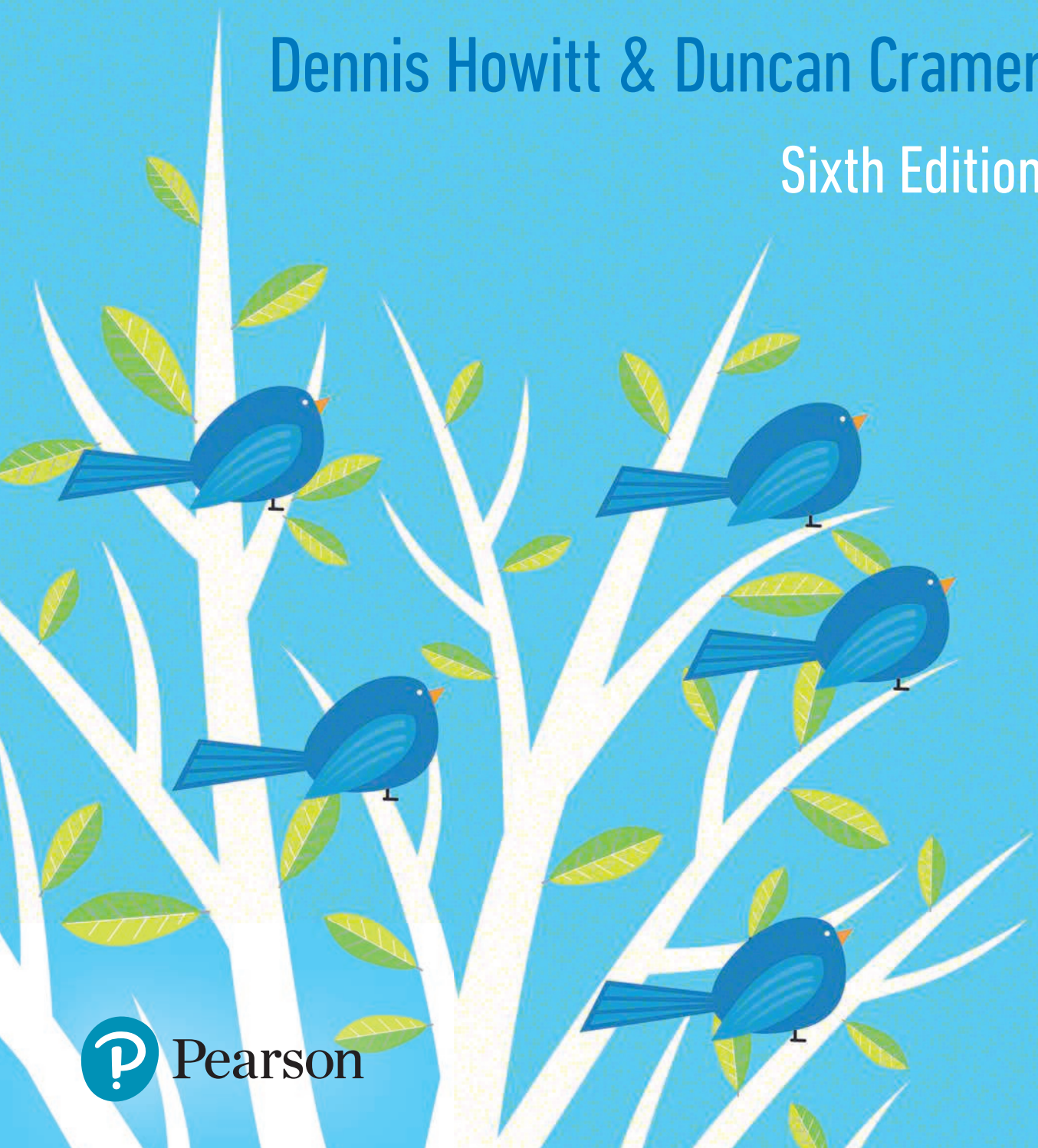
Research Methods in Psychology

Dennis Howitt & Duncan Cramer

Sixth Edition



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Research Methods in Psychology

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Research Methods in Psychology

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Brief contents

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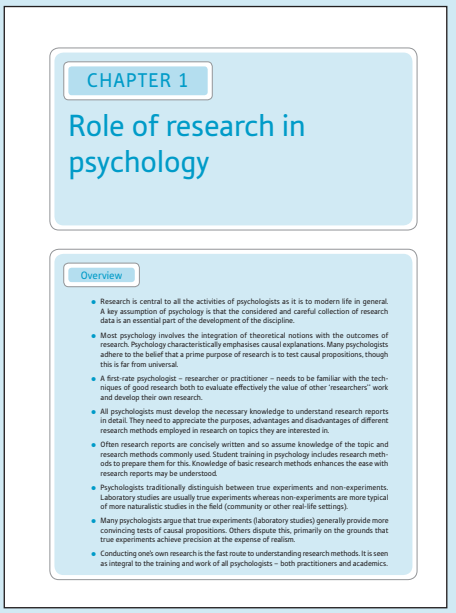
Guided tour



CHAPTER 1

Role of research in psychology

Overview

- Research is central to all the activities of psychologists as it is to modern life in general. A key assumption of psychology is that the considered and careful collection of research data is an essential part of the development of the discipline.
- Most psychology involves the integration of theoretical notions with the outcomes of research. Psychology characteristically emphasises causal explanations. Many psychologists adhere to the belief that a prime purpose of research is to test causal propositions, though this is far from universal.
- A first-rate psychologist – researcher or practitioner – needs to be familiar with the techniques of good research both to evaluate effectively the value of other 'researchers'' work and develop their own research.
- All psychologists must develop the necessary knowledge to understand research reports in detail. They need to appreciate the purposes, advantages and disadvantages of different research methods employed in research on topics they are interested in.
- Often research reports are concisely written and so assume knowledge of the topic and research methods commonly used. Student training in psychology includes research methods to prepare them for this. Knowledge of basic research methods enhances the ease with research reports may be understood.
- Psychologists traditionally distinguish between true experiments and non-experiments. Laboratory studies are usually true experiments whereas non-experiments are more typical of more naturalistic studies in the field (community or other real-life settings).
- Many psychologists argue that true experiments (laboratory studies) generally provide more convincing tests of causal propositions. Others dispute this, primarily on the grounds that true experiments achieve precision at the expense of realism.
- Conducting one's own research is the fast route to understanding research methods. It is seen as integral to the training and work of all psychologists – both practitioners and academics.

Clear Overview

Introduces the chapter to give students a feel for the topics covered

4 PART 1 BASICS OF RESEARCH

1.1 Introduction

Research is exciting – the lifeblood of psychology. The subject matter of psychology is fascinating, but this is not enough. Although initially psychology provides many intriguing ideas about the nature of people and society, as one matures intellectually, the challenges and complexities of the research processes which stimulated these ideas increasingly become part of one's understanding of psychology. There are many engaging psychological issues: for example, why do some relationships last? Is there a purpose behind dreaming? What causes depression and what can we do to alleviate it? Can we improve our memory to make us study more efficiently and, if so, how? Why are we aggressive and can we do anything to make us less so? What are the rules which govern everyday conversation? Psychology's subject matter is enormously diverse which ensures that our individual interests are well catered for. Research methods themselves reflect this diversity. Psychology comes in many forms and so does good psychological research.

Students often see research methods as a dull, dry and difficult topic largely tolerated rather than enjoyed. They much prefer other modules on exciting topics such as child development, mental illness, forensic investigation, brain structure and thought. They overlook that these exciting ideas are the work of commited researchers. For these psychologists, psychology and research methods are intertwined – psychology and the means of developing psychological ideas through research cannot be differentiated. For instance, it is stimulating to learn that we are attracted to people who have the same or similar attitudes to ourselves. The sort of research which supports this idea should also be of interest. This is a start but additional issues will spring to many of our minds about this. For example, why should we be attracted to people who have similar attitudes to our own? Do opposites never attract? When does similarity lead to attraction and when does dissimilarity lead to attraction? The answer may have already been found to such questions. If not, the need for research is obvious. Research makes us think hard – which is the purpose of any academic discipline. The more thinking that we do about research, the better we become at it.

Box 1.1 lists explanations of basic concepts such as 'variable' and 'correlation' which you may be unfamiliar with.

Box 1.1 Key Ideas

Some essential concepts in research

- *Cause* Something which results in an effect, action or condition.
- *Data* The information from which inferences are drawn and conclusions reached. A lot of data are collected in numerical form but textual data may also be appropriate.
- *Randomised experiment* This refers to a type of research in which participants in research are allocated at random (by chance) to an experimental or control condition. Simple methods of random assignment include flipping a coin and drawing slips of paper from a hat. So each participant has an equal chance of being allocated to the experimental or control conditions. The experimental and control conditions involve differences in procedure related to the hypothesis under examination. Randomisation is used to avoid systematic differences between the experimental and control conditions prior to the experimental manipulation. Random selection is fully explained in Chapter 13. The randomised experiment can also be referred to as the randomised trial.

Key Ideas

Outlines the important concepts in more depth to give you a fuller understanding

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Box 5.2 Practical Advice

Important points to summarise in the abstract

Ideally, the following should be outlined in the abstract. Normally, subheadings are *not* used except in structured abstracts, though this rule may be broken if necessary. They are given here simply for purposes of clarity.

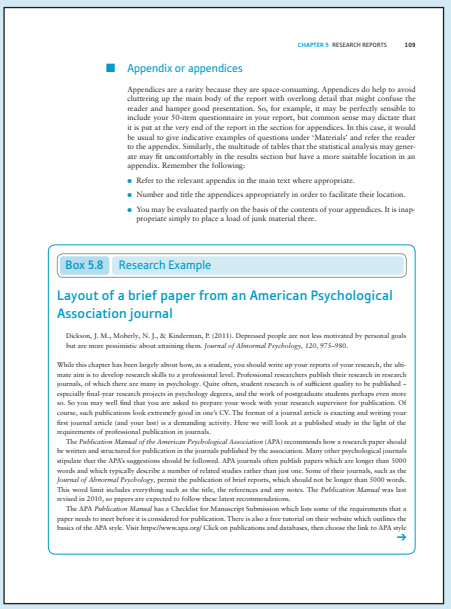
- *Introduction* This is a brief statement justifying the research and explaining the purpose, followed by a short statement of the research question or the main hypotheses. The justification may be in terms of the social or practical utility of the research, its relevance to theory, or even the absence of previous research. Probably no more than 10 per cent of the abstract will be such introductory material.
- *Method* This is a broad orientation to the type of research that was carried out. Often a simple phrase will be sufficient to orient the reader to the style of research in question. So phrases like 'Brain activity was studied using PET (positron emission tomography) and FMRI (functional magnetic resonance imaging) . . .', 'A controlled experiment was conducted . . .', 'The interview transcripts were analysed using discourse analysis . . .' and 'A survey was conducted . . .' suggest a great deal about the way in which the research was carried out without being wordy.
- *Participants* This will consist of essential detail about the sample(s) employed, for example, 'Interview data from an opportunity sample consisting of young carers of older relatives was compared with a sample of young people entering the labour market for the first time, matched for age'.
- *Procedure* This should identify the main measures employed, for example, 'Loneliness was assessed using the shortened UCLA loneliness scale. A new scale was developed to measure social support'. By stipulating the important measures employed, one also identifies the key variables. For an experiment, in addition it would be appropriate to describe how the different conditions were created (i.e. manipulated), for example, 'Levels of hunger were manipulated by asking participants to refrain from eating or drinking for one hour, three hours and six hours prior to the experiment'.
- *Results* There is no space in an abstract for elaborate presentations of the statistical analyses that the researcher may have carried out. Typically, however, broad indications are given of the style of analysis, for example, 'Factor analysis of the 20-item anxiety scale revealed two main factors', 'The groups were compared using a mixed-design ANOVA' or 'Binomial logistic regression revealed five main factors which differentiated men and women'. Now these statistical techniques may be meaningless to you at the moment but they will not be to most researchers. They refer to very distinct types of analysis, so the terms are very informative to researchers. In addition, the major findings of the statistical analysis need to be reported. Normally, this will be the important, statistically significant features of the data analysis. Of course, sometimes the lack of significance is the most important thing to draw attention to in the abstract. There is no need and usually no space to use the succinct methods of the reporting of statistics in the abstract. So things like $[t(17) = 2.43, p < .05]$ are rare in abstracts and best omitted.
- *Discussion* In an abstract, the discussion (and conclusions) need to be confined to the main things that the reader should take away from the research. As ever, there are a number of ways of doing this. If you have already stated the hypothesis, then you need do little other than confirm whether or not this was supported, given any limitations you think are important concerning your research, and possibly mention any crucial recommendations for further research activity in the field.

it is not a substitute for eventually reading that article. A badly written abstract may deter some researchers from reading the original research report and may cause others to waste effort obtaining a report which is not quite what they expected it to be.

Since the abstract provides a summary of the entire paper, having read the abstract, the reader will know what to expect in the report and this speeds up and simplifies the task of reading. First impressions are important, so writing the abstract should not be

Practical Advice

Gives you handy hints and tips on how to carry out research in practice



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Appendix or appendices

Appendices are a rarity because they are space-consuming. Appendices do help to avoid cluttering up the main body of the report with overlong detail that might confuse the reader and hamper good presentation. So, for example, it may be perfectly sensible to include your 50-item questionnaire in your report, but common sense may dictate that it is put at the very end of the report in the section for appendices. In this case, it would be usual to give indicative examples of questions under 'Materials' and refer the reader to the appendix. Similarly, the multitude of tables that the statistical analysis may generate may fit uncomfortably in the results section but have a more suitable location in an appendix. Remember the following:

- Refer to the relevant appendix in the main text where appropriate.
- Number and title the appendices appropriately in order to facilitate their location.
- You may be evaluated partly on the basis of the contents of your appendices. It is inappropriate simply to place a load of junk material there.

Box 5.8 Research Example

Layout of a brief paper from an American Psychological Association journal

Dickson, J. M., Moberly, N. J., & Kinderman, P. (2011). Depressed people are not less motivated by personal goals but are more pessimistic about attaining them. *Journal of Abnormal Psychology, 120*, 975–980.

While this chapter has been largely about how, as a student, you should write up your reports of your research, the ultimate aim is to develop research skills to a professional level. Professional researchers publish their research in research journals, of which there are many in psychology. Quite often, student research is of sufficient quality to be published – especially final-year research projects in psychology degrees, and the work of postgraduate students perhaps even more so. So you may well find that you are asked to prepare your work with your research supervisor for publication. Of course, such publications look extremely good in one's CV. The format of a journal article is exacting and writing your first journal article (and your last) is a demanding activity. Here we will look at a published study in the light of the requirements of professional publication in journals.

The *Publication Manual of the American Psychological Association* (APA) recommends how a research paper should be written and structured for publication in the journals published by the association. Many other psychological journals stipulate that the APA's suggestions should be followed. APA journals often publish papers which are longer than 5000 words and which typically describe a number of related studies rather than just one. Some of their journals, such as the *Journal of Abnormal Psychology*, permit the publication of brief reports, which should not be longer than 5000 words. This word limit includes everything such as the title, the references and any notes. The *Publication Manual* was last revised in 2010, so papers are expected to follow these latest recommendations.

The APA *Publication Manual* has a Checklist for Manuscript Submission which lists some of the requirements that a paper needs to meet before it is considered for publication. There is also a free tutorial on their website which outlines the basics of the APA style. Visit https://www.apa.org/ Click on publications and databases, then choose the link to APA style

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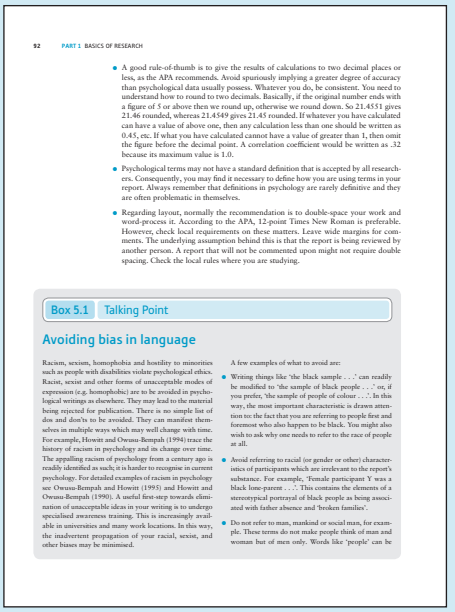
Research Example

Explores a real example of research being carried out, giving you an insight into the process



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- A good rule-of-thumb is to give the results of calculations to two decimal places or less, as the APA recommends. Avoid spuriously implying a greater degree of accuracy than psychological data usually possess. Whatever you do, be consistent. You need to understand how to round to two decimals. Basically, if the original number ends with a figure of 5 or above then we round up, otherwise we round down. So 21.4551 gives 21.46 rounded, whereas 21.4549 gives 21.45 rounded. If whatever you have calculated can have a value of above one, then any calculation less than one should be written as 0.45, etc. If what you have calculated cannot have a value of greater than 1, then omit the figure before the decimal point. A correlation coefficient would be written as .32 because its maximum value is 1.0.
- Psychological terms may not have a standard definition that is accepted by all researchers. Consequently, you may find it necessary to define how you are using terms in your report. Always remember that definitions in psychology are rarely definitive and they are often problematic in themselves.
- Regarding layout, normally the recommendation is to double-space your work and word-process it. According to the APA, 12-point Times New Roman is preferable. However, check local requirements on these matters. Leave wide margins for comments. The underlying assumption behind this is that the report is being reviewed by another person. A report that will not be commented upon might not require double spacing. Check the local rules where you are studying.

Box 5.1 Talking Point

Avoiding bias in language

Racism, sexism, homophobia and hostility to minorities such as people with disabilities violate psychological ethics. Racist, sexist and other forms of unacceptable modes of expression (e.g. homophobic) are to be avoided in psychological writings as elsewhere. They may lead to the material being rejected for publication. There is no simple list of dos and don'ts to be avoided. They can manifest themselves in multiple ways which may well change with time. For example, Howitt and Owusu-Bempah (1994) trace the history of racism in psychology and its change over time. The appalling racism of psychology from a century ago is readily identified as such; it is harder to recognise in current psychology. For detailed examples of racism in psychology see Owusu-Bempah and Howitt (1995) and Howitt and Owusu-Bempah (1990). A useful first-step towards elimination of unacceptable ideas in your writing is to undergo specialised awareness training. This is increasingly available in universities and many work locations. In this way, the inadvertent propagation of your racial, sexist, and other biases may be minimised.

A few examples of what to avoid are:

- Writing things like 'the black sample . . .' can readily be modified to 'the sample of black people . . .' or, if you prefer, 'the sample of people of colour . . .'. In this way, the most important characteristic is drawn attention to: the fact that you are referring to people first and foremost who also happen to be black. You might also wish to ask why one needs to refer to the race of people at all.
- Avoid referring to racial (or gender or other) characteristics of participants which are irrelevant to the report's substance. For example, 'Female participant Y was a black lone-parent . . .'. This contains the elements of a stereotypical portrayal of black people as being associated with father absence and 'broken families'.
- Do not refer to man, mankind or social man, for example. These terms do not make people think of man and woman but of men only. Words like 'people' can be

Talking Point

Investigates an important debate or issue in research

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2.7 Conclusion

It is almost a truism to suggest that the aims and hypotheses of research should be clear. This may seem difficult early on and perseverance is needed. Since research is one way by which psychological knowledge and ideas develop, it is almost inevitable that aims and hypotheses go through a process of refinement. Reformulation of one's aims and objectives commonly occurs in the research planning stage, and sometimes after. All research is guided by aims, but hypotheses are only universal in certain types of research – especially true experiments – where it is possible to specify likely outcomes fairly precisely. Hypotheses are best included wherever possible, since they represent the distillation of the researcher's thoughts about the subject matter. Sometimes, for non-experimental studies, the formulation of hypotheses becomes too cumbersome to be of value. Hence, many excellent studies in psychology will not include hypotheses.

The true experiment (e.g. the laboratory experiment) has many advantages in terms of the testing of hypotheses: (a) its ability to randomise participants to conditions, (b) the requirement of manipulating the independent variable rather than using already existing variables such as gender, and (c) the control over variables. Although we have largely discussed the testing of a single hypothesis at a time, very little research is so restricted. Most research studies have several aims and several hypotheses, because we are usually interested how several different variables may be related to one another. Economies of time and effort result by considering several hypotheses in one study.

The penultimate section of this book on qualitative research methods shows how valuable research can proceed using a quite different approach in which the idea of specified aims and hypotheses is something of an anathema. Nevertheless, much research in mainstream psychology either overtly or tacitly subscribes to hypothesis testing as an ideal. Later (Chapter 18) we present an overview of the theoretical basis to these different approaches to research.

Key points

- Research studies have different general aims. Most seem to be concerned with testing causal propositions or hypotheses. Others may describe a phenomenon or intervention in detail, estimate how common a behaviour is in some population, evaluate the effects of interventions, or statistically summarise the results of similar studies. The aim or aims of a study should be clearly and accurately stated.
- Studies which test causal propositions should describe clearly and accurately what these propositions are.
- The research study should make a contribution to the topic. While research usually builds on previous research in an area, the contribution of the study should be original to some extent in the sense that the particular question addressed has not been entirely investigated in this way before.
- A hypothesis describes what the relationship is expected to be between two or more variables. The hypothesis should be stated in a causal form when the study is a true experiment. It should be stated in a non-causal form when the study is a non-experiment.
- When suggesting that variables may be related to one another, we usually expect the variables to be related in a particular way or direction. When this is the case, we should specify in the hypothesis what this direction is.

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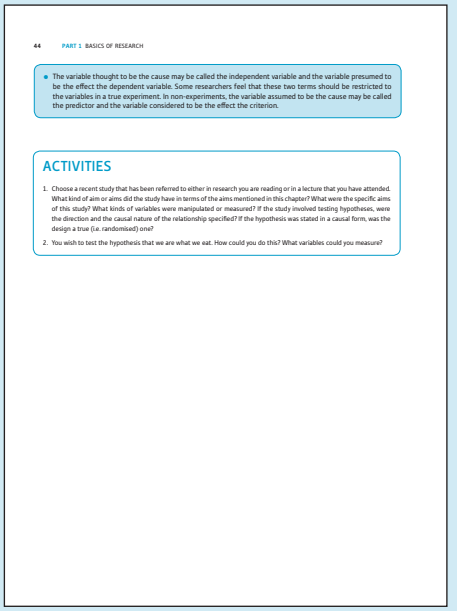
Conclusion/Key points

Each chapter has a conclusion and set of key points to help summarise chapter coverage when you're revising a topic



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- The variable thought to be the cause may be called the independent variable and the variable presumed to be the effect the dependent variable. Some researchers feel that these two terms should be restricted to the variables in a true experiment. In non-experiments, the variable assumed to be the cause may be called the predictor and the variable considered to be the effect the criterion.

ACTIVITIES

1. Choose a recent study that has been referred to either in research you are reading or in a lecture that you have attended. What kind of aim or aims did the study have in terms of the aims mentioned in this chapter? What were the specific aims of this study? What kinds of variables were manipulated or measured? If the study involved testing hypotheses, were the direction and the causal nature of the relationship specified? If the hypothesis was stated in a causal form, was the design a true (i.e. randomised) one?
2. You wish to test the hypothesis that we are what we eat. How could you do this? What variables could you measure?

Activities

Each chapter concludes with activities to help you test your knowledge and explore the issues further

Introduction

Modern psychological research can seem daunting to the newcomer. This sixth edition of *Research Methods in Psychology* seeks to introduce a broad range of topics dealing with psychological research and analysis as currently practised. We cover statistical methods in psychology in a separate volume. Good research requires considerable thought, understanding, experience, and attention to detail. It is far from a simple rule-following exercise and to pretend otherwise is a great disservice to students. The incredible progress of modern psychology requires that teaching resources must struggle to be up to date and be appropriate for the variety of different educational experiences provided by different universities. We do not expect that this sixth edition will be read from beginning to end. Instead, choose what is appropriate for your needs from our sequence of largely self-contained chapters.

In *Research Methods in Psychology* you will find both quantitative and qualitative research covered in appropriate depth. These are commonly but, we think, wrongly seen as alternative and incompatible approaches to psychological research. For some researchers, there may be an intellectual incompatibility between the two. Increasingly, however, researchers appreciate that the two approaches can feed each other. Even if we are wrong about this, it is vitally important that students understand the intellectual roots of the two traditions, how research is carried out in these traditions, and what each tradition is capable of achieving. Armed with this understanding, students will be better placed to make intelligent and appropriate choices about the style of research appropriate to their chosen research questions. On its own, the qualitative material in this sixth edition effectively supports much of the qualitative research likely to be carried out today. There is as much detailed practical advice and theory on qualitative research methods as probably required. (If more is required, the book by Dennis Howitt (2019), *Introduction to Qualitative Research Methods in Psychology,* Harlow: Pearson Education, will probably meet your requirements.) But this is in addition to the quantitative coverage, which easily outstrips any competition in terms of variety, depth and authority. We have tried to provide students with resources to help them in ways largely ignored by most other texts. For example, Chapter 7 on literature searches is extremely comprehensive and practical. Similarly, Chapter 8 on ethics meets the most recent standards and deals with them in depth. Chapter 5 on writing research reports places report writing at the centre of the research process rather than as an add-on at the end. Writing a research report is highly demanding of a student's understanding of all of the elements of research. We provide practical help to this end by including chapters giving examples of quantitative and qualitative research which fail to meet the highest standards. You will also find some discussion of statistics in this book. For the most part, this is when dealing with topics which are missing from the popular SPSS-based statistics textbooks, simply because SPSS does not cover everything useful in psychological research. Statistics is a more controversial topic in psychology than struggling students may realise. So we have included a chapter on some of the more controversial aspects of statistics which may encourage a more mature understanding of the role of statistics in psychology. For the sixth edition, we have included new material

on important but recent topics including multi-method research and data mining. The final chapter is new and is tips and hints which may help you cope better with the stresses and turmoil that planning and executing research may bring.

As far as is possible, we have tried to provide students with practical skills as well as the necessary conceptual overview of research methods in modern psychology. Nevertheless, there is a limit to this. The bottom line is that anyone wishing to understand research needs to read research, not merely plan, execute, analyse and write up research. Hence, almost from the start we emphasise that reading is not merely unavoidable but crucial. Without such additional reading, the point of this book is missed. It is not intended as a jumble of technical stuff too boring to be part of any module other than one on research methods. The material in the book is intended to expand students' understanding of psychology by explaining just how researchers go about creating psychology. At times this can be quite exciting as well as frustrating and demanding.

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We hope that you can tell a book by its cover as we think that the cover design, by Kelly Miller, is excellent and we wish her success after her departure from Pearson. Kevin Ancient took charge of the cover after this and did the all-important text design. He easily holds the record for the number of acknowledgements in our books.

The Project Manager is Sweda R who is just about the most helpful person imaginable. Unfortunately we never know whether to address her as Sweda or R. Maybe R sounds a bit too James Bondish. Perhaps all of us should be a letter.

Bincy Menon had overall responsibility for turning our manuscript into a fine looking book in her role as Content Producer. It never ceases to amaze us that a human being can oversee such a process yet remain charming and friendly.

The Copyeditor was Antonia Maxwell. Not only is she better at spotting our mistakes than even we are at making them, she imposed the text design on our manuscript with great aplomb. This cannot be easy for a book like this with its many elements. Even more remarkable is her ability not to appear irritated by the authors when surely she must have been.

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Duncan Cramer

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PART 1

Basics of research

CHAPTER 1

Role of research in psychology

Overview

- Research is central to all the activities of psychologists as it is to modern life in general. A key assumption of psychology is that the considered and careful collection of research data is an essential part of the development of the discipline.
- Most psychology involves the integration of theoretical notions with the outcomes of research. Psychology characteristically emphasises causal explanations. Many psychologists adhere to the belief that a prime purpose of research is to test causal propositions, though this is far from universal.
- A first-rate psychologist – researcher or practitioner – needs to be familiar with the techniques of good research both to evaluate effectively the value of other researchers' work and develop their own research.
- All psychologists must develop the necessary knowledge to understand research reports in detail. They need to appreciate the purposes, advantages and disadvantages of different research methods employed in research on topics they are interested in.
- Often research reports are concisely written and so assume knowledge of the topic and research methods commonly used. Student training in psychology includes research methods to prepare them for this. Knowledge of basic research methods enhances the ease with research reports may be understood.
- Psychologists traditionally distinguish between true experiments and non-experiments. Laboratory studies are usually true experiments whereas non-experiments are more typical of more naturalistic studies in the field (community or other real-life settings).
- Many psychologists argue that true experiments (laboratory studies) generally provide more convincing tests of causal propositions. Others dispute this, primarily on the grounds that true experiments achieve precision at the expense of realism.
- Conducting one's own research is the fast route to understanding research methods. It is seen as integral to the training and work of all psychologists – both practitioners and academics.

1.1 Introduction

Research is exciting – the lifeblood of psychology. The subject matter of psychology is fascinating, but this is not enough. Although initially psychology provides many intriguing ideas about the nature of people and society, as one matures intellectually, the challenges and complexities of the research processes which stimulated these ideas increasingly become part of one's understanding of psychology. There are many engaging psychological issues: for example, why do some relationships last? Is there a purpose behind dreaming? What causes depression and what can we do to alleviate it? Can we improve our memory to make us study more efficiently and, if so, how? Why are we aggressive and can we do anything to make us less so? What are the rules which govern everyday conversation? Psychology's subject matter is enormously diverse which ensures that our individual interests are well catered for. Research methods themselves reflect this diversity. Psychology comes in many forms and so does good psychological research.

Students often see research methods as a dull, dry and difficult topic largely tolerated rather than enjoyed. They much prefer other modules on exciting topics such as child development, mental illness, forensic investigation, brain structure and thought. They overlook that these exciting ideas are the work of committed researchers. For these psychologists, psychology and research methods are intertwined – psychology and the means of developing psychological ideas through research cannot be differentiated. For instance, it is stimulating to learn that we are attracted to people who have the same or similar attitudes to ourselves. The sort of research which supports this idea should also be of interest. This is a start but additional issues will spring to many of our minds about this. For example, why should we be attracted to people who have similar attitudes to our own? Do opposites never attract? When does similarity lead to attraction and when does dissimilarity lead to attraction? The answer may have already been found to such questions. If not, the need for research is obvious. Research makes us think hard – which is the purpose of any academic discipline. The more thinking that we do about research, the better we become at it.

Box 1.1 gives explanations of basic concepts such as 'variable' and 'correlation' which you may be unfamiliar with.

Box 1.1 Key Ideas

Some essential concepts in research

- *Cause* Something which results in an effect, action or condition.
- *Data* The information from which inferences are drawn and conclusions reached. A lot of data are collected in numerical form but textual data may also be appropriate.
- *Randomised experiment* This refers to a type of research in which participants in research are allocated at random (by chance) to an experimental or control condition. Simple methods of random assignment include flipping a coin and drawing slips of paper from a hat. So each participant has an equal chance of being allocated to the experimental or control conditions. The experimental and control conditions involve differences in procedure related to the hypothesis under examination. Randomisation is used to avoid systematic differences between the experimental and control conditions prior to the experimental manipulation. Random selection is fully explained in Chapter 13. The randomised experiment can also be referred to as the randomised trial.

- *Reference* In psychology, this refers to the details of the book or article that is the source of the ideas or data being discussed. The reference includes such information as the author, the title and the publisher of the book or the journal in which the article appears.
- *Variable* A variable is any concept that varies and can be measured or assessed in some way. Intelligence, height, gender and social status are simple examples.

1.2 The importance of reading

Reading research papers in detail is the best way of understanding psychological research methods. This can be slow at first but speeds up rapidly with practice. Textbooks can only provide an overview and reading some original papers will facilitate progress. Admittedly, some psychologists use unnecessary jargon in their writings so give priority to those who communicate clearly and effectively. University students spend only a small part of a working week being taught – they are expected to spend substantial time on independent study including reading and other work on assignments.

Glance through any textbook or lecture module's reading list and you will see the work of researchers cited. For example, the lecturer or author may cite the work of Byrne (1961) on attraction and similarity of attitude. Normally a list of the 'references' cited is provided. The citation provides information on the kind of work it is (e.g. what the study is about) and where it has been presented or published. The details are shown in the following way:

> Unsworth, N. (2019). Individual differences in long-term memory. *Psychological Bulletin,* 145(1), 79–139.

In publications, nowadays this is usually followed by a DOI (digital object identifier) code which allows the publication to be rapidly found using a computer. The format is standard for a particular type of publication – a book may be referenced differently from a journal article and an Internet source is referenced differently still. For a journal article, the last name of the author is given first, followed by the year in which the paper was published. After this comes the title of the work. Like most research in psychology, Unsworth's study was published in a journal. The title of the journal is given next, together with the number of the volume in which the article appeared and the numbers of the first and last pages of the article. These references are generally listed alphabetically according to the last name of the first author in a reference list at the end of the journal article or book. Where there is more than one reference by the same author or authors, they will be listed according to the year the work was presented. This is known as the Harvard system or author–date system. More detail is given in the chapters about writing a research report (Chapters 5 and 6). We will cite references in this way in this book. However, we cite few references compared with psychology texts on other subjects, as many of the ideas we present have been generally accepted by authors (although usually not in the same way).

Many references cited by lecturers and textbooks refer to reports of research examining a particular question or small set of questions. Research studies are limited and selective in their scope – it is impossible to design a study to study everything. As already mentioned, research is primarily published in professional journals. These are organised into volumes usually published every year. Typically, a volume consists of several issues or parts which are published sequentially every three months or so. Each issue normally

consists of several reports which are probably no more than 4000 or 5000 words in length, though it is not uncommon to find some of them 10,000 words long. Their shortness necessitates concise writing styles. Consequently, they can make for difficult reading and require careful reading in order to master them. Sometimes you may have to read additional studies for details which provide you with a better and more complete understanding.

One aim of this book is to provide the basic knowledge which you require to make sense of such publications – and even to write them. There are obstacles to obtaining necessary publications since, for example, there are too many different psychology journals and books for most libraries to stock physically on shelves. Your university or college library can borrow books from other libraries for use. Most journal articles, however, may be obtained by you in digital form (usually in Portable Digital Format or pdf). Your university or college almost certainly subscribes to digital versions of many different journals which will be readily available to you via your university library over the Internet. The chapter on searching the literature (Chapter 7) explains how to access publications not held in your own library. This is remarkably convenient and there are no overdue fines.

One rewarding aspect about studying psychology is that it is common for students to have questions about a topic which are not addressed in lectures or textbooks. For example, in the case of the research on liking and attitude similarity you may wonder whether the nature of the attitudes being shared affects the relationship. Are some attitudes more important than others and, if so, what are these? If you find yourself asking new questions while reading something then this is excellent. This sort of intellectual curiosity is required to become a good researcher. As your studies progress, you will probably become increasingly curious about what the latest thinking and research on the topic is. If you are interested in a topic, then wanting to know what other people are thinking about it is only natural. Your lecturers will certainly be pleased if you demonstrate such intellectual curiosity. There is a great deal to be learnt about how one can keep up with the latest developments in any academic discipline. Being able to discover what is currently happening and what has happened in a field of research is a vital skill. Chapter 7 discusses in detail how to search for the current publications on a topic.

1.3 Evaluating the evidence

So psychology is not simply about learning and accepting other people's conclusions about a particular research topic. It is more important to be able to carefully evaluate the evidence which has led to these conclusions. Why? Back to our example. What if you have always subscribed to the old adage 'opposites attract'? Would you suddenly change your mind simply because you read in a textbook that people with similar attitudes are attracted to each other? Most likely you would want to know a lot more about the evidence. For example, what if you found that the research in support of this idea was obtained simply by asking a sample of 100 people whether they believed that opposites attract? Actually, all that the researchers had really shown was that people generally thought it was true that people with similar attitudes tend to be attracted. But merely because people once believed the world was flat did not make it flat. It is interesting to know what people believe, but you would require different evidence to conclude that attraction actually is a consequence of attitude similarity. You might also wonder whether it is really true that people once believed the world to be flat. Frequently, in the newspapers and on television, one comes across startling findings from psychological research.

Is it wise simply to accept what the newspaper or television report claims, or would it be better to check the original research before deciding what to conclude?

We probably would be more convinced of the importance of attitude similarity in attraction if a researcher measured how attracted couples were to each other and then showed that those with the most similar attitudes were the most attracted. Even then we might still harbour some doubts. For example, just what do we mean by attraction? If we mean wanting to have a drink with the other person at a pub, then we might prefer the person with whom we might have a lively discussion, that is, someone who does not share our views. On the other hand, if willingness to share a flat with a person were the measure of attraction, then perhaps a housemate with a similar outlook to our own would be preferred. So we are beginning to see that the way in which we choose to measure a concept (or variable) such as attraction may affect the answers we get to our research questions. Notice that the stance of a researcher is somewhat sceptical – that is, they need to be convinced that something is the case.

Is it even more difficult to get a satisfactory measure of attitudes than attraction? There are many different topics that we can express attitudes about. So, would we expect attraction to be affected in the same way if two people shared the view that life exists on Mars compared with if they had similar religious views? Does it matter as much if two people have different tastes in music compared with if they had different views about openness in relationships? That is, some attitudes may be more important than others in determining attraction – perhaps similarity of some attitudes is irrelevant to the attraction between two people. One might study this by asking people about their attitudes on a variety of topics and then how important each of these attitudes is to them. (Importance is sometimes called salience.) Alternatively, if we thought that some attitudes are likely to be the most important then we might focus on these in some depth. All of this implies that the process of evaluating the research in a particular field is not a narrow, nit-picking exercise. Instead, it is a process by which new ideas are generated and new research stimulated.

The various propositions that we have discussed about the relationship between attraction and similarity are all examples of *hypotheses*. A hypothesis is merely a supposition or proposition which serves as the basis of further investigation, either through the collection of research data or through reasoning. The word hypothesis comes from the Greek word for foundation – perhaps confirming that hypotheses are the foundation on which psychology develops. Precision is an important characteristic of good hypotheses. So, our hypothesis that similarity of attitudes is related to attraction might benefit from refinement. It looks as if we might have to say something more about the attitudes that people have and what we mean by attraction, for that matter, if we are to pursue our basic research question further. If we think that the attitudes have to be important, then the hypothesis should be reformulated to read that *people are more attracted to those with similar attitudes on personally important topics*. If we thought attraction was based on having a similar attitude towards spending money, we should restate the hypothesis to say that *people are more attracted to those with similar attitudes towards spending money*.

The evaluation of research evidence involves examining the general assertion that the researcher is making about an issue and the information (data) relevant to this assertion. We need to check whether the evidence or data supports the assertion or whether the assertion goes beyond what could be confidently concluded. Sometimes, in extreme cases, researchers draw conclusions which seem not to be justified by their data. Any statement that goes beyond the data is speculation or conjecture and needs to be recognised as such. There is nothing wrong with speculation as such since hypotheses, for example, are themselves often speculative as they go beyond what is known already. However, speculation needs to be distinguished from legitimate inferences from data.

1.4 Inferring causality

The concept of *causality* has been important throughout most of the history of psychology. Other disciplines might consider it almost an obsession of psychology. The meaning of the term is embodied in the phrase 'cause and effect'. The idea is that things that happen in the world may have an effect on other things. So when we speak of a causal relationship between attitude similarity and attraction, we mean that attitude similarity is the cause of attraction to another person. Not all data allow one to infer causality with confidence. Sometimes researchers suggest that their research demonstrates a causal relationship when others would claim that it demonstrates no such thing – there may be a relationship but one thing did not cause the other. In strictly logical terms, some claims of a causal relationship can be regarded as an error since they are based on research methods which by their nature cannot prove causality with certainty. Frequently, research findings may be consistent with a causal relationship but they are, equally, consistent with other explanations.

A great deal of psychology focuses on causes of things even when the word 'cause' is not used directly. Questions such as why we are attracted to one person rather than another, why people become depressed and why some people commit violent crimes are typical examples of this. The sorts of explanation that are given might be, for example, that some people commit violent crimes because they were physically abused as children. In other words, physical abuse as a child is a *cause* of adult violent crime. There may be a relationship between physical abuse and violent crime, but does this establish that physical abuse is a cause? To return to our main example, suppose a study found that people who were attracted to each other had similar attitudes. Pairs of friends were compared with pairs of strangers in terms of how similar their attitudes were (see Figure 1.1). It emerged that the friends had more similar attitudes than pairs of strangers. Could we conclude from this finding that this study showed that attitude similarity causes people to be attracted towards one another? If we can conclude this, on what grounds can we do so? If not, then why not?

There are at least three main reasons why we cannot conclude definitively from this study that similar attitudes lead to people liking each other:

- Attraction, measured in terms of friendship, and similarity of attitudes are assessed once and at precisely the same time (see Figure 1.2). As a consequence, we do not know which of these two came first. Did similarity of attitudes come before friendship as it would have to if similar attitudes lead to liking? Without knowing the

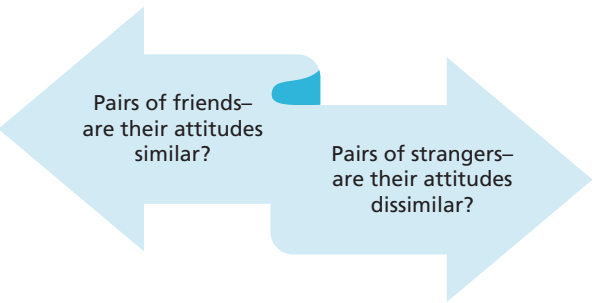

FIGURE 1.1 Looking for causal relationships

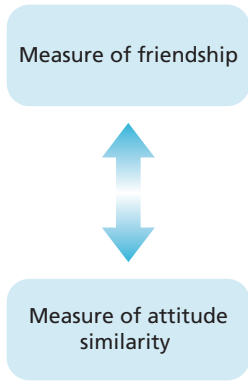

FIGURE 1.2 Cross-sectional study: measures taken at the same point in time

temporal sequence, definitive statements about cause and effect are not possible (see Figure 1.3).

- Friendship may have preceded similarity of attitudes. In other words, perhaps friends develop similar attitudes because they happen to like one another for other reasons. Because this study measures both friendship and similarity of attitudes at the same time, we cannot tell which came first. In other words, we cannot determine which caused which (see Figure 1.4).
- The development of attraction and similarity may be the result of the influence of a third factor. For example, if one moves to university, one begins to be attracted to new people and, because of the general influence of the campus environment, attitudes begin to change. In these circumstances, the relationship between attraction and similarity is

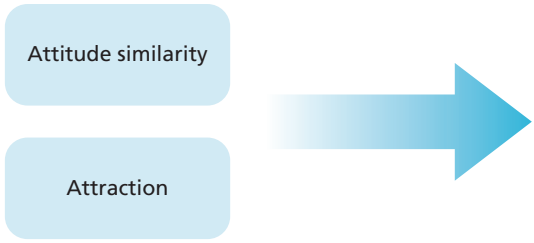

FIGURE 1.3 No time lag between the measurement of attitude similarity and attraction: no evidence of causality

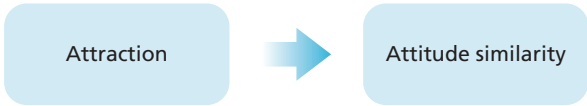

FIGURE 1.4 Attraction is more likely to cause similarity in this example because of the time lag involved