First edition

Psychology

in context

Stephen Kosslyn • Robin Rosenberg • Anthony Lambert

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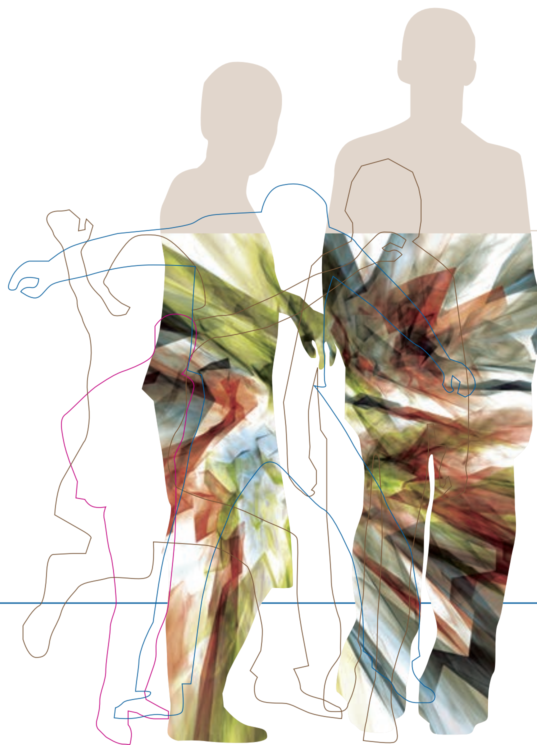

Stephen M. Kosslyn,
Robin S. Rosenberg &
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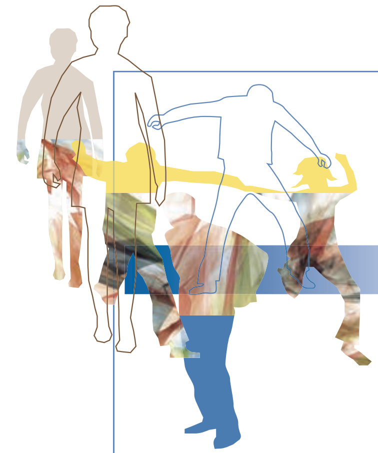

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Preface

Psychology is a young discipline. Although people have probably 'psychologised', in the sense of wondering about the minds of others ('What is she thinking?', 'Why did he do that?'), since the dawn of our species, the history of psychology as a scientific, rather than as a purely philosophical, enterprise is relatively recent. The origins of modern psychology are often traced to developments in Germany in the late-19th century, and the first psychological laboratory in New Zealand was established at Victoria University of Wellington in the early-20th century.

With a life-span of little more than a century, psychology is in the first flush of youth, compared with, for example, medicine or philosophy. On the other hand, it is surprising that, despite its 100-year history in Aotearoa/New Zealand, a comprehensive textbook of psychology, written specifically for students in Aotearoa, has not been available. So, I felt both delighted and honoured when Helen Cox, Acquisitions Editor at Pearson, asked if I would be interested in embarking upon the project that has culminated in this textbook.

Because psychology is the science of mental life, its subject matter is extremely broad – embracing literally anything you can think of, including the ability to invent stories, compose music or design new objects. So, although psychology is a science, its scope includes the human capacity to imagine, to create and appreciate art, and also the ability to construct different ways of understanding the physical, social and cultural environment in which we live. In this sense, psychology plays a distinctive role in bridging the intellectual gap between the physical and biological sciences on the one hand, and the humanities and creative arts on the other.

The diverse subject matter of psychology presents a formidable challenge to the would-be textbook author. Each chapter in this textbook surveys a vast specialist literature and, in the pages that follow, you will find summaries of the latest research and thinking on topics ranging from perception and memory to racial stereotyping and moral behaviour, and to stress, anxiety and schizophrenia. Early on, I realised that getting to grips with so many different research fields was going to test my stamina, and I began to understand why no one before me had undertaken a project of this kind in Aotearoa/New Zealand! Fortunately, the scale of the project was tempered to a large extent by the fact that, rather than developing each chapter from scratch, I was adapting the superbly written and researched work of Stephen Kosslyn and Robin Rosenberg.

I remember arriving at university in 1973, with a background in the physical sciences, and feeling completely blown away by my first-year course in psychology. I loved it! Four decades later, that fascination is undiminished and, in some ways, working on this project has been like taking Stage I Psychology all over again: I have learned so much. I hope that readers of this textbook will share some of the enthusiasm and fascination that I felt, both as a student of introductory psychology all those years ago and, more recently, as a teacher, researcher and co-author of this textbook.

However, textbook writing is a bit like painting the legendary Forth Bridge in Edinburgh, Scotland – by the time it's finished, you need to pick up your paint brush and start again. So, as I write the final sentences for this textbook, I have two thoughts. First, I hope that the content will be of value to students and teachers of introductory psychology in Aotearoa/New Zealand; and, secondly, I am getting ready to pick up that brush again, because my mind is already brimming with plans and improvements for the next edition!

Ahakoa he iti, he pounamu

Tony Lambert,
The University of Auckland, August 2013

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Learning aids for students

This textbook includes a number of learning aids to assist students in getting the most out of their learning. These learning aids are summarised in the table below.

LEARNING AID	DESCRIPTION	BENEFIT	EXAMPLE
Chapter story	Each chapter opens with a story about a well-known event or person, which is used to provide a context for the chapter's discussion of theories and research.	Enables the learner to apply material in the 'real world', and makes material more relevant and applicable to students' lives, aiding learning and retention of content.	Chapter 1, Edmund Hillary and Tenzing Norgay conquering Mount Everest, p. 1
Margin definitions	Glossary of key terms	Reviewing margin notes will aid learner comprehension and vocabulary.	Behaviour: The outwardly observable acts of an individual, alone or in a group, p. 3
Learning objectives	List of bullet points that summarise the key material covered in the chapter	Enables the learner to focus attention on topics of importance.	Chapter 6, p. 173 After reading this chapter, you should be able to: • define classical conditioning and trace its history • identify some common examples of classical conditioning in daily life • define operant conditioning and explain how it occurs • identify some common examples of operant conditioning in daily life • for both classical and operant conditioning, explain the principles of extinction, spontaneous recovery, generalisation and discrimination • describe the concept of behavioural reinforcement and be able to give examples of different schedules of reinforcement • describe the brain processes involved in both classical and operant conditioning • define and give examples of cognitive learning, insight learning and observational learning.
Looking at levels	Takes an aspect of the chapter content (e.g. a theory or observed occurrence) and considers it from the perspectives of the brain, the person and the group, including the interactions among each.	Promotes integration by the learner of knowledge about each 'level' (brain, person and group).	Chapter 7, Looking at levels: Autobiographical memory, p. 232

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LEARNING AID	DESCRIPTION	BENEFIT	EXAMPLE
Review and remember!	Chapter-by-chapter outline of important chapter material, including a list of key terms	Highlights key points and vocabulary learners should know.	Chapter 5, Review and remember!, p. 168

This textbook also includes other features to promote understanding of the topics discussed.

FEATURE	DESCRIPTION	BENEFIT	EXAMPLE
Understanding research	A walk-through of a selected research study	Promotes understanding of the topic and critical thinking by the learner about the research.	Chapter 3, Understanding research: The hemispheric interpreter, p. 70 Chapter 6, New Zealand research: The Matching Law – all behaviour is choice, p. 198
Interviews	Interviews with psychologists working in different fields of psychology, in New Zealand	Informs learners about the types of research and career opportunities available.	Chapter 1, Types of psychologist: Clark Sim, Clinical Psychologist, p. 16 Chapter 14, Interview: Professor Michael O'Driscoll, University of Waikato, on research into work-related stress, p. 519
First-person experiences	Short, first-person experiences	Provides learners with insight into the lived experience of psychological disorders.	Chapter 15, Obsessive-compulsive disorder from the inside, p. 547

Teaching aids for lecturers

Additional supplementary resources to assist educators using this textbook have been developed by Reece Roberts and James Richards of The University of Auckland, in conjunction with the author, Tony Lambert.

These supplements to the textbook are password-protected and are available online to lecturers at www.pearsoned.co.nz/9781442557925.

The teaching aids include:

- a PowerPoint™ Image Library
- an instructor's manual
- test-bank questions.

Note: these resources are available *gratis* to adopters of the textbook. Contact your local Pearson Higher Education representative for further details and access.

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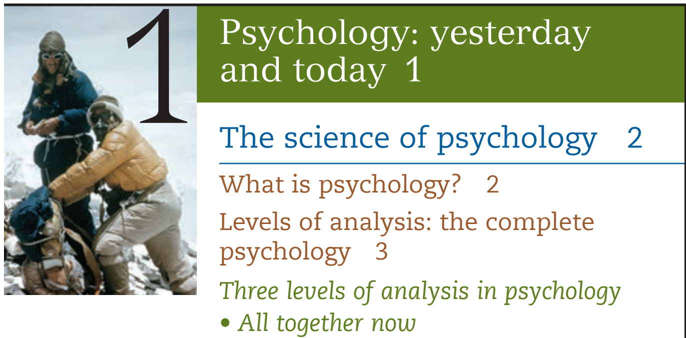

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Dr Lambert has a vivid memory of the fascination he felt as an 18-year-old, learning about psychology as a new undergraduate; that experience was the trigger for a lifelong career in psychology. The aim of this textbook is to introduce the subject in a way that will spark a similar enthusiasm in, and capture the interest of, contemporary New Zealand students encountering psychology for the first time.

In addition to his teaching interests, Dr Lambert has published scientific research articles and book chapters on a variety of topics, including visual attention and perception, memory, the split brain, effects of cellphone use on driving, dyslexia, schizophrenia and handedness. Further information about Dr Lambert's research work can be found at http://scholar.google.com/citations?user=zmuoMMQAAAAJ&hl=en.

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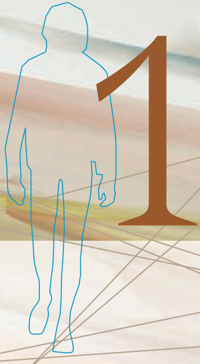
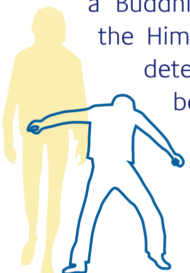


1 Psychology: yesterday and today

At 11:30 am on 29 May 1953, Edmund Hillary, the mountaineering bee-keeper from Tuakau, and Tenzing Norgay, the Nepalese Sherpa, became the first two people to stand on the summit of Everest, the highest mountain peak in the world. It was a magnificent and historic achievement.

In the photograph reproduced on the next page, the flags of Great Britain, Nepal, India and the United Nations can be seen fluttering from Tenzing's ice-axe as he stands at the summit. The flags provide a valuable reminder that the achievement of Hillary and Tenzing depended not only on their individual tenacity, skill, physical endurance and courage, but also on a large co-operative, multinational endeavour involving several hundred porters, many Sherpa guides, a team of other climbers, a doctor and a team photographer. The conquest of Everest was both a product of individual perseverance and courage, and the culmination of a massive team effort.

To a psychologist, the moment captured in this famous photograph of Tenzing on Everest prompts a host of fascinating questions. What were the factors that led Tenzing to abandon his brief career as a Buddhist monk, and turn to guiding and mountaineering in the Himalayas? To what extent can Edmund Hillary's legendary determination to achieve physical feats of fitness and endurance be traced back to the day when, as an 11-year-old boy, he was mercilessly scorned by a gym teacher at Auckland Grammar School? Is this psychology? Indeed it is.



Edmund Hillary and Tenzing Norgay forged a remarkable partnership on the slopes of Mount Everest.

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Psychologists ask and, in scientific ways, attempt to answer questions about why and how people think, feel and behave as they do. Because we are all human and, therefore, have much in common, the answers are often universal. But we are also, like snowflakes on Everest or Ruapehu or anywhere, all different, and psychology helps to explain our uniqueness. Psychology is about mental processes and behaviour, both exceptional and ordinary.

In this chapter, we show you how to look at and answer such questions by methods used in current research and (because the inquiry into what makes us tick has a history) how psychologists over the past century have approached these questions.

Chapter 1 learning objectives

After reading this chapter, you should be able to:

- define psychology
- describe the concept of 'levels of analysis' in psychology, and be able to give relevant examples
- describe how psychology has evolved over time
- define the different fields of psychology
- describe the roles performed by different kinds of psychologist
- describe and discuss ethical principles for the conduct of research with humans and animals and the ethical principles of clinical practice.

The science of psychology

Virtually everything any of us does, thinks or feels falls within the sphere of psychology. You are dealing with the subject matter of psychology when you watch people interacting in a classroom or misbehaving at a party, or when you notice that a friend is in a bad mood, or wonder why memories of a former lover return unbidden and spontaneously to your conscious mind. The field of psychology aims to understand what is at work when you daydream as you watch the clouds drift by, when you have trouble recalling someone's name and even when you are asleep.

What is psychology?

Although it may seem complex and wide-ranging, the field you are studying in this textbook can be defined in one simple sentence: **psychology** *is the science of mental processes and behaviour*. Let's look at the key words in this definition.

Psychology: The science of mental processes and behaviour

First, *science*. From the Latin *scire*, 'to know', science avoids mere opinions, intuitions and guesses and, instead, strives to nail down facts – to *know* them – by using objective evidence to answer questions, such as: What makes the Sun shine? Why do earthquakes occur? Why are there no native land mammals in New Zealand, save for bats? Why is remembering someone's face easier than remembering their name? A scientist uses logic to reason about the possible causes of a phenomenon and then tests the resulting ideas by collecting additional facts, which will either support the ideas or refute them, and thus nudge the scientist further along the road to the answer.

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Secondly, *mental processes*. **Mental processes** are what your brain is doing not only when you engage in 'thinking' activities, such as storing memories, recognising objects or using language, but also when you feel depressed, jump for joy or savour the experience of being in love. How can we find objective facts about mental processes, which are hidden and internal? One way, which has a long history in psychology, is to work backward, observing what people do and inferring from outward signs what is going on 'inside'. Another way, as new as the latest technological advances in neuroscience, is to use brain-scanning techniques to take pictures of the living brain that show its physical changes as it works.

Mental processes: What the brain does when a person stores, recalls or uses information or has specific feelings

Thirdly, *behaviour*. By **behaviour**, we mean the outwardly observable acts of a person, either alone or in a group. Behaviour consists of physical movements, voluntary or involuntary, of the limbs, facial muscles or other parts of the body. A particular behaviour is often preceded by mental processes, such as a perceptions of the current situation ('How far is it to the summit?', 'How many hours of daylight are left?') and a decision about what to do next ('We will press on to the summit, because there will be enough time to return to camp before the light fails.'). A behaviour may also be governed by the relationship between the individual and a group. In the years that followed his conquest of Everest, Hillary formed a deep and lasting relationship with the people of the Himalayas, and returned again and again, not to scale mountains but to help with building schools, hospitals and clinics. So, there are layers upon layers: an individual's mental processes affect his or her behaviour, and these processes are affected by the surrounding group (the members of which, in turn, have their own individual mental processes and behaviours).

Behaviour: The outwardly observable acts of an individual, alone or in a group

When you think about a friend's 'psychology', you might wonder about his or her motivations ('Why would she say such a thing?'), knowledge ('What does she know that led her to make that decision?') or goals ('What is she trying to accomplish by acting like that?'). In all cases, you are trying to *describe* (such as by inferring what your friend knows or believes) and *explain* (such as by inferring your friend's motivations) your friend's mental processes and behaviour. Most people try to describe and explain other people's psychology on the basis of 'common sense' or generalisations they have heard (such as the idea that some people are grouchy in the morning). The field of psychology is dedicated to helping us understand each other by using the tools of science. But more than that, psychology's goals are not simply to describe and explain mental processes and behaviour, but also to *predict* and *control* them. As an individual, you would probably like to be able to predict what kind of person would make a good spouse for you or which politician would make sound decisions in crisis situations. As a society, we all would greatly benefit by knowing how people learn most effectively, how to control addictive and destructive behaviours, and how to cure mental illness.

Science

Mental processes

Behaviour

Levels of analysis: the complete psychology

If you wanted to ask about the psychological factors that led to the success of Tenzing and Hillary on Everest, where would you begin? The task seems to be dauntingly complex: one might investigate how they acquired their mountaineering skills, enquire into their early experiences, or ask them to describe the motivations and rewards that each associated with the experience of climbing.

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One way of thinking about issues such as these, and a host of other psychological questions, is in terms of three types of event, each of which provides a field for analysis. Think for a moment about a computer. How can we understand what it does?

First, we can ponder the machine itself. The computer is a *mechanism*. One event causes another. You enter a 'Save' command, the machine saves a file to a disk; you enter a 'Print' command, it sends the file to the printer, and so on. Each input triggers a specific event: cause and effect. The computer program is like a mental process; it specifies the steps the mechanism takes in particular circumstances.

Secondly, we can ask about the *content* of the computer – the specific information it contains and what is being done to it. The mechanism behaves exactly the same way, no matter if you typed a research paper, a love letter or directions to a barbecue. Nevertheless, the differences in content obviously matter a great deal. The content relies on the mechanism (for instance, if the computer is not turned on, you cannot type in any content), but the mechanism and content are not the same.

Thirdly, we can connect the computer into a network. We now focus on how different computers *affect each other and the network itself*. What happens when you type in a query to Google? Your computer (both the mechanism and the particular content you type) interacts with other computers that relay the query and finally send back information in response.

These so-called *levels of analysis* (to rely on the most accepted and widely used terminology) build on one another, with each level adding something new to our understanding of computing. Specifically, the content relies on the mechanism (as anyone knows who has tried to use a computer with a broken hard-drive or malfunctioning power supply), and the network depends on both the content (such as the particular commands or requests you enter) and the mechanism (a functioning computer).

Do we really need to consider these three levels of analysis? To see why we do, suppose you log onto the internet and your computer suddenly freezes. Why? It could be that your hard-drive has crashed (mechanism); or perhaps you entered an invalid command (content); or perhaps the network itself is down (network). To consider all of the possible reasons for your computer's malfunction, you need to contemplate disruptions at each level of analysis.

Now let's see how this analogy applies to humans.

Three levels of analysis in psychology

At any given moment in your life, events are happening at the same three levels we just considered in our computer analogy. Considering psychological phenomena from these three levels reveals much that would be hidden were we to look at only one level.

In humans, the *mechanism* is the brain and all of the biological factors that affect it. At this **level of the brain**, psychologists consider not only the activity of the brain but also the structure and properties of the organ itself – brain cells and their connections, the chemical 'soup' in which they exist (including the hormones that alter the way the brain operates) and the genes that give rise to them. At the level of the brain, a psychologist might want to design an experiment to study how climbers, such as Hillary and Tenzing, respond to events that are perceived as dangerous. Hillary once remarked to a friend that, 'I don't think a climb is really worthwhile unless you have been scared out of your wits at least twice.' One might speculate that the experience of clinging to a vertical rock-face, perhaps conveyed by a virtual-reality simulator, would evoke a very different set of brain processes in adventurers, such as Hillary and Tenzing, and in individuals, such as the current writer, who prefer less extreme kinds of leisure pursuit.

Level of the brain: Events that involve the structure and properties of the organ itself – brain cells and their connections, the chemical 'soup' in which they exist, and the genes

At the next level, consider how we use the information that our brains store and process. At this **level of the person**, psychologists focus on the *content* of mental processes, not just the internal mechanics that are the focus at the level of the brain. Unlike the level of the brain, we no longer talk about the characteristics of brain areas or how they operate to process information; rather, we talk about mental contents, such as beliefs (including ideas, explanations and expectations), desires (such as hopes, goals and needs) and feelings (such as fears, guilts and attractions). Although the brain is the locus and vehicle for content, the two are not the same – any more than a computer and a love letter written on it are the same. Rather, the brain is in many ways a canvas on which life's experiences are painted. Just as we can discuss how aspects of a canvas (such as its texture) allow us to paint, we

Level of the person: Events that involve the nature of beliefs, desires and feelings – the content of the mind, not just its internal mechanics

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can discuss how the brain supports mental contents. But, just as we can talk about the picture itself (a portrait, a landscape, and so on), we can also talk about mental contents. To do so, we must shift to another level of analysis. For example, at the level of the person, a psychologist who is investigating how people respond to a catastrophic event, such as the 2011 Christchurch earthquake, might want to consider the impact of individuals' personal philosophy or religious beliefs on their reactions and behaviour following the catastrophe (Sibley & Bulbulia, 2012).

And, at the third level, just as computers in a network affect each other, people affect one another. 'No man is an island,' the poet John Donne wrote. We all live in social environments that vary over time and space and that are populated by our friends and professors, our parents, the other viewers in a movie theatre, the other drivers on a busy motorway, and so on. Our lives are intertwined with other people's lives and, from birth to old age, we take our cues from other people around us. The relationships that arise within groups make them more than simply collections of individuals. Psychologists study not only isolated individuals, but also investigate the mental processes and behaviour of members of groups. Members of motorcycle gangs and political parties both have distinct identities based on shared beliefs and practices that are passed on to new members as *culture*, which has been defined as the 'language, beliefs, values, norms, behaviours, and even material objects that are passed from one generation to the next' (Henslin, 1999). Thus, at the **level of the group**, psychologists consider the ways that collections of people (as few as two, as many as a society) shape individual mental processes and behaviour. At the level of the group, a psychologist might want to examine the role of a well-trained and enthusiastic support team in facilitating individual or team achievements, such as the conquest of Everest.

The conquest of Everest was both a product of individual perseverance and courage, and the culmination of a massive team effort.

Level of the group: Events that involve relationships between people (such as love, competition and co-operation), relationships among groups, and culture. Events at the level of the group are one aspect of the environment; the other aspect is the physical environment itself (the time, temperature and other physical stimuli).

Events that occur at every level of analysis – brain, person and group – are intimately tied to conditions in the physical world. All our mental processes and behaviours take place within, and are influenced by, a specific *physical environment*. A storm on 29 May 1963 would have stymied the efforts of Hillary and Tenzing, and the conquest of Everest would have eluded them. The group is only part of the world; to understand the events at each level of analysis, we must always relate them to the physical world that surrounds all of us.

All together now

Many people seem delighted to discover that their brains are not, in fact, computers. We noted above that the computer acts the same way whether it is used to write a love letter or directions to someone's house. The human brain does not. When you feel an emotion (at the level of the person), that experience is accompanied by changes in how your brain operates (Davidson, 2004; Sheehan, Chambers & Russell, 2004). In humans, unlike computers, events at the different levels are constantly interacting. For example, as you sit in a lecture theatre, the signals among your brain cells that enable you to understand the lecture, and the new connections among your brain cells that enable you to remember it, are happening because you decided to take the course (perhaps because it seemed interesting). That is, events at the level of the person (your interests) are affecting events at the level of the brain.

However, as you listen to the lecture, two of your neighbours are busy texting on their cellphones, and you are finding this annoying and distracting: events at the level of the group are affecting events at the level of the brain. Because you really want to hear this brilliant lecture, you are wondering how to get your neighbours to stop their rude and discourteous behaviour – so you decide to shoot a few dirty looks at them: events at the level of the person are affecting events at the level of the group (which, as we have seen, affect events

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at the level of the brain). And all of this is going on within the physical environment of the room, where the February sunlight that had seemed so warm and welcoming now feels over-poweringly hot, and you are getting drowsy, and you are really irritated, and you finally change your seat … and round and round. Events at the three levels of analysis, in a specific physical context, are constantly changing and influencing one another. To understand fully what is going on in any life situation, you need to consider all three levels.

The concept of levels of analysis has long held a central role in science in general (Anderson, 1998; Nagel, 1979; Schaffner, 1967) and in the field of psychology in particular (Fodor, 1968, 1983; Kosslyn & Koenig, 1995; Marr, 1982; Putnam, 1973; Saha, 2004), and for good reason: this view of psychology not only allows you to see how different theories and discoveries illuminate the same phenomena, but it also lets you see how these theories and discoveries are interconnected – and, thus, how the field of psychology, as a whole, emerges from them.

In each of the remaining chapters of this textbook, we will consider one aspect of psychology in detail, showing how it is illuminated when we investigate events at the three levels of analysis and their interactions. Moreover, we shall draw on the different levels continually as we encounter different aspects of the field throughout the book. The fact that interactions of events at the different levels of analysis are always present is one thread that holds the different areas of psychology together – and that makes the field more than a collection of separate topics.

Psychology then and now: the evolution of a science

How do you think psychologists 50 or 100 years ago might have interpreted Hillary and Tenzing's achievement? Would they have focused on the same things that psychologists focus on today? One hallmark of the sciences is that, rather than casting aside earlier findings, researchers use them as stepping stones to the next set of discoveries. Reviewing how psychology has developed over time helps us understand where we are today. In the century or so during which psychology has taken shape as a formal discipline, the issues under investigation have changed, the emphasis has shifted from one level of analysis to another, and events at each level have often been viewed as operating separately or occurring in isolation.

In one form or another, psychology has probably always been with us. People have apparently always been curious about why they and others think, feel and behave the way they do. In contrast, the history of psychology as a scientific field is relatively brief, spanning little more than a century. The roots of psychology lie in *philosophy* (the use of logic and speculation to understand the nature of reality, experience and values) on the one hand and *physiology* (the study of the biological workings of the body, including the brain) on the other.

From philosophy, psychology borrowed theories of the nature of mental processes and behaviour. In a treatise entitled *On the Soul* (often known by its Latin name, *De Anima*), written in the fourth century BC, Aristotle developed a sophisticated and, in some respects, a surprisingly modern theory of the relationship between mental contents and physical bodies. In the 17th century, the French philosopher, René Descartes, also considered the distinction between mind and body and the relation between the two (still a focus of considerable debate). John Locke, a 17th-century English philosopher (and friend of Sir Isaac Newton), stressed that all human knowledge arises from experience of the world and from reflection about it. Locke argued that we only know about the world via how it is represented in the mind.

From physiology, psychologists learned to recognise the role of the brain in giving rise to mental processes and behaviour, and acquired tools to investigate these processes. These twin influences of philosophy and physiology remain in force today, shaped and sharpened by developments over time.

Early days: beginning to map mental processes and behaviour

The earliest scientific psychologists were not particularly interested in why we behave as we do. Instead, these pioneers typically focused their efforts on understanding the operation of perception (the ways in which we sense the world), memory and problem-solving: events at what we now think of as the level of the brain. But, even at the beginning, psychologists focused on events at several levels of analysis.

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Structuralism

Wilhelm Wundt (1832–1920), usually considered the founder of scientific psychology, set up the first psychology laboratory in 1879 in Leipzig, Germany. The work of Wundt and his colleagues led to **structuralism**, the first formal movement in psychology. The structuralists sought to identify the 'building blocks' of consciousness (*consciousness* is the state of being aware). Part of Wundt's research led him to characterise two types of elements of consciousness. The first comprised sensations, which arise from the eyes, ears and other sense organs; the second consisted of feelings, such as fear, anger and love. The goal of structuralism was to describe the rules that determine how particular sensations or feelings may occur at the same time or in sequence, combining in various ways into mental *structures*. Edward Titchener (1867–1927), an American student of Wundt, broadened the structuralist approach to apply it to the nature of concepts and thinking in general.

Structuralism: The school of psychology that sought to identify the basic elements of experience and to describe the rules and circumstances under which these elements combine to form mental structures

The structuralists developed and tested their theories partly with objective techniques, such as measures of the time it takes to respond to different sensations. Their primary research tool, however, was **introspection**, which means literally 'looking within'. Here is an example of introspection: try to recall how many windows and doors are in your parents' lounge. Are you aware of 'seeing' the room in a mental image, of scanning along the walls and counting the windows and doors? Introspection is the technique of noticing your mental processes as, or immediately after, they occur.

Introspection: The process of 'looking within'

Unfortunately, the technique of introspection encountered a serious problem. Let's say that, although you are able to use mental imagery as a tool to recall the numbers of windows and doors in your parents' lounge, your best friend does not seem to be able to do the same. How could you prove that mental images actually exist and objects can indeed be visualised? For the early psychologists, this was the core of the problem. Barring the ability to read minds, there was no way to resolve disagreements about the mental processes that introspection revealed. If the only evidence you gather cannot be verified, then you cannot establish the evidence as fact. This is precisely what happened when the structuralists tried to use introspection as a scientific tool. Their observations could not be objectively repeated with the same results and, thus, their theorising based on introspective reports fell apart.

Functionalism

Rather than trying to chart the elements of mental processes, the adherents of **functionalism** sought to understand how our minds help us to adapt to the world around us – in short, to *function* in it (Boring, 1950). Whereas the structuralists asked *what* mental processes are and how they operate, the functionalists wanted to know *why* humans think, feel and behave as we do. The functionalists had less interest in events at the level of the brain than did the structuralists, and greater interest in events at the level of the group. The functionalists, many of whom were Americans, shared the urge to gather knowledge that could be put to immediate use. Sitting in a room introspecting simply did not seem worthwhile to them. The functionalists' interest lay in the methods by which people learn and in how goals and beliefs are shaped by environments. As such, their interests spanned the levels of the person and the group.

Functionalism: The school of psychology that sought to understand how the mind helps individuals function, or adapt to the world

The functionalists were strongly influenced by Charles Darwin (1809–1882), whose theory of evolution by natural selection stressed that some individual organisms in every species, from ants to oaks, possess characteristics that enable them to survive and reproduce more fruitfully than others. The phrase 'survival of the fittest', often quoted in relation to natural selection, does not quite capture the key idea. (For one thing, these days, 'the fittest' implies the muscle-bound star of the gym, whereas in Darwin's time it meant something was 'fit for' or 'suited to' its situation.) The idea of natural selection is that certain inborn characteristics make particular individuals more fit for their environments, enabling them to have more offspring that survive, and those offspring in turn have more offspring, and so on, until the characteristics that led the original individuals to flourish are spread through the whole population. Darwin called the inborn characteristics that help an organism survive and produce many offspring *adaptations*. (Chapter 3 covers Darwin's theory more fully.)

The functionalists applied Darwin's theory to mental characteristics. For example, William James (1842–1910), who set up the first psychology laboratory in the United States at Harvard University, studied the ways in which consciousness helps an individual survive and adapt to an environment. The functionalists likely would have tried to discover how

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Edmund Hillary's goals and beliefs enabled him to press on in the face of adversity, such as discovering that his climbing boots had frozen overnight and were iron hard on the morning of the final assault on the summit of Everest.

The functionalists made several enduring contributions to psychology. Their emphasis on Darwin's theory of natural selection and its link between humans and non-human animals led them to theorise that human psychology is related to the psychology of animals. This insight meant that the observation of animals could provide clues to human behaviour. The functionalists' focus on social issues, such as improving methods of education, also spawned research that continues today.

Gestalt psychology

Although their work began in earnest nearly 50 years later, the Gestalt psychologists, like the structuralists, were interested in consciousness, particularly as it arises during perception (and thus, they too focused on events at the levels of the brain and the person). But, instead of trying to dissect the elements of experience, **Gestalt psychology** – taking its name from the German word *Gestalt*, which means 'whole' – emphasised the overall patterns of thoughts or experience. Based in Germany, Max Wertheimer (1880–1943) and other scientists noted that much of the content of our thoughts comes from what we perceive and, further, from inborn tendencies to structure what we see in certain ways.

Gestalt psychology: An approach to understanding mental processes that focuses on the idea that the whole is more than the sum of its parts

Have you ever glanced up to see a flock of migrating birds? If so, you probably did not pay attention to each individual bird but, instead, focused on the flock. In Gestalt terms, the flock would be a *perceptual unit*, a whole formed from individual parts. The Gestalt psychologists developed over 100 perceptual laws, or principles, that describe how our eyes and brains organise the world. For example, both because the birds are near one another (the law of proximity) and because they are moving in the same direction (the law of common fate), we perceive them as a single unit (see Chapter 4). Gestaltists believed that such principles are a result of the most basic workings of the brain and that they affect how we all think. Most of the Gestalt principles illustrate the dictum that: 'The whole is more than the sum of its parts.' When you see the birds in flight, the flock has a size and shape that cannot be predicted from the size and shape of the birds viewed one at a time. To Gestalt psychologists, just as the flock is an entity that is more than a collection of individual birds, our patterns of thought are more than the simple sum of individual images or ideas. Gestaltists would want to know how Edmund Hillary could take in the overall layout of a rock-face, and plan his climbing route accordingly.

When we look at a tukutuku panel, we do not see isolated individual elements of the interwoven strands; rather, we see the overall pattern of the tukutuku. In the words of the Gestalt psychologists, 'The whole is more than the sum of its parts.'

Psychodynamic theory: more than meets the eye

Sigmund Freud (1856–1939), a Viennese physician specialising in neurology (the study and treatment of diseases of the brain and nervous system), developed a detailed and subtle theory of how thoughts and feelings affect our actions. We consider Freud and theorists who followed in his footsteps in Chapter 11; here, we touch briefly on key points of his theory.

Freud stressed the notion that the mind is not a single thing but, in fact, has separate components. Moreover, some of these mental processes are **unconscious**; that is, they are outside our awareness and beyond our ability to bring to awareness at will. Freud believed that we have many unconscious sexual, and sometimes aggressive, urges. Freud also believed that a child absorbs his or her parents' and culture's moral standards, which then censor the child's (and, later, the adult's) goals and motivations. Thus, he argued, we often find our

Unconscious: Outside conscious awareness and not able to be brought to consciousness at will

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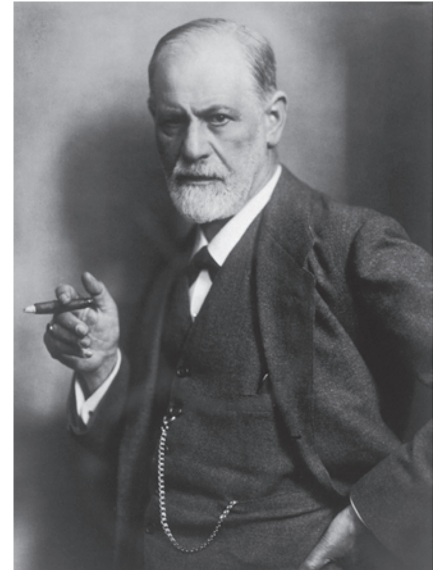
urges unacceptable and, hence, keep them in check, hidden in the unconscious. According to Freud, these unconscious urges build up until, eventually and inevitably, they demand release as thoughts, feelings or actions.

Freud developed what has since been called a **psychodynamic theory**. From the Greek words *psyche*, or 'mind', and *dynamo*, meaning 'power', the term refers to the continual push-and-pull interaction among conscious and unconscious forces. Freud believed it was these interactions that produced abnormal behaviours, such as obsessively washing one's hands until they crack and bleed. According to Freud, such hand-washing might be traced to unacceptable unconscious sexual or aggressive impulses bubbling up to consciousness (the 'dirt' perceived on the hands) and that washing symbolically serves to remove the 'dirt'. What would followers of psychodynamic theory say about Edmund Hillary? A Freudian would probably have asked Hillary about his earliest memories and his strict upbringing, and try with him to analyse the unconscious urges that led to his intense drive to compete and succeed. Freud developed an extraordinarily ambitious theory, which attempted to reach into all corners of human thought, feeling and behaviour.

Psychodynamic theory: A theory of how thoughts and feelings affect behaviour; refers to the continual push-and-pull interaction among conscious and unconscious forces



Sigmund Freud, the father of psychodynamic theory

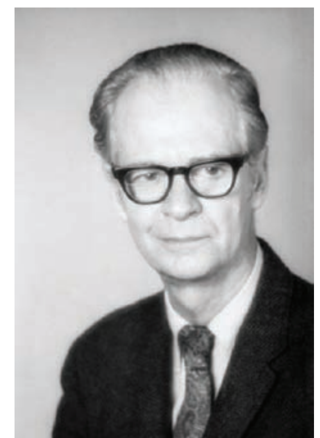
Others modified Freud's theory in various ways, for example, by de-emphasising sex in favour of other sources of unconscious conflicts. Alfred Adler (1870–1937), for instance, stressed the role of feelings of inferiority; Carl Jung (1875–1961) explored the relationship between spirituality and psychology (Jung, 1961), and was fascinated by the recurrence of apparently universal symbols, or 'archetypes', in dreams, literature and art (Jung & Franz, 1964). Psychodynamic theories have attracted many passionate followers. However, one problem associated with this approach is that psychodynamic theory became so intricate and complicated that it could usually explain any given observation or research result as easily as it could the opposite result and, thus, the theory became impossible to test – obviously a serious drawback.

Behaviourism: the power of the environment

By the early part of the 20th century, a new generation of psychologists calling themselves behaviourists began to question a key assumption shared by their predecessors: that psychologists should study hidden mental processes. Because they found the theories of mental processes so difficult to pin down, American psychologists, such as Edward Lee Thorndike (1874–1949), John B. Watson (1878–1958) and Clark L. Hull (1884–1952), rejected the idea that psychology should focus on these unseen phenomena. Instead, these followers of **behaviourism** concluded that psychology should concentrate on understanding directly observable behaviour.

Behaviourism: The school of psychology that focuses on how a specific stimulus (object, person or event) evokes a specific response (behaviour in reaction to the stimulus)

Some behaviourists were willing to talk about internal stimuli, such as motivation, but only those stimuli that were directly reflected in behaviour (such as running quickly to catch a bus). Later behaviourists, among them B. F. Skinner (1904–1990), acknowledged that mental processes probably exist, but argued that it was not useful for psychology to focus on them. Instead, Skinner and his followers held that, in order to understand behaviour, we should study behaviour. For instance, rather than trying to study the nature of 'affection' so as to understand why someone treats dogs well ('affection' being an unobservable mental process), these behaviourists would look at when and how a person approaches dogs, protects them from harm, pets them and otherwise treats them well. Such a scientific investigation would be aimed at discovering how particular responses came to be associated with the stimulus of perceiving a dog. Because of their concern with the content of the stimulus–stimulus and stimulus–response associations, the behaviourists focus on events at the level of the person.



Proponents of behaviourism, such as B. F. Skinner, argued that scientific psychology should focus on events that can be observed objectively: that is, the behaviours and the environmental stimuli associated with behaviour.

The behaviourists have had many important insights, among them the fact that responses usually produce consequences, either negative or positive, which, in turn, affect how the organism responds the next time it encounters the same stimulus. Say you put money in a vending machine (a response to the stimulus of seeing the machine) and the machine dispensed a delicious chocolate bar; chances are good that you will repeat the behaviour in the future. If, on the other hand, the machine served up a stale, desiccated

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