.

KEY TERM

validity: the extent to which the researcher is testing what they claim to be testing.

RESEARCH METHODS IN PRACTICE

Dr Splash is conducting a laboratory experiment to test whether older adults detect emotions as quickly as younger people. He has two groups of participants, older and younger ones. This is his IV. He tests them by comparing how quickly they press a button to say that they have recognised the emotion on a face of a screen. This is the DV. Each participant sits at the same distance from the screen. This is one aspect of the **standardisation** of the procedure. In a pilot study, Dr Splash had shown the participants pictures and used a stopwatch to time their reactions himself, but he found he was not very consistent in his ability to stop timing exactly when the participant responded. He therefore changed to the computerised system to improve **reliability**. The pictures of faces included both younger and older people to ensure it was a **valid** test.

Reflections: Look at the Research methods in practice box above.

- Define the independent variable.
- Define the dependent variable.
- Name and explain the experimental design being used in this study.
- Suggest why the use of faces of a range of ages would have improved validity.

Field experiments

Returning to the idea at the beginning of this section of the effect of light levels, the schoolchildren could be tested by altering the number of lights turned on in their normal classroom. Light level would still be the IV and the levels of the IV could be 'all the lights on' and 'half the lights on'. The DV of attention could then be measured by looking at their scores on a class test they were due to take that day. This is still an experiment because it has an IV and a DV (and there will still be some controls, such as the amount of time they spend studying for the test). However, it would be a **field experiment** because the children are being tested on a usual behaviour (the topic test) in their normal environment (the classroom).

Evaluating field experiments

It is a little harder to control variables and standardise procedures in a field experiment than a laboratory experiment. Reliability and validity may therefore be lower. However, validity might be improved because the participants are performing a task that seems normal in a familiar environment. School students taken into a university laboratory might concentrate really hard because they are nervous or interested, which might cover up any differences between the different light level conditions. This means the findings from the laboratory would not **generalise** to other settings as well as those from the classroom. This is a problem of **ecological validity**, and field experiments often have better ecological validity than laboratory experiments (but not always).

Another advantage, if the participants are unaware that they are in an experiment, is that there may be fewer demand characteristics than there would be in a laboratory experiment. These are any features of the experiment that give away the aims and cause participants' behaviour to change, for example to try to 'make the experiment work'.

Natural experiments

A third type of experiment is the **natural experiment**. This is not a true experiment because the researcher cannot manipulate the levels of the IV. The differences or changes in the IV exist, or would occur, even in the absence of the experiment. For example, children's attention could be measured on very dull and very bright days, when the amount of light in the classroom differed (even with the lights turned on). The DV could again be measured with a class test.

KEY TERMS

field experiment: an investigation looking for a causal relationship in which an independent variable is manipulated and is expected to be responsible for changes in the dependent variable. It is conducted in the normal environment for the participants for the behaviour being investigated.

generalise: apply the findings of a study more widely, e.g. to other settings and populations.

ecological validity: the extent to which the findings of research in one situation would generalise to other situations. This is influenced by whether the situation (e.g. a laboratory) represents the real world effectively and whether the task is relevant to real life (has **mundane realism**).

natural experiment: an investigation looking for a causal relationship in which the independent variable cannot be directly manipulated by the experimenter. Instead they study the effect of an existing difference or change. Since the researcher cannot manipulate the levels of the IV it is not a true experiment.

Evaluating natural experiments

Using this method there is less opportunity to control and standardise the situation. There may be **uncontrolled variables**, such as how warm the classroom is. It might be much warmer on sunny days for example. This could matter because the warmth might make the children sleepy and less able to concentrate. This would lower the validity of the findings, although this is countered by the familiarity of the task and setting, which would increase ecological validity.

KEY TERM

uncontrolled variable: a confounding variable that may not have been identified and eliminated in an experiment, which can confuse the results. It may be a feature of the participants or the situation.

Types of experiment			
	Laboratory experiment	**Field experiment**	**Natural experiment**
Strengths	Good control of extraneous variables, raising validity Causal relationships can be determined Standardised procedures raise reliability and allow replication	As participants are in their normal situation for the activity being studied they are likely to behave naturally, making the results representative If participants are unaware that they are in a study, the problem of demand characteristics is less than in laboratory experiments	They can be used to study real-world issues If participants are in their normal situation, their behaviour is likely to be representative If participants are unaware that they are in a study, demand characteristics will be less problematic They enable researchers to investigate variables that it would not be practical or ethical to manipulate
Weaknesses	The artificial situation could make participants' behaviour unrepresentative Participants could respond to demand characteristics and alter their behaviour	Control of extraneous variables is harder than in laboratory experiments, lowering reliability and making replication difficult The researcher will be less sure that changes in the DV have been caused by changes in the IV than in a laboratory experiment Participants may be unaware that they are in a study, raising ethical issues	They are possible only when differences arise naturally Control over extraneous variables is often very difficult As the researcher is not manipulating the IV, they will be less sure of the cause of changes in the DV, so a causal relationship cannot necessarily be established They are often hard to replicate, as controls and standardisation are hard to implement, so the reliability may be low

Table 1.2 Strengths and weaknesses of experimental methods

RESEARCH METHODS IN PRACTICE

A research team is deciding how to test the effect of watching television on children's pro-social behaviour, that is, how nice children are to each other. They will measure pro-social behaviour by observing how often the children hold hands. They are considering two methods. One is a **field experiment**, in which parents either do or do not allow their child to watch television. Alternatively, they could observe the children in a remote place that has no television and then observe them again after the area has begun to receive satellite transmissions. This would be a **natural experiment**. Both of these studies would have more **ecological validity** than a laboratory experiment in which children were shown additional television, because in a laboratory the children would in an unfamiliar environment so may not pay attention to the television if they were nervous or distracted. In both situations there may be **uncontrolled variables**, such as which exact programmes were watched, and for how long. These factors could affect later pro-social behaviour. If the children are aware that their television viewing is being manipulated (in the field experiment) or their pro-social behaviour is being observed (in either experiment) they may try to alter their behaviour to meet the research team's expectations, for example being extra nice to each other (or especially nasty!).

Reflections: Look at the Research methods in practice box above. Which of the following can you identify?

- Independent variable
- Dependent variable.

Is there a *control condition*?

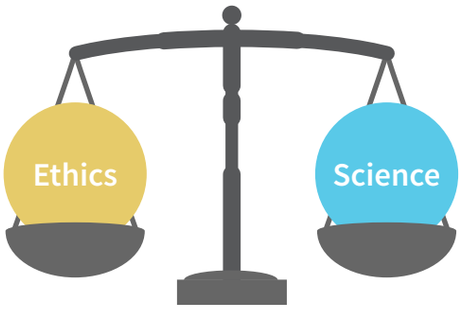
Can you suggest one *extraneous variable* that it would be important to control?

What effect might *demand characteristics* have in this study?

Suggest **one** strength and **one** weakness of conducting the study as a natural experiment in terms of *generalisability*.

Ethics in experiments

The role of ethics in psychology is discussed in detail in Section 1.10. Here we will briefly consider ethics in experiments (Figure 1.5). A participant in a laboratory experiment is likely to know that they are participating in a study and can readily be asked for their **informed consent**. However, it may be necessary to deceive them in order to avoid them working out the aim of the study and altering their behaviour, i.e. to reduce demand characteristics. There is therefore a balance between good ethics and good science. In field and natural experiments, in contrast, it may not be possible to gain consent as the participants may be unaware that they are even in a study. This is an ethical problem because participants should have the right to know what they are entering into and to agree to participate or not. They should also have the **right to withdraw**, which they cannot do if they do not even know that they are in a study, and they should be protected from possible harm.



1.5 Researchers must achieve a balance between good ethics and good science

In all experiments, privacy and confidentiality are important. **Privacy** can be respected in laboratory experiments because the tests or questions used are pre-planned. In the natural settings of field and natural experiments, however, there is a risk of invading privacy so researchers must be more careful of this. **Confidentiality** can be respected in all experiments by keeping the participants' data secure and anonymous, although if the participants are unaware that data has been collected, as in a field experiment, it is important to ensure that they cannot be individually identified, for example by their place of work.

KEY TERMS

informed consent: knowing enough about a study to decide whether you want to agree to participate.

right to withdraw: a participant should know that they can remove themselves, and their data, from the study at any time.

privacy: participants' emotions and physical space should not be invaded, for example they should not be observed in situations or places where they would not expect to be seen.

confidentiality: participants' results and personal information should be kept safely and not released to anyone outside the study.

RESEARCH METHODS IN PRACTICE

A psychology department ethical committee is looking at a research proposal for a study about the effect of cognitions on a therapy designed to help people to relax. The researchers only plan to ask for **consent** about the procedure they will use – listening to an imagery-based relaxation tape – and not their aim. They intend to deceive the participants about the independent variable, which will be either to tell them what will really happen – their pulse rate should fall – or to give them false information by telling them that some people see disturbing flashing lights. When the participants are given the limited information at the start of the study, they will also be told that they can leave at any time, giving them the **right to withdraw**. The instructions on the tape tell the participants to imagine relaxing, intimate thoughts. However, they will also be told that they will not be asked about these thoughts, which ensures their **privacy** is protected. When the participants join the study, each will be given a number, which will be used to identify their data so that their names do not have to be used, ensuring their **confidentiality**.

Reflections: Look at the Research methods in practice box above. Which of the following can you identify?

- The type of *experiment* being planned
- The independent variable
- The dependent variable
- The experimental design

Can you suggest one way in which possible harm to participants could arise as a result of this study?

Suggest why participants may want to withdraw from the study.

Why might it be necessary for the researchers to *deceive* the participants?

Applying your knowledge of experiments to novel research situations

You should be able to recognise experiments (including the IV and DV – and be able to operationalise them, i.e. define them in detail) to decide whether an experiment is a laboratory, field or natural experiment and to comment on controls, standardisation, ethics and reliability and validity. In addition, you should be able to plan an experiment, deciding on an IV and a DV, the type of experiment and how to implement suitable controls and to avoid ethical issues.

SELF-ASSESSMENT QUESTIONS

1 Barry and Anouk are deciding how to test whether gender affects artistic ability. Barry suggests doing a study in the psychology department where they ask students to come in for a study about memory in which they must redraw a complicated image. Barry and Anouk can then see how well they do it. Anouk thinks it would be better to persuade the art teacher to use an art class and set a lesson where students have to copy the same complicated image.

a Explain the type of experiment that is being suggested:

i by Barry

ii by Anouk.

b The independent variable is the same in Barry and Anouk's studies, as is the dependent variable.

i Describe the independent variable (IV).

ii Describe the dependent variable (DV).

c Explain **one** ethical issue that is clear from the procedure they have suggested.

d Suggest **one other** ethical issue and how they could avoid problems with this issue.

1.2 Self-reports

In a **self-report**, the participant gives the researcher information about themselves directly. This is different from experimental tests or observations where the researcher finds the data out from the participant. There are two techniques, questionnaires and interviews, both of which ask the participant questions.

Questionnaires

In a **questionnaire**, the questions are presented to the participant in written form. This may be on paper or as an online survey. There are several different types of questions. The two most important are **closed questions**, which have

KEY TERMS

self-report: a research method, such as a questionnaire or interview, which obtains data by asking participants to provide information about themselves.

questionnaire: a research method that uses written questions.

closed questions: questionnaire, interview or test items that produce quantitative data. They have only a few, stated alternative responses and no opportunity to expand on answers.

a fixed set of possible responses, and **open questions**, which ask for descriptive answers in the participant's own words. Closed questions can take the form of simple choices, such as those asking for yes/no answers or items from a list. Other forms of closed questions include rating scales (where a number is chosen, e.g. between 0 and 5) and Likert scales, which ask the respondent to say how much they agree with a statement such as 'Obesity is not important' or 'Exercise is a necessity' using the choices 'strongly agree / agree / don't know / disagree / strongly disagree'. Some examples of closed questions are as follows:

- What is your gender: male or female?
- How do you travel to school? walk / bicycle / bus / train / car
- Indicate which animal(s) scare you: dog, spider, cat, rat, fish, rabbit, bird. [You may tick as many as you like]
- How much do you like psychology on a scale of 0–4? (0 = not at all, 4 = very much)

Open questions prompt the respondent to give detailed answers, which may be quite long. They contain more depth than the answers to closed questions and are more likely to be able to explore the reasons behind behaviours, emotions or reasoning. They typically ask 'Why…' or simply 'Describe…'. Some examples of open questions are as follows:

- What do you think about children having access to the internet?
- Why do you believe it is important to help people who suffer from phobias?
- How would you suggest parents should discipline their children?
- When do you feel it is important to allow young people the freedom to control their own TV viewing?
- Describe your views on the use of social media sites with regard to encouraging helping behaviour.
- Explain how you would respond if you were told to hurt another person.

KEY TERMS

open questions: questionnaire, interview or test items that produce qualitative data. Participants give full and detailed answers in their own words, i.e. no categories or choices are given.

inter-rater reliability: the extent to which two researchers interpreting qualitative responses in a questionnaire (or interview) will produce the same records from the same raw data.

social desirability bias: trying to present oneself in the best light by determining what a test is asking.

filler questions: items put into a questionnaire, interview or test to disguise the aim of the study by hiding the important questions among irrelevant ones so that participants are less likely to alter their behaviour by working out the aims.

Evaluating questionnaires

Questionnaires using mainly closed questions are easier to analyse than interviews (using more open questions) as they can be used to produce totals of each category of answers so making it simple to summarise the findings. It is also possible to work out averages, which can help to describe the patterns in the results. Where qualitative data is gathered from questionnaires, it produces more detailed, in-depth information. This is an advantage, although it also leads to a problem. Answers to open questions have to be interpreted, and this can lead to a lack of reliability as the researcher may not be consistent in their interpretation. If more than one researcher is involved, there may also be differences between them. This would be a lack of **inter-rater reliability**.

One problem with questionnaires is that it is easy for participants to ignore them, which means the return rate may be very low. Importantly, the people who do reply to a questionnaire may all be quite similar, for example have time to spend because they are unemployed or retired. This would mean all the people who filled out the questionnaire would be quite similar.

1.6 People may lie in questionnaires, lowering validity, for example giving socially desirable responses to questionnaires about eating habits

Another problem with questionnaires is that participants may lie. They may do this because they want to look more acceptable; this is called a **social desirability bias** (Figure 1.6). Participants may also lie if they believe they have worked out the aim of the study. To avoid this, researchers sometimes include **filler questions** among the real questions. The answers to filler questions are not analysed in the research since they serve only to hide the real purpose of the study.