

TOPICS IN APPLIED PSYCHOLOGY

SECOND EDITION

Health Psychology

Charles Abraham, Mark Conner,
Fiona Jones and Daryl O'Connor

ROUTLEDGE



Health Psychology

The new edition of *Health Psychology* is the perfect introduction to this rapidly developing field. Throughout the book, the psychological processes that shape health-related behaviors and affect core functions, such as the immune and cardiovascular systems, are clearly explained. These relationships provide the foundation for psychological interventions that can change cognition, perception and behavior, thereby improving health.

The book is split into five sections and builds to provide a comprehensive overview of the field:

- the biological bases of health and illness;
- stress and health;
- coping resources: social support and individual differences;
- motivation and behavior;
- relating to patients.

Extensively revised to include new material on behavioral change, the role of stress, resilience and social support, recovery from work and the care of people with chronic disease, the book also includes a range of features that highlight key issues and engage readers in applying what we have learned from research.

This is essential reading for any undergraduates studying this exciting field for the first time and the perfect primer for those embarking on postgraduate study.

Charles Abraham is Professor of Psychology Applied to Health at the University of Exeter Medical School.

Mark Conner is Professor of Applied Social Psychology at the University of Leeds.

Fiona Jones is Visiting Senior Research Fellow in the Institute of Psychological Sciences, University of Leeds.

Daryl O'Connor is Professor of Psychology at the University of Leeds.

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Second edition

**Charles Abraham, Mark Conner,
Fiona Jones and Daryl O'Connor**

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Series preface

Psychology is still one of the most popular subjects for study at undergraduate degree level. As well as providing the student with a range of academic and applied skills that are valued by a broad range of employers, a psychology degree also serves as the basis for subsequent training and a career in professional psychology. A substantial proportion of students entering a degree programme in psychology do so with a subsequent career in applied psychology firmly in mind, and as a result the number of applied psychology courses available at undergraduate level has significantly increased over recent years. In some cases these courses supplement core academic areas and in others they provide the student with a flavour of what they might experience as a professional psychologist.

The original series of *Topics in Applied Psychology* consisted of six textbooks designed to provide a comprehensive academic and professional insight into specific areas of professional psychology. The texts covered the areas of *Clinical Psychology*, *Criminal Psychology*, *Educational Psychology*, *Health Psychology*, *Sports and Exercise Psychology* and *Work and Organizational Psychology* and each text was written and edited by the foremost professional and academic figures in each of these areas.

These texts were so successful that we are now able to provide you with a second edition of this series. All texts have been updated with details of recent professional developments as well as relevant research and we have responded to the requests of teachers and reviewers to include new material and new approaches to this material. Perhaps most significantly, all texts in the series will now have back-up web resources.

Just as in the first series, each textbook is based on a similar academic formula that combines a comprehensive review of cutting-edge research and professional knowledge with accessible teaching and learning features. The books are also structured so they can be used as an integrated teaching support for a one-term or one-semester course in each of their relevant areas of applied psychology. Given the increasing importance of applying psychological knowledge across a growing range of areas of practice, we feel this series is timely and comprehensive. We hope you find each book in the series readable, enlightening, accessible and instructive.

Graham Davey
University of Sussex, Brighton, UK
August 2014

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Preface

Health psychology is an area of applied psychological research and a profession. Psychological research has established how perceptions, cognitions and behaviour patterns affect physiological processes such as those constituting the cardiovascular, endocrine and immune systems. These physiological processes, in turn, determine symptomatology, morbidity and mortality. Our perceptions, cognitions and behaviour patterns are strongly influenced by our social interactions. Consequently health psychology research is inherently biopsychosocial.

Health psychology research examines the determinants and consequences of physical rather than mental health and illness (which, in the UK, is the focus of clinical psychology). This area of research is becoming increasingly important since it is clear that (1) health behaviour patterns are critical to health; and (2) without effective promotion of health-preserving lifestyles it will become impossible to fund the treatment of those with ill health and chronic illness. Comprehensive and widely accessible health services depend on the population being engaged in protecting and maintaining good health. In addition, health psychology brings useful methodological tools to outcome and process evaluations of interventions to change perceptions, cognitions and health behaviour patterns. Consequently, there is an increasing need to provide health care professionals with health-psychology-based skills (e.g. in relation to stress reduction and health-behaviour change) and to employ health psychologists in health care services.

Health psychology is now making an important contribution to undergraduate degree programmes (at all levels) and a substantial proportion of undergraduate students (in psychology and applied health) study health psychology. The purpose of this book is to introduce undergraduate students to health psychology research and to illustrate the links between such research and health psychology practice (e.g. in relation to health behaviour change). The book will prepare students for final examinations in health psychology at undergraduate level and provide a solid foundation for students wishing to pursue graduate studies in health psychology. The book has a UK and European perspective but is relevant to any health care system. It is divided into five sections: (1) the biological bases of health and illness; (2) stress and health; (3) coping resources: social support and individual differences; (4) motivation and behaviour; and (5) relating to patients. Throughout the book, we discuss health-related perceptions and behaviours and explain how psychological processes (e.g. emotional responses) shape health-related behaviours and affect physiological systems such as the immune and cardiovascular systems. These relationships provide the foundation for psychological interventions, which can change cognition, perception and behaviour and thereby improve health.

As with all the books in the *Topics in Applied Psychology* series, this text is written as a support for a one-term or one-semester course. *Health Psychology* contains a range

of teaching and learning features such as focus boxes, research methods boxes, activity boxes (supporting students to engage actively with presented material), as well as consideration of issues of contemporary interest (including developments within the UK National Health Service (NHS), the National Institute for Health and Clinical Excellence (NICE) and the Health and Safety Executive (HSE)). Each chapter also ends with support for further reading, including relevant journal articles and books, which will enable the interested student to engage with key topics in more depth.

The aim of this book is to provide the undergraduate student with a concise, readable, structured introduction to health psychology. We have focused on core topics that define the sub-discipline and linked these together so that the text can be read as a continuous course. All of the authors teach health psychology to undergraduates and postgraduates and we hope that, like us, readers will be inspired by the findings of health psychology research and the impact of health psychology practice. The second edition of the book provides an update on the exciting and growing area of health psychology.

Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor
October 2015

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Introduction

This book provides a concise, one-term course covering core topics in health psychology suitable for undergraduate or masters study in psychology or specialist health programmes. We discuss the origins and definition of the sub-discipline as well as considering evidence identifying processes that affect psychological well-being, physiological functioning, health behaviour patterns, behaviour change, usage of health services and responses to health services, such as following medical advice.

CHAPTER PLAN

In this chapter we discuss definitions of health psychology as an academic discipline and as a profession. We also consider other academic traditions that have contributed to the development of health psychology illustrating the rich mix of theories, methodologies and practice, which make health psychology what it is today. In addition, we offer guidance on using the book and studying health psychology generally, including introducing the structure and topic order used in this book.

This chapter has four sections: (1) what is health psychology?; (2) foundations of health psychology; (3) using this book effectively; and (4) the structure and content of this book.

LEARNING OUTCOMES

When you have completed this chapter you should be able to:

- 1 Define and describe the discipline and profession of health psychology.
- 2 Identify psychological sub-disciplines that contribute to health psychology research and practice.
- 3 Explain what is meant by the biopsychosocial model of health and illness.
- 4 Understand how this book is structured and how to study it effectively.

WHAT IS HEALTH PSYCHOLOGY?

The World Health Organization (1948) defines health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’. This definition, which has not been amended since 1948, challenges psychologists to define and assess the determinants of ‘physical, mental and social well being’. Within UK psychology there has been a division between health psychology, which focuses on physical health, and clinical psychology, which focuses on mental health. The two sub-disciplines overlap because psychological processes that affect physical health are also important to mental health. For example, anxiety and stress responses have important consequences for both physical and mental health and the broader social well-being of an individual.

The following broad definition of health psychology was provided by Matarazzo (1980: 118):

Health psychology is an aggregate of the educational, scientific and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, the identification of etiologic and diagnostic correlates of health, illness and related dysfunction and the improvement of the health care system and health policy formation.

This much-cited definition is usefully inclusive and highlights (1) the overarching aims of the sub-discipline, namely, promoting health and preventing illness; (2) the scientific focus of research in health psychology, that is, understanding etiologic and diagnostic correlates of health; and (3) key priorities of professional practice in health psychology, that is, improving health care by focusing on delivery systems and policy.

Health psychologists seek to understand the processes that link individual perceptions, beliefs and behaviours to biological processes, which, in turn, result in physical health problems and the processes by which they can be ameliorated or cured. For example, how a person perceives work demands and copes with them will determine his/her stress levels (see [Chapter 3](#)), which, in turn, may affect the functioning of the cardiovascular and immune systems (see [Chapter 2](#)). Health psychologists also study social processes including the effect of wider social structure (such as socio-economic status) and face-to-face interactions with others (e.g. work colleagues) because these social processes shape perceptions, beliefs and behaviour (see [Chapter 4](#)). In addition, health psychologists explore individual processes that shape health outcomes and health behaviour patterns (see [Chapters 6 and 7](#)) and social processes, which influence the effectiveness of health care delivery. For example, the way health care professionals communicate with their patients influences patient behaviour, including patients’ willingness to take medication and adopt health-enhancing behaviours (see [Chapters 8 and 10](#)). Since most health and medical interventions depend both on the behaviour of health care professionals and, critically, on the behaviour of patients, behaviour change processes determine the potential of health service delivery.

When research allows us to develop good models of underlying causal processes this establishes the evidence base for the design of interventions capable of changing psychological functioning (see [Chapter 8](#)) and behaviour patterns (see [Chapter 9](#)). This

enables us to provide guidance that can enhance the effectiveness and cost-effectiveness of health care services. Professional health psychologists use research findings to assess individuals and design and evaluate interventions that change perceptions, beliefs, behaviours and social relationships, which affect health-related behaviour patterns, quality of life and physical health. These interventions operate at different levels ranging from those focusing on the individual to those designed to change society, i.e. targeting, on the one hand, individual health and, on the other, public health (see [Chapter 9](#)).

We will examine the determinants of health behaviours, highlight the impact they have on health and health care delivery and consider how we can change such behaviour. Health behaviours have a crucial impact on individual and public health. The Alameda County study, which followed nearly 7,000 people over 10 years, revealed that sleep, exercise, drinking alcohol and eating habits predict mortality (Belloc and Breslow, 1972). Moreover, the leading causes of death in the US in 2000 were tobacco use (18.1 per cent), poor diet and physical inactivity (16.6 per cent) and alcohol consumption (3.5 per cent) accounting collectively for almost 40 per cent of all deaths (Mokdad *et al.*, 2004). Similar findings emerge from other population studies. For example, in the UK, Khaw *et al.* (2008) measured four key health behaviours among people with no known cardiovascular disease or cancer. These behaviours were (1) not smoking; (2) being physically active; (3) only drinking alcohol moderately; and (4) plasma vitamins indicating consumption of five portions of fruit and vegetables a day. Eleven years later more than 20,000 people were followed up. Results showed that, controlling for age, gender, body mass index and socio-economic status, those engaging in none of the four behaviours were more than four times more likely to have died than those engaging in all four. The researchers note that this effect is equivalent to those who engaged in four behaviours having the health of someone 14 years younger than those who engaged in none! Health behaviours are not just relevant to our early and middle years but to older people as well. Yates *et al.* (2008) studied a sample of 2,357 healthy men aged 70 and examined the predictors of mortality over the next 20 years. A healthy 70-year-old had a 54 per cent chance of living to be 90 but this reduced to 44 per cent if he had a sedentary lifestyle, 36 per cent if he had hypertension, 26 per cent if he was obese and only 22 per cent if he smoked. The percentage living to be 90 dropped to only 14 per cent if three of these factors were present. So promoting health behaviours among 70-year-olds is important because of the years of life that can be gained.

It is not surprising, therefore, that a review of the UK National Health Service concluded that its long-term effectiveness and economic viability depended on more successful disease prevention strategies and high levels of public engagement in health care and maintenance (Wanless, 2002). The economic implications of promoting preventive health behaviours, minimising demands on health services and supporting people coping with chronic illness are substantial (e.g. see [Chapters 8](#) and [10](#)). For example, in 2014, it was reported that more than 130 million days a year are lost to sickness absence in Great Britain, which has a substantial impact on workers, employers and taxpayers (Department of Work and Pensions, 2015). Consequently, research-based interventions to prevent illness, enhance coping with chronic illness and reduce health service demand have the potential to make a substantial difference to public health and the efficiency of health services (Friedman *et al.*, 1995).

4 INTRODUCTION

Psychological processes can have direct and indirect effects on health and illness. The indirect effects are frequently referred to as behavioural pathways because they provide an explanation as to how psychological factors such as stress can indirectly influence health by producing positive or negative changes in health behaviours (e.g. exercise, diet, smoking). Direct effects are often referred to as psychophysiological pathways because they help us understand how psychological factors can directly impact on the body's physical systems such as the immune or cardiovascular systems (see [Chapter 2](#)). Feeling anxious or stressed changes physiological processes and cumulatively these effects can damage physical systems and so compromise health. A number of studies have found that people who frequently have relatively large physiological responses to stress are more likely to develop serious illnesses in the future. For example, the Kuopio Heart Study, which has been following over 2,500 men for the last 25 years in Finland, found that men who had large increases in blood pressure or heart rate when they felt stressed at the beginning of the study were more likely to have had a stroke or to have developed hypertension many years later (Everson *et al.*, 1996a; Everson *et al.*, 2001). These researchers suggested that the experience of frequent daily stressors over time lead to excessive wear and tear of the cardiovascular system and ultimately to poorer health and earlier death of these 'reactive' individuals. Psychological processes can also initiate healing processes. These explain what are referred to as placebo effects and a better understanding of these processes could enable health care professionals to harness patients' own, internal healing processes.

FOUNDATIONS OF HEALTH PSYCHOLOGY

Hippocrates is credited with the establishment of the medical professional and the Hippocratic Oath. He was born around 460 BC on the Greek island of Kos and sought to understand the processes that cause a variety of illnesses. While this search for causal processes seems self-evident to us it was a formative step in the development of scientific medicine. Hippocrates also linked behaviour, including diet, to health and emphasized the healing power of the doctor–patient relationship. These topics remain key areas of health psychology research today.

More than half a millenium later, in the second century AD, the Greek leader Diogenes commissioned a wall etched with core messages taken from the teachings of the philosopher Epicurus in the city of Oenoanda in Lycia. The wall included 25,000 words written over 260 square metres and emphasized the importance of quality of life, self-reflection and self-regulation (see [Chapter 9](#)). This wall can be viewed as one of the first public health campaigns designed to enhance the lifestyle and quality of life of the general population. Nearly 2,000 years later, we are still designing and evaluating such interventions (see [Chapters 8](#) and [9](#)), although we have more accessible and interactive media now, including websites, podcasts and smartphones! Thus the questions and concerns that define health psychology are millennia old and intricately interwoven into the development of medicine.

Modern medicine is founded on basic research, which revealed the biological processes that constitute health and illness. Painstaking studies of human physiology over many centuries together with key scientific breakthroughs have provided the foundation for understanding how the body's systems work. Breakthroughs included

understanding the nature of respiration, clarifying that specific bacteria cause particular illnesses, discovering compounds that kill bacteria and showing how vaccination works. Such research continues today but we already have good models of how physiological systems (such as the immune and cardiovascular system) operate. It is these models that allow effective medical intervention through diagnosis and treatment. The science of health psychology has important contributions to make because we now know that psychological processes and behaviour patterns affect the operation of these bodily systems and are important determinants of health and illness. Thus a key strand of health psychology research focuses on clarifying how psychological responses and behaviour impact on the body's physiological systems (see [Chapters 2](#) and [10](#)).

Health psychology also has its origins in early cognitive and social psychology as well as behaviourism. Wundt established the first experimental psychological laboratory at the University of Leipzig in 1879 and he is credited with establishing psychology as a research discipline. In the early part of the twentieth century, learning theorists including Pavlov, Watson and Skinner established the behaviourist school of psychology, which focused on observable behaviour and on learning (e.g. through classical and operant conditioning; Skinner, 1974). The success of behaviourism in explaining behaviour and providing tools with which to change behaviour was critical to the recognition that professional psychology had an important contribution to make to the management of behaviour relevant to mental and physical health. The role of learning theory in health behaviour change interventions is still under investigation by health psychologists today (e.g. Hegel *et al.*, 1992; and see [Chapter 9](#)).

Wundt had studied internal individual processes including attention and use of imagery. Later work clarified that even when explaining how rats learn to run mazes we require a psychology of internal representation. Tolman (1948) found that rats learned mazes even when the behaviour was not reinforced and concluded that they had developed internal cognitive maps. This was an important development in what we now think of as cognitive psychology, which seeks to understand the kind of representations of reality that are necessary to explain people's behaviour and how we process information (cf. Neisser, 1967). Developing models of how people perceive and understand their reality and in particular their health and illnesses, is central to health psychology research (see [Chapters 7](#), [8](#) and [10](#)).

The sub-discipline of social psychology became established when researchers focused on the effects of others on our behaviour (e.g. Triplett, 1898). Social psychologists applied experimental methods to understanding how we perceive and represent others, how others influence us and how our position in wider society shapes our beliefs, attitudes and behaviour (cf. Allport, 1924; Sherif, 1936). These processes are important to health psychologists because health-relevant perceptions and behaviours are affected by others. For example, interactions with work colleagues may cause stress and interactions with health care professionals may change beliefs and motivations relevant to taking medication (see [Chapters 4](#) and [10](#)).

Thus health psychology draws upon the methods and theories of a range of sub-disciplines within psychology including learning theory, psychobiology, cognitive psychology and social psychology. More recently collaboration between psychologists and neuroscientists has generated new insights. For example, researchers have developed a standardized way of assessing the extent to which features in a video (such

as an advertisement) arouse and engage attention referred to as ‘message sensation value’ (Seelig *et al.*, 2014). Health psychology research applies these various theories and methods in order to better understand how our perceptions, beliefs and behaviour can maintain health or cause illness. The recognition that health (or illness) results from the interaction of biological characteristics and processes (including genetic predispositions and physiological mechanisms), psychological processes (including perceptions, beliefs and behaviours) and social processes and contexts (including social structure, cultural influences and interpersonal relationships) is what is meant by adopting a *biopsychosocial model* (Schwartz, 1980) of health and illness. This biopsychosocial perspective is central to current health psychology research and practice.

The profession of health psychology was institutionalized in 1978 when the Division of Health Psychology of the American Psychology Association (APA) was established. The European Health Psychology Society (EHPS) was established in 1986 in Tilberg and, in the UK, the Division of Health Psychology of the British Psychology Society (BPS) first met in January 1998. The establishment of these organisational structures recognized the profession of health psychology and allowed research-based training courses to be set up to train professional health psychologists worldwide (see [Chapter 11](#)). These organizations also provided a focus for research by arranging conferences and sponsoring academic journals. For example, the journal *Health Psychology* is published by the APA, *Psychology and Health* and *Health Psychology Review* are published by the EHPS and the *British Journal of Health Psychology* is published by the BPS. Other journals publishing health psychology research include: *Journal of Behavioral Medicine*, *Preventive Medicine*, *Social Science and Medicine*, *Journal of Health Psychology*, *Health Education Research*, *Patient Education and Counselling*, *Annals of Behavioral Medicine* and *Psychology and Health and Medicine*.

USING THIS BOOK EFFECTIVELY

In each chapter of this book we have included brief chapter plans, learning outcomes, lists of terms introduced, individual and/or group exercises and short lists of recommended additional readings. These are designed to help you actively learn as you proceed through the course. In [Chapter 8](#), we note that lasting cognitive change depends on systematic processing of incoming messages involving active engagement with the content. This includes linking content to prior knowledge and, critically, evaluating it in terms of pre-existing standards and principles. In building your expertise in health psychology you are managing your own cognitive development. So how can you facilitate systematic processing of the material in this book?

It is important to read the chapter plans and learning outcomes before reading the chapters to develop an overview of the material. Then at the end of each chapter check that you understand the terms introduced and that you can now do whatever is specified in the learning objectives. Testing yourself by checking through previous learning objectives and planning essays is also important. Research has found that testing improves retention compared to just studying and that this is true even if the test is never marked (Roediger and Karpicke, 2006)! Testing is a central part of learning. It is not just an assessment tool. Testing can also work well when students work together in a study groups.

You should read papers from our additional reading lists and make your own notes on these papers and the chapters in this book. Research has shown that making notes enhances learning and the transfer of learning from one topic to another (e.g. Wittrock and Alesandrini, 1990). Your notes are not just useful for revision. Making them will enhance your learning even if you do not consult them later.

When reading empirical papers it may be helpful to think of them as boxes that contain things you want rather than stories that need to be read from beginning to end. You might try reading the abstract first and then the first couple of paragraphs of the discussion to get a good overview of the paper before you decide what else you need to know about it. When reading a paper reporting an empirical study it is useful to check that you can answer the questions highlighted in Activity 1.1.

ACTIVITY 1.1

Reading empirical papers

Try reading an empirical paper and answering the questions below. For example you could try reading the following paper, which is highlighted as an additional reading in [Chapter 9](#).

Luszczynska, A., Sobczyk, A. and Abraham, C., (2007). Planning to lose weight: RCT of an implementation intention prompt to enhance weight reduction among overweight and obese women. *Health Psychology*, 26, 507–512.

What kind of study is reported? For example is it an experiment, a correlational study (cross-sectional or longitudinal), a qualitative analysis of text or interview data, or a review (narrative, systematic or meta-analysis)?

What are the independent variables and which are the dependent variables (or outcome measures)? Are there any mediating or moderating variables (see Research methods 3.1)?

How do the measures used relate to measures of these (or similar) constructs in other studies? Are the measures reliable? Do they have good construct and predictive validity?

Are there any confounding variables? Have these been controlled for?

What population is studied? How does this relate to other populations studied in this area?

What are the key findings?

Is the sample size adequate? Is the sample representative? Can we generalize from these findings? If so, what are the limits to this generalization?

Does the study suggest any new theoretical development/s? What further research should be undertaken to explore questions arising from the results or problems with the study's methodology?

Does the study have practice and/or policy implications?

Does the study need to be replicated?

Planning and writing essays are also effective ways to test and develop your understanding of a topic. You may have a well-developed approach to writing essays but it may be useful to revise the points in Focus 1.1 when thinking about your next health psychology essay.

FOCUS 1.1

Essay writing

First make sure you understand the question. The question will direct you towards particular readings and research and perhaps ask you to treat these in a particular way – e.g. ‘discuss’, ‘contrast’, etc. Make sure you have good plan, which sets out a clear structure for your essay that corresponds to what the question asks. Also try to ensure that you know how your arguments link together (e.g. using a diagram).

In the opening sections ensure your title makes sense to the reader by providing any necessary definitions and explanations. Also outline and explain your objectives in writing the essay – what do you intend to argue and achieve in the essay – how is this linked to previous research? Use appropriate references to anchor your essay to previous research findings.

The main body of your essay will convey your core arguments, which have been outlined in the introduction. Think about the following points.

You should be able to summarize your essay as a series of core arguments or points. It is often helpful to state these explicitly early on in the relevant paragraph. For example, ‘I will highlight one strength and two weaknesses in this theory. First . . .’ Then for each of these (three) arguments, consider what evidence and illustrations you need.

Be precise about theoretical distinctions and definitions and avoid lapsing into lay psychology.

Know the data you are discussing. Be specific about measures and methods used and illustrate measures where this clarifies a construct or a methodological critique. Support your arguments with data (e.g. means, correlations or effect sizes). This can emphasize the strength or weakness of an association or the effect of an intervention and, thereby, strengthen an argument or critique. However, it is uninformative to provide ‘p’ values alone without references to statistics that convey size of associations, differences or effects.

Note too that, sometimes, an anecdote or case study can illustrate a point in a concrete way.

Reference claims you make about previous findings using author names and dates. Your essay is about research findings so avoid unsupported claims. Use American Psychological Association (APA) referencing rules unless told otherwise by your tutor.

Link your arguments. Each paragraph should lead onto the next and the introduction should link clearly to the conclusion. You may want to make this explicit, e.g. 'The study by Brown (2003) outlined above also emphasizes . . .'

Make links across the reading you have completed for the course.

Provide a short conclusion at the end of the essay. This should summarize your main points and highlight connections between them. In many essays this will also be the opportunity to succinctly state what you think needs to be done next, in terms of further research, intervention, adoption or policy changes (including implications for health care practice and social policy).

You may have been told correctly that your psychology essays are not about your opinion but about research findings. However, a good essay will involve a personal synthesis of research, including your evaluations of findings and your evidence-based conclusions (e.g. the weight of the evidence suggests . . .). Do not be afraid to draw your own conclusions – it's your essay.

Finally, make sure you provide a complete set of references (i.e. all papers, books, etc. that you have referred to in your text in APA format).

THE STRUCTURE AND CONTENT OF THIS BOOK

The book is divided into five sections: (1) biological bases of health and illness; (2) stress and illness; (3) coping resources: social support and individual differences; (4) motivation and behaviour; and, finally (5) relating to and caring for patients.

Chapter 2 deals with the body's physical systems such as the central nervous system, the endocrine system and the immune system. We then consider how these basic biological processes may be influenced by psychological factors such as stress. A brief overview of the role of psychological processes in the experience of pain is also provided. This chapter finishes by introducing important developments linking psychological factors to immune function.

In **Chapters 3** and **4** we review and critically appraise research into the nature of stress. We introduce key theories and methodologies used in researching stress and examine its impacts on health. In **Chapter 3** we introduce theories that viewed stress primarily as a physiological phenomenon, before moving on to more contemporary approaches examining the impact of major life events and day-to-day hassles on health. We also consider possible pathways for links between stress and disease. In **Chapter 4** we focus on specific environmental or contextual factors that have been prominent in stress research and have been shown to affect health, in particular, social inequality and employment factors. Models of work stress are discussed and evidence relating work stress to disease is considered. We conclude by examining the role of organizational change and worksite interventions in reducing stress, foreshadowing our focus on behaviour change in **Chapter 9**.

In **Chapters 5** and **6** we focus on key individual differences between people that affect the way in which environmental factors (such as stress or social inequality) impact

on health. These factors are said to ‘moderate’ the relationships between the environment and an outcome such as stress. In [Chapter 5](#) the focus is on individual differences in the ways that people cope and in the types of social support they receive. We first consider types of coping strategies that individuals use and whether these are consistent across situations (i.e. whether people have their own coping style). We review the effect that such styles have on health. We then consider different types of social support and their value for preventing illness. In [Chapter 6](#) we review work on how personality factors influence health. Much of this research focuses on the Big Five dimensions of personality: openness, conscientiousness, extraversion, agreeableness and neuroticism. Several of these personality dimensions have important consequences for health including how long we can expect to live. A key issue addressed in this chapter is the nature of mechanisms by which personality factors affect health outcomes. So, for example, the personality trait of conscientiousness appears to exert effects on health outcomes by influencing the extent to which individuals will engage in health behaviours.

In [Chapters 7–9](#) we focus on motivation and behaviour. In [Chapter 7](#) we examine models that identify beliefs, attitudes and intentions (that is *cognitions*), which predict individual behaviour. We note the success of these models in predicting behaviour using prospective surveys and objective measures. These models identify potentially modifiable determinants of behaviour patterns (including, e.g. attitudes), which, if changed, would lead to changes in health behaviour patterns. In [Chapter 8](#) we discuss methods used to change these cognitions, including use of information provision and social influence and note some of the pitfalls that health educators must avoid in using these methods. We highlight how best to change attitudes using persuasive methods and also discuss how self-efficacy can be enhanced. This leads directly into approaches to behaviour change and we consider how behaviour change interventions need to be carefully planned, implemented and evaluated if they are to contribute to health promotion. We identify key features of behaviour change interventions and highlight a range of change techniques that may be employed in such interventions.

In [Chapter 10](#) we focus on interactions between health care professionals and patients, examining the processes that prompt medical help seeking and the reasons why some patients follow advice given by health care professionals, while others do not. We consider consultation management in some detail and discuss the particular needs of people with long-term illness. We explore the role of complementary therapies in health care and explain why people may show health benefit even when they have only received a placebo treatment such as a sugar pill. Research in these areas clearly highlights the importance of consultation management to patients’ satisfaction, adherence and health. Cognitive and emotional care affects health-related behaviour and health over and above the pharmacological effects of medication. Psychological interventions are especially important to patients with long-term illnesses and have been shown to be effective in pain management.

We draw to a close in [Chapter 11](#) by reflecting on current and future developments in health psychology research, the professional roles health psychologists may occupy and the competencies required to practise in those roles.

KEY CONCEPTS AND TERMS

- American Psychology Association
- Behaviour change
- Biopsychosocial model
- British Psychology Society
- Classical and operant conditioning
- Cognitive maps
- Direct and indirect effects on health
- Essay writing
- Etiologic
- European Health Psychology Society
- Health behaviours
- Hippocrates
- Making notes
- Professional practice
- Promoting health and preventing illness
- etiological and diagnostic correlates of health
- Psychophysiological pathways
- Public health campaigns
- Social influence
- Systematic processing
- Testing
- World Health Organization

SUMMARY

Health psychology aims to promote health and prevent illness through scientific research that elucidates psychological processes linked to health. Evidence-based causal models provide the basis for effective interventions that may enhance health by changing psychological processes. Interventions designed to change demand for health services can have substantial effects on the cost-effectiveness of services. Emotional responses and health behaviours have been shown to have important measurable effects on morbidity and mortality. Behavioural effects are referred to as indirect effects whereas psychological processes, which affect health through psychophysiological pathways, are referred to as direct effects.

The origins of health psychology research can be seen in the teaching of ancient Greek philosophers and more recently in the application of learning theory, cognitive theories and social psychological theories to health and health behaviour. The biopsychosocial model incorporates biological, psychological and social processes.

You will learn more effectively if you (1) read chapter plans and learning outcomes before reading chapters; and (2) check that you understand terms introduced and that you can do what is specified in the learning objectives at the end of each chapter. Taking notes, reading recommended additional readings and writing essays will also consolidate your learning.



FIGURE 1.1 Structured learning makes studying easier.

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SAMPLE ESSAY TITLE

- Discuss the main theoretical concepts that underpin research and practice in health psychology today.

FURTHER READING

Journal articles

Adler, N. and Matthews, K. (1994). Health psychology: Why do some people get sick and some stay well? *Annual Review of Psychology*, 45, 229–259.

Schwartz, G.E. (1980). Testing the biopsychosocial model: The ultimate challenge facing behavioural medicine? *Journal of Consulting and Clinical Psychology*, 50, 1040–1053.

1

**Biological bases
of health and
illness**

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2

Biopsychosocial pathways to health and illness

CHAPTER PLAN

In [Chapter 1](#), we introduced health psychology as a discipline, the biopsychosocial model of health and illness, the context in which health psychology research takes place and areas studied. In this chapter we consider the main psychophysiological pathways through which psychological factors impact on physical health and illness.

We discuss the body's physical systems including the central nervous system, the endocrine system, the cardiovascular system and the immune system. We then consider how these basic biological processes may be influenced by psychological factors such as stress. In particular, we will describe how activation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic adrenal medullary (SAM) system are linked to increased cardiovascular disease. Next, we present a brief overview of the role of psychological factors in the experience of pain and gate-control theory. Finally, we introduce important developments in the area of psychoneuroimmunology and discuss how psychological factors can affect the immune system within the context of susceptibility to upper respiratory illness and the speed of wound healing.

The chapter is composed of five sections: (1) basic features of the nervous system; (2) the stress response; (3) biopsychosocial aspects of pain; (4) psychoneuroimmunology; and (5) stress and the immune system.

LEARNING OUTCOMES

When you have completed this chapter you should be able to:

- 1 Describe the basic features of the central nervous system.
- 2 Explain how activation of the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic adrenal medullary (SAM) system links to stress and health.
- 3 Understand the role of psychological factors in the experience of pain.
- 4 Discuss how psychoneuroimmunology (PNI) plays a role in illness processes.
- 5 Design an experiment to examine the effects of psychological stress on health outcomes within a laboratory setting.

WHAT IS THE BIOPSYCHOSOCIAL PERSPECTIVE ON HEALTH AND ILLNESS?

As outlined in [Chapter 1](#), the biopsychosocial model postulates that health and illness are influenced by psychological factors (e.g. cognition, emotion, personality), social factors (e.g. people in your social world, social class, ethnicity) and biological factors (e.g. viruses, lesions, bacteria). Within this context, there is increasing evidence that psychological factors such as stress affect health directly, through autonomic and neuro-endocrine responses (e.g. blood pressure and hormonal changes), but also indirectly, through changes to health behaviours (e.g. exercise, diet, smoking). The direct effects of stress on health are often referred to as psychophysiological pathways because they help us understand how psychological factors can directly impact on physiological disease-related processes. The indirect effects are frequently referred to as the behavioural pathways as they provide an explanation as to how psychological factors can indirectly influence disease-related processes by producing negative changes in health behaviours. This chapter describes the main psychophysiological pathways that may influence health and illness, while the key behavioural pathways are considered in [Chapter 3](#). Before the direct effects are considered in more detail, we introduce you to the basic features of the nervous system. It is paramount that you understand some of the basic biological processes constituting the human body in order to gain a good understanding of the psychophysiology of health and illness. Throughout this book we use activity boxes to consolidate your learning and there is one just beyond the next section so read carefully!

BASIC FEATURES OF THE NERVOUS SYSTEM

The role of the nervous system is to allow us to adapt to changes within our body and environment by using our five senses (touch, sight, smell, taste, sound) to understand, interpret and respond to internal and external changes quickly and appropriately. The nervous system consists of the brain, the spinal cord and the nerves (bundles of fibres that transmit information in and out of the nervous system). The brain is the central part of the nervous system and it helps control our behaviour. It receives and sends messages for the rest of the body through the spinal cord. The brain has three major anatomic components: the forebrain, the midbrain and the hindbrain.

The anatomy of the brain

The forebrain consists of dense, elaborate masses of tissue and has two main subdivisions:

- 1 The *telencephalon*, which is composed of the cerebrum and limbic system.
- 2 The *diencephalon*, which comprises the thalamus and hypothalamus.

The cerebrum is the largest part of the human brain and is divided into the two halves – the left and right cerebral hemispheres – that are connected in the middle by a bundle of nerve fibres called the corpus callosum. The upper part of the cerebrum

is the cerebral cortex (its outermost area). This is subdivided into the frontal, parietal, occipital and temporal lobes and controls higher processes such as speaking, reasoning, memory, etc. (see [Figure 2.1](#)). More specifically, the frontal lobe (located towards the front of the cerebrum) is involved in speech, thought and emotion. Behind this is the parietal lobe, which perceives and interprets sensations like touch, temperature and pain. The occipital lobe is at the centre back of the cerebrum and detects and interprets visual images. Finally, the temporal lobes located on either side are involved in hearing and aspects of memory storage. The limbic system is evolutionarily older than other parts of the brain and consists of the amygdala and hippocampus among other structures (not shown below). This system interacts with the endocrine system (a network of glands that secrete hormones throughout the body, described later) and the autonomic nervous system (ANS) and plays an important role in motivational and emotional aspects of behaviours such as sex, eating, drinking and aggression. It is also involved in aspects of memory processes.

The second major division of the forebrain is the diencephalon. Its two most important structures are the thalamus and the hypothalamus (see [Figure 2.1](#)). The thalamus is thought to have multiple functions and plays an important role in regulating states of sleep, arousal and consciousness. The hypothalamus is located below the thalamus and although it is a relatively small structure it is very important as it regulates

Median section of the brain

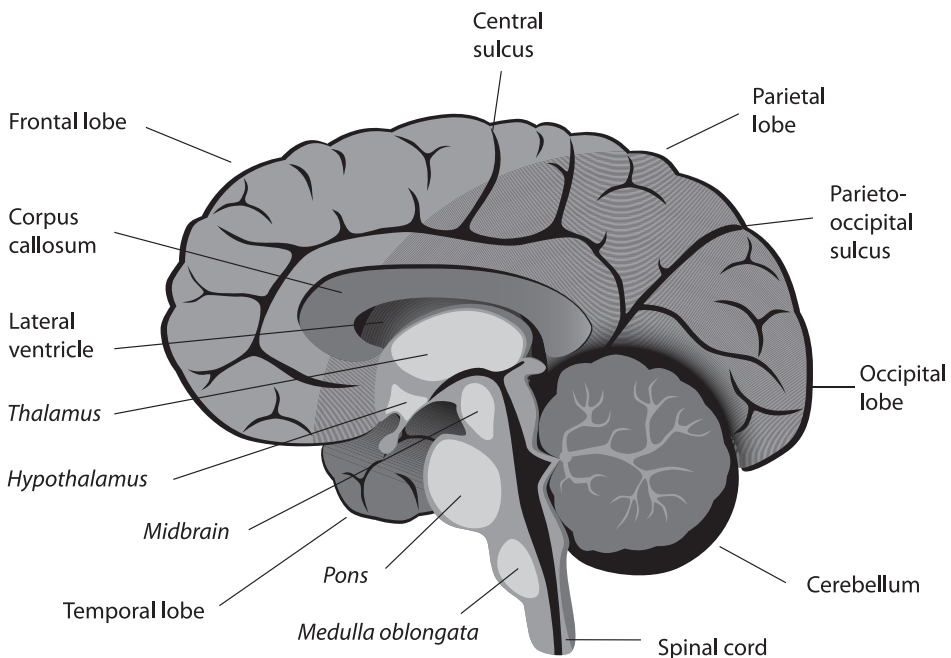


FIGURE 2.1 Anatomical structure of the brain.

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the ANS and the endocrine system and, as we will see later in this chapter, it controls how individuals respond to stressful encounters. In short, it oversees the basic behaviours associated with the survival of the species: fighting, feeding, fleeing and mating, often referred to as the four Fs!

The midbrain consists of two major parts: the tectum and the tegmentum.

Broadly speaking, the midbrain, including the brain stem, regulates critical bodily functions such as breathing, swallowing, posture, movement and the rate at which the body metabolizes foods.

The hindbrain has two major divisions: the metencephalon and the myelencephalon. The former comprises the cerebellum and the pons and the latter contains one major structure, the medulla oblongata (usually referred to simply as the medulla). The cerebellum is involved in coordinating the body's movements and the pons has been implicated in sleep and arousal. The medulla controls vital functions linked to the regulation of the cardiovascular system and respiration.

ACTIVITY 2.1

You have just read that the brain has three major anatomical components and each has a number of subdivisions. Can you list them? If not, it might be useful as a revision aid to draw a diagram of each component and its subdivisions.

The spinal cord and nerve cells

The spinal cord is a long, delicate structure that begins at the end of the brain stem and continues down to the bottom of the spine. It carries incoming and outgoing messages between the brain and the rest of the body. The brain communicates with much of the body through nerves that run up and down the spinal cord. As you will see later, the spinal cord plays an important role in responding to pain stimuli. The nervous system contains 100 billion or more nerve cells that run throughout the body. A nerve cell, called a neuron, is made up of a large cell body and a single, elongated extension (axon) for sending messages. Neurons usually have many branches (dendrites) for receiving messages. Nerves transmit messages electrically from the axon of one neuron to the dendrite of another (at the synapse) by secreting tiny amounts of chemicals called neurotransmitters. These substances trigger the receptors on the next neuron's dendrite to start up a new electrical impulse.

Central nervous system and peripheral nervous system

The nervous system is classified into various different subsystems and subdivisions but these different components are all part of an integrated system and do not operate independently.

The nervous system has two distinct parts:

- 1 the *central* nervous system; and
- 2 the *peripheral* nervous system.

The central nervous system (CNS) comprises the brain and spinal cord and is protected by bone. The brain is encased in the cranial subcavity within the skull and the spinal cord is enclosed in the spinal cavity and protected by the vertebrae. Both the brain and the spinal cord do not come into direct contact with the skull or the vertebrae as they are further enclosed by a three-layered set of membranes called the meninges. Instead, they float in a clear liquid called cerebrospinal fluid.

The peripheral nervous system (PNS) is a network of nerves that connects the brain and spinal cord to the rest of the body. The PNS is further subdivided, according to its function, into the

- 1 *somatic* nervous system (SNS); and
- 2 *autonomic* nervous system (ANS).

The SNS is concerned with coordinating the ‘voluntary’ body movements controlled by the skeletal muscles. The ANS regulates internal body processes that require no conscious awareness, for example, the rate of heart contractions and breathing and the speed at which food passes through the digestive tract.

The ANS is subdivided into the

- 1 *sympathetic* division; and
- 2 *parasympathetic* division.

As shown in [Figure 2.2](#), the sympathetic division mobilizes the body by increasing heart rate and blood pressure among other physiological changes, whereas the parasympathetic division generally restores the body’s energy by reducing heart rate and respiration while increasing the rate of digestion. The changes in each of the divisions occur when the ANS triggers the endocrine system to react in the face of stress.

Endocrine system

The endocrine system is an integrated system of small glands that work closely with the ANS and are extremely important for everything we do! In particular, endocrine glands, which secrete their chemicals into the bloodstream to be carried to their point of use, are most important here. Similar to the nervous system, the endocrine system communicates with many different parts of the body, however, it uses a different ‘signalling system’. Whereas the nervous system uses nerves to send electrical and chemical messages, the endocrine system only uses blood vessels to send chemical messages. In particular, each of the endocrine glands, once activated, secretes chemical substances called hormones into the bloodstream, which carry messages to different parts of the body. There are a number of endocrine glands located throughout the human body such as the adrenal glands, gonads, pancreas, thyroid, thymus and pituitary gland (see [Figure 2.2](#)). Within the context of understanding the influence of psychological factors, such as stress, on the development of disease, the most important glands to consider are the adrenal and pituitary glands. Moreover, the endocrine system is linked to the nervous system by connections between the hypothalamus and the pituitary gland, the latter of which is discussed next.