

Chapter 1

Why Do Research in Psychology?

In This Chapter

- ▶ Finding out what research is and why psychologists do it
- ▶ Discovering the various stages of a research study
- ▶ Understanding the different research methods used to gather information

In this chapter, we introduce you to the main research methods, designs and components that you encounter during your psychology course, and we signpost you to relevant chapters in this book where you can find more information – and discover how to become a research methods maestro (or at least pass the course!).

What Is Research?

Research is a systematic way of collecting information (or data) to test a hypothesis.

A *hypothesis* is just a testable (or falsifiable) statement. For example, a good hypothesis is that 'you see a statistically significant difference in self-esteem mean scores between male and female psychology students'. A poor hypothesis is hard to test (or falsify) – for example, 'gender differences in self-esteem develop in the womb for some individuals'. How can you possibly collect data to refute this statement?



No single research study sets out to conclusively 'prove' a hypothesis. Over time, research studies generate, test, refine and retest hypotheses, and build up a body of knowledge and evidence. Research is more of a process than a single thing.

You need to have the skills to conduct your own research study, but you also need to be able to review and critically evaluate existing research studies.

Why Do Psychologists Need to Do Research?

We could tell you that you do research in your psychology course because it's fun, because you can discover something new that no-one else has found and because you develop insights into fascinating areas of the discipline and develop many transferable skills along the way too – but we're biased, and you probably won't believe us.

Instead, we'll tell you that psychologists do research for two main reasons. The first is to expand the knowledge base of the discipline and to explain psychological phenomenon. The second is to apply this new-found knowledge and use it to help individuals and society. Generating a reliable evidence base allows psychologists to describe and explain behaviour, establish cause-and-effect relationships and predict outcomes. Applying research findings can help policy-makers, clinicians and individuals.

Consider a clinical psychologist who meets a client suffering from depression for the first time and wants to recommend a course of therapy:

- ✓ How do they know that 'depression' as a construct actually exists?
- ✓ How do they know that the questionnaire or interview used to assess depression actually measures it?
- ✓ How do they know that an intervention to reduce depression actually works?
- ✓ How do they know if one intervention is better than another?
- ✓ How do they know the possible causes of the depression?

The answer to all of these questions is the same: research.

Doing Psychological Research

Carrying out a research project can be a complex process. Consider these stages you have to go through (no skipping any of them!):

- ✓ First you have to have a comprehensive and viable plan that involves coming up with an idea and developing a research proposal.
- ✓ You have to decide if you want to measure and quantify the things you are interested in (quantitative research) or collect information on people's experiences and opinions using their own words (qualitative research).

- ✓ You then have to choose a research design that is most appropriate for your proposed project.
- ✓ Finally, you have to disseminate your research findings through a written report, a research poster or an oral/verbal presentation.



The stages of a research project are not always separate and distinct. You may have to tackle the question of quantitative vs. qualitative research at the same time you're weighing different research designs. As you read through the book, you see that there may be overlap between stages.

The following sections outline each of these stages and point you to the relevant chapters of the book to help you complete a successful research project.

Planning research

When we task students with conducting and writing up a research study, they're often keen to begin and see the planning stage as a frustrating delay. However, it's impossible to carry out a good research study without good planning – and this takes time.

First, you need to identify your idea. To do this, you review the literature in the area you're interested in. A good literature review demonstrates to your supervisor that you're aware of existing published research in the area and that you're familiar with its strengths and weaknesses. It ensures that your proposed study hasn't been done before. It may also inform you of ways that you can improve your research idea (for example, by using a novel methodology or including a related variable that you haven't yet considered).



Conducting a comprehensive literature review takes time. Don't underestimate how much time you need to explore electronic search engines to find relevant sources, track down these sources and write up your literature review. You find plenty of information on how to conduct a literature review in Chapter 16.

When you've settled on a research idea and defined your research question, you need to draft your *research proposal*. This document outlines the research that you intend to do and why you intend to do it. You need to submit your research proposal in order to obtain ethical permission to carry out your study (Chapter 3 covers research ethics and how to apply for ethical approval).

Your proposal should comprise two sections:

- ✓ An introduction containing your literature review and your research questions or hypotheses.
- ✓ A well-defined research protocol, which is a detailed plan of your design and methodology (we look at research designs in more detail in the later section, 'Choosing a research design'). Your protocol clearly states what you intend to do and how it addresses your research questions or hypotheses. You include details of how you intend to analyse your data and a timetable specifying how long each stage of the research process takes.

Chapter 18 guides you step by step through the process of developing a solid research proposal.



A good research proposal helps you (the researcher) and your supervisor establish whether your project is feasible – that is, if your research project is practical, realistic and possible to carry out. You may have a brilliant idea for a research project (and we're confident that you do!), but can it be completed on time, with the resources you have available, with the participants you have access to and in an ethical manner?

When you're writing your research proposal, you need to specify the sample size that you intend to recruit. Calculating the required sample size is essential at this stage. It impacts the time and resources that you require for your study. Also, if you can't achieve the required sample size, you're unable to detect statistically significant effects in the data – which may mean that you reach the wrong conclusions. Chapter 17 discusses sample size calculations in more detail and covers how to calculate the required sample size for your research proposal.

Deciding between quantitative and qualitative research

A lot of research in psychology attempts to quantify psychological constructs by giving a number to them – for example, the level of depression or an IQ score. This is known as *quantitative research*.

Quantitative research normally uses statistics to analyse numerical data. If you need help analysing this type of data, we recommend you consult a statistics book such as *Psychology Statistics For Dummies* (authored by us and published by Wiley).

Qualitative research is an umbrella term used to signify that the data you collect is in words, not numbers. It focuses on gaining detailed information about people's experiences, often at the expense of representativeness and internal validity.

You normally collect qualitative data during face-to-face interactions – for example, by conducting a semi-structured interview. You can also collect data using focus groups, existing transcripts, social media or many other novel sources.



The information you obtain through qualitative research is based on the interaction between you (as the researcher) and the participant. Your assumptions and biases can and will affect the data you collect. You must acknowledge this influence and reflect upon the impacts of this in any qualitative study.

Qualitative research uses different sets of guidelines from quantitative research. It often requires smaller sample sizes, employs different sampling techniques and differs in how you interpret and analyse data. We explore qualitative research in detail in Part IV: we share guidelines for conducting qualitative research in Chapter 10, we offer advice on analysing qualitative data in Chapter 11 and we examine some different theoretical approaches and methodologies in Chapter 12.

Choosing a research design

As part of your research proposal, you need to decide how you can address your research questions or hypotheses. The most appropriate research design for your study depends on the nature of these questions and hypotheses. In the following sections, we look at some potential research designs that may be appropriate.

Survey designs and external validity

You use *survey designs* to collect naturally occurring information. You don't attempt to control or manipulate any variables (which you do with experimental designs – see the later section, 'Experimental designs and internal validity' for more on these). You can use surveys to collect any type of information (for example, intelligence, personality, attitudes, sexual behaviour and so on) – this may be quantitative (through the use of closed questions) or qualitative (using open-ended questions). Researchers can then investigate the relationships between variables that exist in a population – for example, the relationship between intelligence and personality, or the relationship between attitudes to risk and sexual behaviour.



Good survey designs can be a time- and cost-effective way of collecting data from a large representative sample of participants.

Plan your survey design carefully. It's very easy to have a poor survey design if you don't plan it properly!

Good survey designs investigate the relationships between naturally occurring variables using large sample sizes. As a result, they tend to have high external validity. *External validity* refers to the extent that you can generalise from the findings of the study. You find more information on external validity in Chapter 2.

Exploring types of survey designs

You can conduct survey designs in three main ways:

- ✓ **Cross-sectional survey designs:** You collect data from each individual at one occasion or at one time point. It doesn't matter how long this time point actually lasts (it can last two minutes or take all day) or how many people participate at the time point (it can be one individual or a classroom full of children). Each individual participant only contributes information once.
- ✓ **Longitudinal survey designs:** You collect data from the same participants over multiple time points. You may be interested in how one variable changes over time – for example, you may want to see how self-esteem changes develop in adolescents by measuring self-esteem in the same group of participants every month over a period of years. Alternatively, you may be interested in how one variable can predict another variable at a later time point – for example, you may want to see if intelligence in children can predict earnings as an adult. To do this, you decide to measure intelligence scores in a group of participants as children and then measure earnings in the same participants when they're adults.
- ✓ **Successive independent sample designs:** This type of design is really a mix of cross-sectional and longitudinal designs. You use it to examine changes over time when it's not possible to use a longitudinal design. In this design, you measure a sample of people on one or more variables at one time point (as in cross-sectional designs) and then you measure the same variables at subsequent time points but using a different sample of participants. For example, you may want to know if attitudes to attention deficit hyperactivity disorder (ADHD) are changing over time in entrants to the teaching profession. You can measure attitudes to ADHD in a sample of first-year trainee teachers each year for a period of five years. This approach includes longitudinal elements because you're measuring the same variable over time, but it also has cross-sectional elements because you have to measure a different cohort of first-year trainee teachers each year.

You can find out more about these types of survey designs in Chapter 4.

Selecting a survey method

Your research question or hypotheses dictate the type of survey design that you need to use. Once you've decided on your survey design, you need to decide on your data-collection method – your *survey method*.

The main methods for collecting survey data are

- ✓ Postal surveys
- ✓ Face-to-face surveys
- ✓ Telephone surveys
- ✓ Online surveys

You can find out more about these survey methods and the advantages and disadvantages of each approach in Chapter 4.

Experimental designs and internal validity

In *experimental designs* you manipulate (at least) one variable in some way to see whether it has an effect on another variable. For example, you may manipulate the amount of caffeine that participants consume to see whether this affects their mood. This approach differs from survey designs, where you simply look at the relationship between participants' natural caffeine consumption levels and their mood (refer to the earlier section, 'Survey designs and external validity' for more on survey designs).

By manipulating a variable (and attempting to hold everything else constant) experimental designs can establish cause-and-effect relationships. Experimental studies endeavour to maximise internal validity. *Internal validity* refers to the extent that you can demonstrate causal relationship(s) between the variables in your study. You find more information on internal validity in Chapter 2.



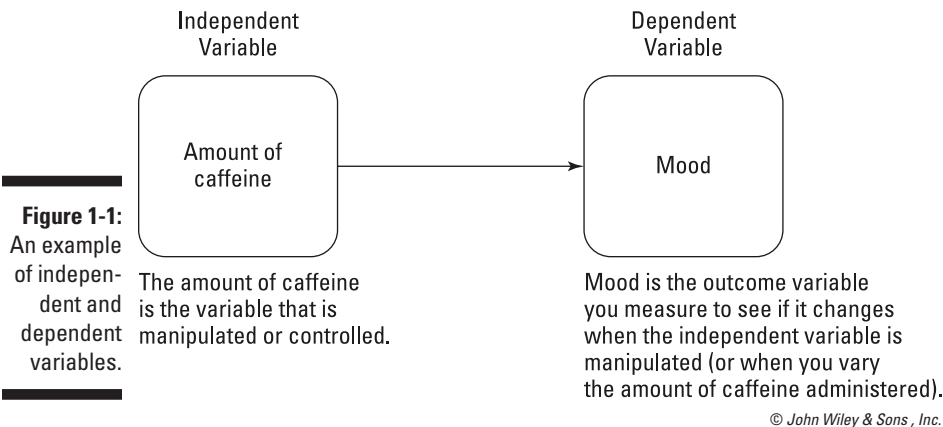
In experimental designs, the variable that you manipulate or have control over is called the *independent variable*. The outcome variable that changes due to the manipulation is called the *dependent variable*. In the preceding example, caffeine is the independent variable and mood is the dependent variable. Figure 1-1 shows the relationship between the variables.

Two main experimental designs underpin all other types of experiments:

- ✓ **Independent groups design:** Different groups of participants take part in different experimental conditions (or levels). Each participant is only tested once. You make comparisons between different groups of

participants, which is why it is also known as a *between-groups design*. For example, if you want to see the effect of caffeine on mood, you assign participants to three different groups. One group consumes no caffeine, the second group is given 100 milligrams of caffeine and the third group is given 200 milligrams of caffeine. You can then compare mood between these three groups.

- ✓ **Repeated measures design:** The same participants take part in all the experimental conditions (or levels). Each participant is tested multiple times. You're looking for changes within the same group of people under different conditions, which is why it is also known as a *within-groups design*. For example, if you want to see the effect of caffeine on mood, participants consume no caffeine one day, 100 milligrams of caffeine another day and 200 milligrams of caffeine at another time. You can then look at the changes in mood when the same people consume different amounts of caffeine.



You can also use more complex experimental designs, such as:

- ✓ Factorial designs
- ✓ Mixed between–within designs
- ✓ Randomised controlled trials (RCTs)
- ✓ Solomon four group design

Chapters 7 and 8 explain each of these experimental designs and outline their strengths and weaknesses. They also address techniques that you can use to help minimise weaknesses in your experimental design, including counterbalancing, random allocation, blinding, placebos and using matched pairs designs.

Reporting research

You carry out your study – well done! All that planning must have paid off. But before you start to celebrate, you need to think about disseminating your findings – after all, what’s the point of carrying out your research if you don’t share your findings?

You can disseminate or present your research findings in different formats, but you always include the same main sections:

✓ **Introduction:** Your introduction provides an overview of the current area of your research by reviewing the existing research. You then outline your rationale for the study. This flows logically from the literature review because it outlines what you intend to do in your study and how this fits into the literature you’ve reviewed. Finally, you report your research questions or hypotheses.

✓ **Method:** Your method section tells a reader exactly what you did, with enough detail to allow someone to replicate your study. A good method section contains the following subheadings:

- Design
- Participants
- Materials
- Procedure
- Analysis

✓ **Results:** Your results section describes the main findings from your study. The results that you report need to address the research questions or hypotheses that you state in the introduction.

You only report findings in this section – you don’t attempt to interpret or discuss them in terms of hypotheses or previous literature.

✓ **Discussion:** Your discussion, like other sections, has several different parts. First, you need to take each hypothesis in turn, state to what extent your findings support it and compare your findings to the previous literature that you discuss in your introduction. You then need to consider the implications of your findings, analyse the strengths and limitations of the study, and suggest how your work can be built on by recommending ideas for future research studies.



The most common way of disseminating your research findings is in a written report – similar to the kind of report that you read in psychological journals. You can find a detailed guide to writing research reports in Chapter 13. You may also be asked to present your findings in the form of a research poster



or an oral presentation. Chapter 14 guides you through the process to help you prepare the perfect poster or presentation.



Reports, posters and presentations share similar information, but they tend to do it in different ways – so you need to be aware of the discrepancies.

Whichever format you present your research in, it must be appropriate and consistent with universal psychological standards. Chapter 15 discusses the American Psychological Association (APA) standards, outlines tips on how to report numbers and, importantly, gives you guidelines for correct referencing procedures. Failure to reference correctly means you can be accused of plagiarism – which is a serious academic offence! Find out what plagiarism is and how to avoid inadvertently committing plagiarism in Chapter 15.

Exploring Research Methods

Research methods are the methods you use to collect data for your research study. You won't find a 'right' or 'correct' research method for your study. Each method has its own set of advantages and disadvantages. Some methods are more suitable for investigating specific hypotheses or research questions – and any method can be performed poorly. For example, if you want to find out about the experience of living with bone cancer, an interview may be more suitable than a questionnaire; however, a well-designed and validated questionnaire is far better than a poorly planned and badly executed interview.

The following sections consider some potential data-collection methods that you may consider for your research study.

Questionnaires and psychometric tests

Most of the things psychologists are interested in are hard to measure. If you want to measure someone's height or weight, however, it's relatively straightforward. When you can directly measure something, it's known as an *observed variable* (or sometimes a manifest variable) – like height or weight.

But what about attitudes, emotional intelligence or memory? You can't see or weigh these constructs. Variables that you can't directly and easily measure are known as *latent variables*.

Psychologists have developed various questionnaires and tests to measure latent variables. If the measure is good, the observed scores that you get from the questionnaire or test reflect the latent variable that you're trying to assess.

Questionnaires usually consist of a number of items (or questions) that each require a brief response (or answer) from participants. Psychometric tests are similar but they may also include other tasks – for example, completing a puzzle within a set time period.



Often the terms ‘questionnaire’ and ‘test’ are used interchangeably.

The scores you get from your questionnaire are only useful if they accurately assess the latent construct they are designed to measure. If they’re a poor measure, the scores that you get out (and any conclusions you base on these scores) may be worthless. You need to consider carefully the validity and reliability of any questionnaire or test that you use in your research study (read more about reliability and validity in Chapter 2).

Chapter 6 discusses how to select questionnaires for your research study and how to appropriately use the data you obtain.



Sometimes, you can’t find an existing questionnaire that directly addresses the things you want to measure. In these cases, you may decide to design your own tailored questionnaire specifically for your research study. Chapter 6 comes to the rescue again and provides you with guidelines for designing your own measure.

Interviews

You can use interviews to collect quantitative data, but you normally use interviews to collect qualitative data. Interviews typically consist of an interviewer (the researcher) asking questions to an individual participant. The interview style can vary from quite structured (where the interviewer asks closed questions requiring short specific answers from the participant) to very unstructured (where the interview is more like a free-flowing conversation about a topic with no specific questions).

The most common interview style in psychological research is the *semi-structured interview*. The interviewer prepares a list of *open-ended questions* (that can’t have a simple ‘yes’ or ‘no’ answer) and a list of themes that he wants to explore; this list is known as the *interview schedule*. It takes considerable and skilful piloting of the interview schedule, as well as interviewing experience, to allow the participant the flexibility to discuss important issues and also to keep the interview focused on the area of interest.



You need to record (having received permission from the participant) and transcribe your interviews. *Transcription* is the labour-intensive process of accurately writing up a detailed account of the interview. Interviewers must also reflect on their role in the process to consider how they may have influenced the responses and direction of the interaction.



Students can sometimes think that interviews are an easy way of collecting information, but they require careful planning and preparation. Don't ask value-laden or judgemental questions. The rapport between the interviewer and the interviewee, the participants' expectations and the location of an interview can all have an impact on interview outcomes. However, if they're performed correctly, interviews can result in rich and complex information that is hard to access using any other methodology.

You can find out more information about using interviews as a research method in Chapter 10.

Focus groups

Focus groups consist of a researcher (sometimes two) and a small group of people (usually around three to ten people). The researcher's role is to lead the group discussion and keep the conversation flowing through the use of an interview schedule (refer to the previous section for more on these). You may be interested in the content of the discussion generated by the group or the behaviours of the participants (which is why involving a second researcher to take notes can be useful).

Focus groups are a different methodology from interviews, and you collect a different type of information. The discussions and behaviours generated in focus groups are due to the interactions of the different group members. They're very useful when you want to explore the shared experience of a group as opposed to an individual's experience. The make-up of the group is an important consideration and influences the type of interactions that occur, so you need to decide whether you want to include people with similar or different experiences.

Participants can often feel that focus groups are more natural and informal than one-to-one interviews. They can also generate huge amounts of data (which is both an advantage and a disadvantage). However, they're not suitable for exploring all topics (sometimes people won't want to discuss personal or embarrassing issues), and inexperienced researchers can find them hard to control and lead.

You discover more about focus groups in Chapter 10.

Observational methods

Instead of giving people questionnaires or interviewing them you can simply observe how they normally behave. However, human behaviour is varied and complex, so it's impossible to accurately observe everything – even in a short

space of time. To get around this, you record samples of the behaviour of an individual or group. Psychologists use a number of specific techniques when observing behaviour to help make the data more manageable. These include:

- ✓ **Time sampling:** Observing behaviour at specific or random intervals – for example, a record every 10 minutes during the school day.
- ✓ **Event sampling:** Recording behaviour only when a specific event occurs – for example, a new child joins the class.
- ✓ **Situation sampling:** Observing behaviour in different situations or locations – for example, playing in the classroom under the supervision of the teacher, or playing unsupervised in the playground.

Observation can be *overt* when the participants are aware that they're being observed – for example, by a researcher sitting in a classroom. Conversely, *covert observation* is when the participants are unaware that their behaviour is being observed – for example, by a researcher sitting behind a one-way mirror.

In addition, you can observe a group when you join them and actively participate in their activities; this is known as *participant observation*. Alternatively, you can passively observe behaviour or even record it without interfering in the participants' behaviour; this is known as *nonparticipant observation*.



Observational methods can have very high external validity (see Chapter 2) because you can capture and record natural behaviours. They're most useful for describing behaviours rather than explaining behaviours.



Observational methods aren't suitable for certain research questions (for example, how can you observe intelligence or personality?), and they can also raise ethical questions. Chapter 3 considers the ethical issues you may find when planning your psychological study.

You can read more about observational methods in Chapter 4.

Psychophysical and psychophysiological methods

You use *psychophysical methods* to explore the relationship between physical stimuli and the subsequent psychological experiences that they cause. The physical stimuli may be noise, brightness, smell or anything else that leads to a sensory response. It's a method for investigating how humans detect, measure and interpret sensory information.

You may use psychophysical methods to examine thresholds – for example, a high pitch sound may be increased or decreased in intensity until a participant can just about detect it, determining his absolute threshold for that tone. Alternatively, you may conduct a scaling study that can, for example, aim to create a rating scale for unpleasant odours.

You use *psychophysiological methods* to explore the relationship between physiological variables and psychological variables. Attempts to create lie detectors (or polygraphs) are a good example of psychophysiology methodology: when people are stressed or aroused (psychological variables), it tends to cause changes in pupil dilation, heart rate and breathing behaviour (physiological constructs).

Psychophysiological methods often employ specialised equipment. Examples of common non-invasive techniques include:

- ✓ Electroencephalography (EEG) to record electrical brain activity
- ✓ Galvanic skin response (or electro-dermal activity) to measure skin conductivity or resistance
- ✓ Eye-tracking to observe eye movement and attention

These are sometimes called *direct measures* because they don't require participants to think about a response. Confounding variables may have less of an effect on data collected this way compared to other methods. For example, you can directly and accurately measure how quickly participants notice an alcohol stimuli (for example, a picture of a bottle of beer) and how long they focus their attention on it (gaze duration), rather than asking them to complete a questionnaire.

Psychophysical and psychophysiological methods tend to be very specific to a particular study and often require the use of dedicated equipment. It's not possible to generalise about these techniques in an introductory research methods textbook. If you intend to use these methods in your research study, you need the specialised knowledge and support of your supervisor.