Chapter 1

Behaviour and Psychology

Never did any science originate,
but by a poetic perception.

Ralph Waldo Emerson

Chapter contents

LEARNING OBJECTIVES ☑

In this chapter, the objectives are to learn:

☑ what psychology is

☑ why the study of psychology provides special challenges

☑ why different approaches to the study of psychology are necessary

☑ how perception affects the study of psychology

☑ the origins of psychology

☑ why the scientific method is used in psychology

☑ the methodologies used in the study of psychology

☑ the ethics of psychological research

THE MAGIC OF BEHAVIOUR

When I (WEG) was a child, my father sometimes took me to see magic shows. To a boy of 10, this was a wondrous and exciting event. The tricks performed were usually pretty standard – producing objects from hats or boxes, making things disappear, and so on. I knew even then that these feats were not supernatural, but based on some sort of deception or gimmickry – in a word, 'tricks'. Nonetheless, they held me spellbound, wondering how it was all accomplished.

As children and as adults, we are curious about the world, and when faced with the unexpected or unexplained, we are driven to increase our understanding. Magic shows represent a special kind of mystery, because what we *think* we see is somehow different from the underlying reality. Indeed, one of the most basic tools in a magician's repertoire is *misdirection* – getting the audience to focus on an irrelevant detail, while ignoring a crucial manoeuvre by the magician. By manipulating our attention and expectations, magicians draw us into a world which entertains us precisely because it is hard to understand.

For us (WEG and MH), magic and psychology are linked, because the mechanics of magic are based on exploiting perceptual processes that are a basic concern in psychology. Even more fundamentally, both evoke a sense of wonder and the desire to understand. Consider the case of a horse called 'Clever Hans'. Hans had been 'educated' by his owner for four years, and subsequently seemed capable of answering questions in history, geography, mathematics and more. People came from near and far to see Clever Hans, and most went away convinced that he really was educated. Ultimately, it was a psychologist named Oskar Pfungst who figured out the true explanation. (Of course, Hans really didn't understand history and so on; later in this chapter, we will discuss what was really happening.) Although an 'educated' horse is unusual, it is not really surprising that a psychologist was involved in understanding it. Understanding behaviour in all its forms is, after all, the primary goal of psychology.

INTRODUCTION

Throughout human history, people have sought ways to make sense of the world, and there have been many attempts to formalize the understanding of behaviour. Astrology, for example, arose out of the belief that human actions were influenced by the stars. Often, theories of behaviour have been stimulated by developments in other fields. For instance, in the eighteenth century, anatomists studying the brain proposed that there was a relationship between brain size and mental abilities. This led to the development of **phrenology**, 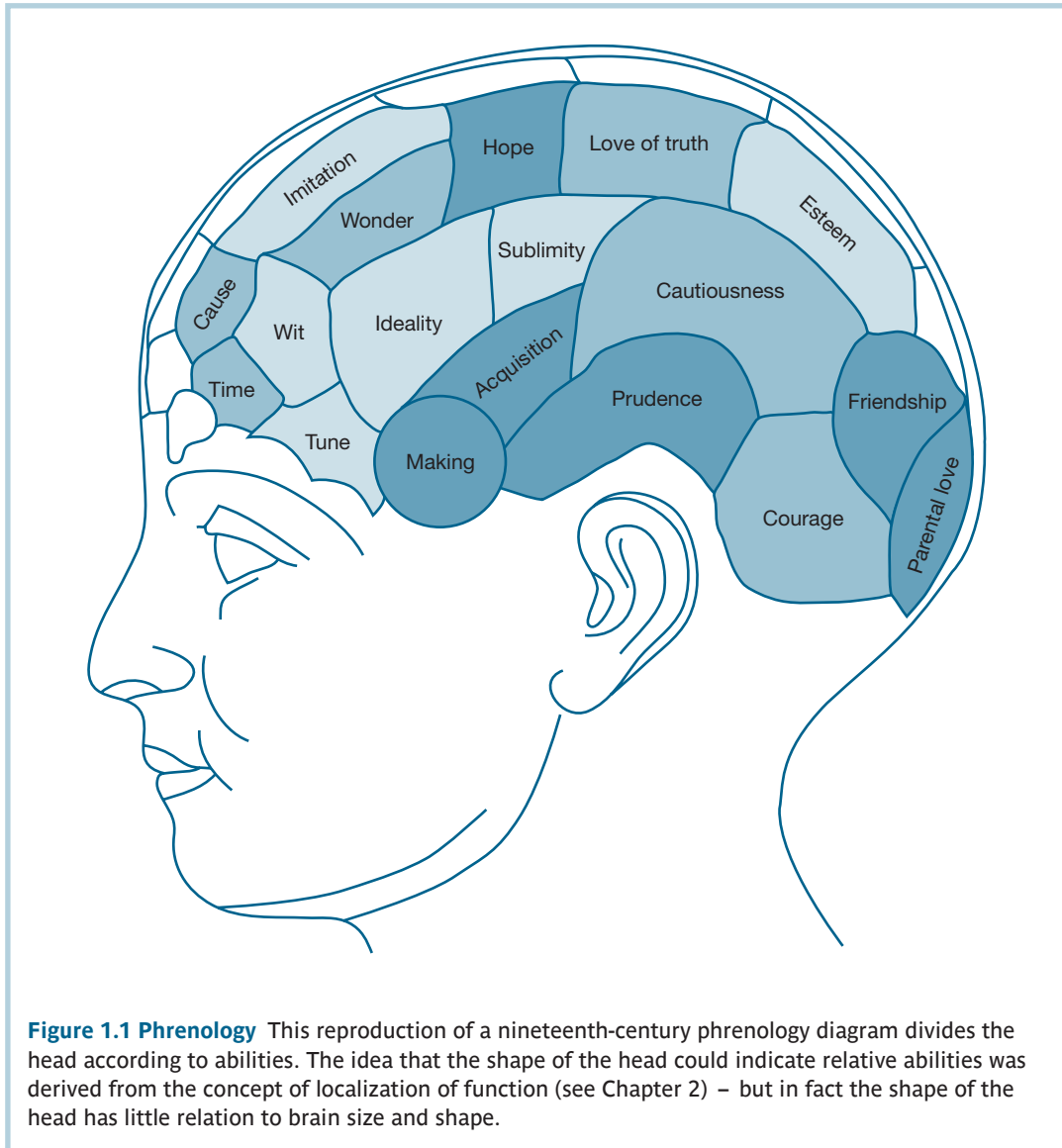which asserted that one could assess people's various abilities by examining the shape of the skull. While phrenology and astrology have been largely discredited, their goal of understanding and explaining the way people act seems similar to that of psychology. So what makes psychology different?

phrenology a now-discredited eighteenth-century theory which asserted that one could assess ability by examining the shape of the skull.

psychology the scientific study of behaviour and experience.

The simple answer is that psychology differs in the method it uses in the search for understanding. Unlike astrology, phrenology, or even 'common sense', **psychology** utilizes a form of systematic observation and analysis that is often called 'the scientific method'. In fact, psychology is often defined as 'the scientific study of behaviour'. Definitions, of course, have limitations, and this one does, too. For example, some psychologists would interpret 'behaviour' to mean both overt responses and conscious experience, that is, actions and thoughts or feelings; while others would be more restrictive, omitting thoughts and feelings because they cannot be

Figure 1.1 Phrenology This reproduction of a nineteenth-century phrenology diagram divides the head according to abilities. The idea that the shape of the head could indicate relative abilities was derived from the concept of localization of function (see Chapter 2) – but in fact the shape of the head has little relation to brain size and shape.

directly observed. Similarly, some psychologists include the behaviour of other species, while some are concerned only with human behaviour. Despite such variations in the focus of interests, the *methods* used in psychology are *scientific*. These methods, which involve both how observations are made and how theories are assessed, are primarily based on a tradition which originated with the natural sciences of physics, chemistry and biology.

The Challenge of Psychology

All scientists emphasize certain common principles, like the importance of careful observation, minimizing sources of error and testing alternative explanations. At the same time, the methods of psychologists differ from those of physicists or chemists, because what psychologists study is different: rather than dealing with inanimate particles, psychologists explore the actions (and

interactions) of living creatures. This means that psychological researchers face four particular challenges which are unique to their discipline.

■ *Complexity*. One challenge in psychology relates to the **complexity** of behaviour. Physicists studying atomic particles typically deal with only a limited number of particles at once – a hundred particles interacting would be a very complex system. By contrast, a physiological psychologist studying the human brain is dealing with a structure composed of several *billion* interconnected cells – the most complex structure in the known universe! Even for non-physiological researchers, there is tremendous diversity to consider – for example, studying language is complicated because there are several thousand languages and dialects known, each with its own vocabulary and grammar. Given the richness of human behaviour, psychologists must contend with a vast range of possibilities, and a correspondingly large variety of data (observations). By comparison, the possible interactions between two chemical elements, or the dynamics of a moving object, are relatively simple.

complexity a characteristic of systems composed of large numbers of interacting units (such as neurons in the brain), resulting in new patterns or phenomena not found in individual units.

■ *Self-awareness*. Psychologists also face challenges related to the human capacity for **self-awareness** (Hofstadter 1979). While physicists studying atoms are themselves composed of atoms, most researchers would say that this has no impact on the problems they study. By contrast, psychologists studying human behaviour are simultaneously *producing* human behaviour. At first glance, this may not seem like a problem – it might even be seen as a convenience. In fact, historically, a number of noted psychologists studied their own behaviour as part of their broader studies: Sigmund Freud, the founder of psychoanalysis, studied his own dreams as well as those of his patients (Freud 1900). William James, a pioneering American psychologist, favoured introspection – studying the contents of one's conscious awareness – over laboratory research. In doing so, he popularized the phrases 'stream of consciousness' and 'armchair psychology' (James 1890). Eventually, however, it was recognized that self-observation is prone to many sources of error, not the least of which is bias – researchers, like other people, may misinterpret their own behaviour to fit their theoretical ideas. (For example, consider the possible distortions in trying to recall one of your dreams.)

self-awareness the capacity for individuals or other living organisms to consciously observe their own behaviour.

■ *Reactivity*. A concern related to self-awareness also arises when observing the behaviour of others. While measurement can be demanding even in simple physical systems, psychological observation is complicated by the fact that one is dealing with independent, living organisms, not inanimate particles. In particular, observing human behaviour can lead to reactivity, the tendency for people to alter their behaviour when they know that they are being observed. (As a simple case, consider how if you are singing to yourself, you may stop if you realize someone is listening.) In order to deal with **reactivity**, psychologists often resort to complicated research designs, sometimes including deliberate deception to increase the chances of people behaving naturally. (The methods used will be discussed in more detail later in this chapter.) In the end, observing human behaviour proves more difficult than observing simple physical systems.

reactivity the tendency for people to alter their behaviour when they are being observed.

■ *Causality*. Another challenge arises in terms of identifying the causes of behaviour. Traditionally, science has viewed **causality**, the study of what actions or events produce an outcome, as an important part of 'understanding', and psychology has tended to accept this goal. However, the reality is that many different factors can influence behaviour in a given situation. Consider the following example. The child welfare authori-

causality the study of how actions or events produce (cause) a particular outcome

ties are called in when someone is reported to have hit their child. It turns out that the father was drinking, had just lost his job, and was himself abused as a child. Is the cause of his abusive behaviour the alcohol, the job loss, his early upbringing, a combination of these, or some factor not identified? In any situation, there are many factors which influence behaviour: some are internal, some are part of the immediate situation, and some are related to past experience. Each of these represents a type of cause, but developing a complete description of such causes in a given situation is a difficult (if not impossible) task.

WHY DIFFERENT APPROACHES?

It is not surprising, given the richness and complexity of behaviour, that psychologists have evolved different approaches to understanding behaviour. Ideally, we would have one simple set of principles which would explain every aspect of human experience. At present, no such theory has been developed which has met with broad acceptance. Instead, there are a number of different approaches which differ from each other in terms of their basic assumptions, their methods and their theoretical structures. In effect, each approach represents a distinct framework for the study of behaviour. While most introductory psychology books emphasize the research findings in psychology, organized according to traditional topic areas like learning and perception, this book focuses instead on the frameworks which have been developed in psychology, as defined by the major approaches. Examining how these frameworks arose, and how they differ, provides a way to understand the significance of each approach, and to make sense of the field as a whole.

The traditional model of science says that scientists formulate theories based on the information they have gathered from research. Hence, one might imagine that each approach arose as an attempt to improve on existing theories. This viewpoint, while a bit simplistic, is partially valid. In some cases, theorists *do* react against what they see as limitations or errors in the work of others. For example, Carl Jung split from his mentor, Sigmund Freud, partly because of disagreements about the meaning of sexuality. At the same time, other factors also come into play. Thomas Kuhn (1970), a specialist in the philosophy of science, has argued that the acceptance or rejection of particular frameworks or approaches (which he calls 'paradigms') depends on human preferences as well as the available evidence. That is, the development and evaluation of a theory depend not simply on the available data, but also on social and personal factors, including the experiences of the researcher and the influence of the prevailing culture. (See Chapter 10 for more on Kuhn's ideas.)

To summarize briefly, the complexity of behaviour means that currently no single theory can effectively explain all aspects. In addition, the nature of theory formation in science means that different approaches developed in response to that complexity, but also as a result of personal and cultural factors. To understand how this happens, let us start by examining how we actually perceive the world.

Perception and Experience

perception the process of selection, organization and interpretation of information about the world conveyed by the senses.

Most individuals tend to assume that what we experience depends on what is 'out there' – that is, that our senses simply convey information about the physical stimuli that we encounter. This implies a direct record of the external world, similar to the way a video camera records a scene. The idea that we see things simply as they are is sometimes called 'naive realism'; however, the process of perceiving is actually much more complex. **Perception** is an *active* process involving selection, organization and interpretation, not a passive mirroring of the external world.

Let us consider first the process of *selection*. At every moment, we encounter a tremendous variety of stimuli – sights, sounds, smells, etc. Unfortunately, the human brain has a limited capacity to deal with incoming information. Imagine going to a television store, and trying to watch several channels on different televisions simultaneously – parts of one or more programmes are inevitably missed. In order to cope with the sensory barrage, our perceptual system focuses on some aspects of the situation, while ignoring others. This process of choosing stimuli is called **selective attention**. One example is the way we focus on one conversation, while filtering out other voices and sounds, at a party or other crowded location. (The nature of attention, and its limits, will be discussed further in Chapter 4. See *The World Today: Magic*, below, as well.)

selective attention the perceptual process of selectively focusing on particular stimulus elements.

Perception, then, is partly determined by the external stimuli that we encounter, as filtered by selective attention. This stimulus-based process is sometimes called 'bottom-up' processing. At the same time, perceptual experience is also influenced by various internal factors, such as our prior experience and expectations. These factors (referred to as 'top-down' processing) influence both the way that we interpret selected stimuli, and also what we select. Consider two examples: in Figure 1.2, what do you see? (Look *now*!) While the figure *could* be interpreted as either a duck or a rabbit, most native English speakers see the rabbit first, because they have learned to scan

The world today: **Magic**

Psychology may or may not be 'magical', but it's undeniable that magicians make use of psychological phenomena in their acts. Massimo Polidoro (2007) has reviewed some of the ways that magicians have (usually unwittingly) done this. First, magicians make use of misdirection. What this means is that magicians influence where we will direct our attention. For example, in making a coin 'disappear' from their hand, magicians will verbally direct us to look at the coin in their hand and will reinforce this by directing their own attention to their hand. Then, the magician makes the coin 'disappear' (actually by passing it to the other hand). At this point in the trick, they look at the audience and tell a joke to distract them away from the hand and focus attention on the magician's face instead. Attention is diverted away from the hand at this critical point and not directed back at the hand until the magician instructs the audience to notice that the coin has 'disappeared' from that hand (i.e., directs attention back to the hand). Note that we, the audience, are further disadvantaged because magicians usually do not tell us what they are going to do at the beginning of the trick: the situation is ambiguous, so we have little idea beforehand of where to direct our attention.

Magicians also take advantage of our expectations in performing their tricks: very often, we see what we expect to see, whether it is visually there or not. When magicians do a card trick, for example, they often open a new sealed deck of cards. We expect that the new sealed deck will contain all the cards, so even if the audience is allowed to examine the deck, they typically fail to notice that it is not complete. This removal of one or more of the cards and the resealing of the deck allow the magician to take advantage of our expectations and perform a number of card tricks. In addition, magicians often make use of our memory systems which reconstruct events rather than recording them as they happen. For example, the magician may say, 'You will notice that I never touched the deck of cards,' when a videotape of the event shows clearly that he or she did, in full view of the audience. Yet, most of the audience who witness this report afterwards that the magician never touched the deck of cards!

As we will see in Chapter 4, attentional processes, seeing what we expect to see, and memory reconstruction not only play a large part in the fun of magical tricks, they also play a problematical part in eyewitness testimony.

images in a left-to-right sequence. In this case, past experience influences the processing order. (Individuals brought up to read in a different sequence, like the right-to-left sequence of Hebrew, would often perceive it differently. To explore this issue further, try making a copy of the image reversed, and show it to a friend to see what happens.)

A different source of influence is illustrated in the next two figures: in Figure 1.3, what are the letters? Now, compare this with Figure 1.4. What are the elements in the centre – numbers, or the letter B? In this situation, the presence of other letters or numbers – what we might call the *context* of the stimuli – leads us to interpret the same elements differently.

ambiguous figure a picture or other visual stimulus which can be perceived in more than one way.

So-called **ambiguous figures**, which can be interpreted in different ways, have long been of interest to psychologists studying perception. Such figures illustrate that what we perceive is not based simply on what is 'out there', but is also influenced by internal processes. On first encounter, it may seem that ambiguous figures have little to do with everyday experience – but they actually underscore the processes which are part of *all* perception. In trying to make sense of the world, we look for familiar patterns, and we interpret what we encounter based on our prior experiences. When faced with a situation where there is incomplete information, we fill in the gaps according to what seems probable. For example, in a noisy environment, we fill in small gaps in what someone says based on the words we *do* hear. 'Do you want to get [gap] [gap] here?' says your friend, looking somewhat uncomfortable. Most of us readily recognize that the words in the gaps are 'out of', and we may not even be aware that we filled in the gaps, thinking that we 'heard' the words. This view of perception as an active, creative process was pioneered in the early part of the twentieth
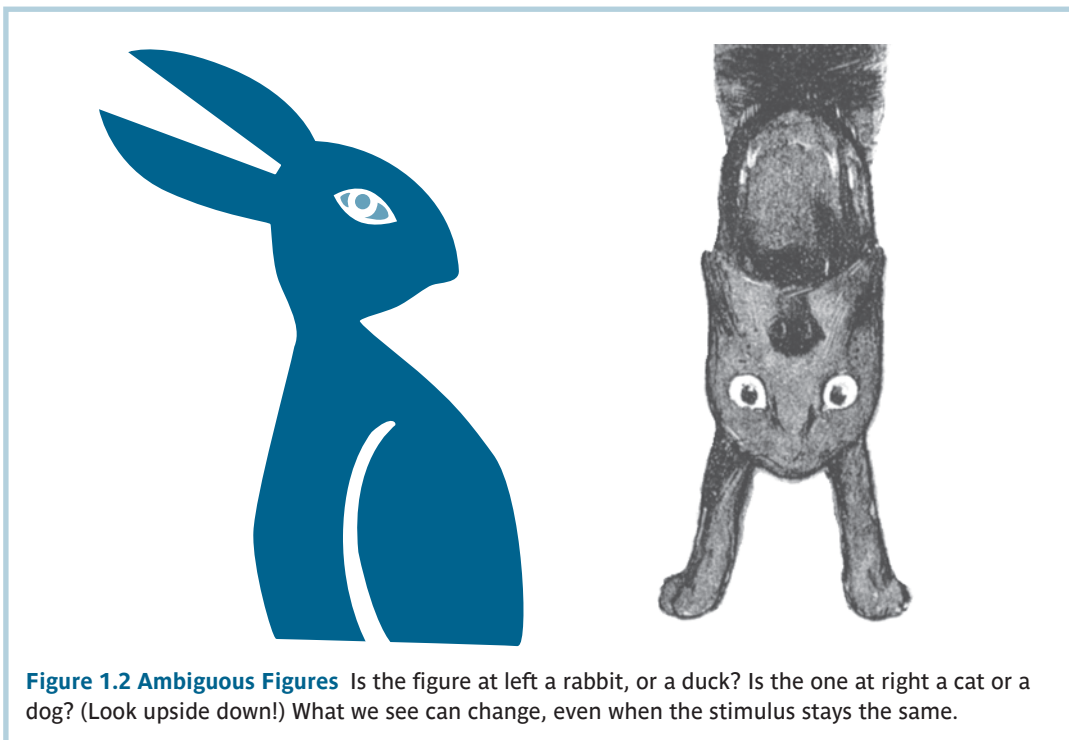

Figure 1.2 Ambiguous Figures Is the figure at left a rabbit, or a duck? Is the one at right a cat or a dog? (Look upside down!) What we see can change, even when the stimulus stays the same.

A I3 C

Figure 1.3 Ambiguous Figures What do you see between the A and the C? Compare this to Figure 1.4.

I2 I3 I4

Figure 1.4 Ambiguous Figures What do you see between the 12 and the 14? Compare this to Figure 1.3; note how context alters our expectations, and thereby what we perceive.

Gestalt theory a theory of behaviour pioneered in the early part of the twentieth century by Kohler, Wertheimer and others, which emphasized the active, creative nature of perception and learning (Gestalt is German, and means roughly 'organized whole).

similarity a Gestalt principle of perceptual organization, based on grouping together similar elements (for example, shape or size).

proximity a Gestalt principle which states that elements which are close together tend to be perceived as a group.

closure in perception, the tendency to fill in incomplete patterns to produce a coherent whole.

century by the developers of **Gestalt theory** (the word *Gestalt* is German, and means roughly 'organized whole').

Gestalt psychologists argued that perceptual experience is the result of active synthesis, and one of their goals was to identify the basic factors that affect how we organize and interpret sensory data. Over time, they identified a number of organizational principles which are sometimes called 'laws of grouping'. Among these are the principles of **similarity** (grouping similar items together) and **proximity** (elements which are close together tend to form a group) (see Figures 1.5 and 1.6). In general, the Gestalt view was that we are naturally inclined to seek ways to organize sensory data; perception is not random.

Gestalt theory also argued for the importance of *interpretation* in perception. This is clearly seen in the concept of **closure**, which is the tendency to fill in incomplete patterns to produce a coherent whole (see Figure 1.7). Rather than perceiving a complex set of unconnected elements, we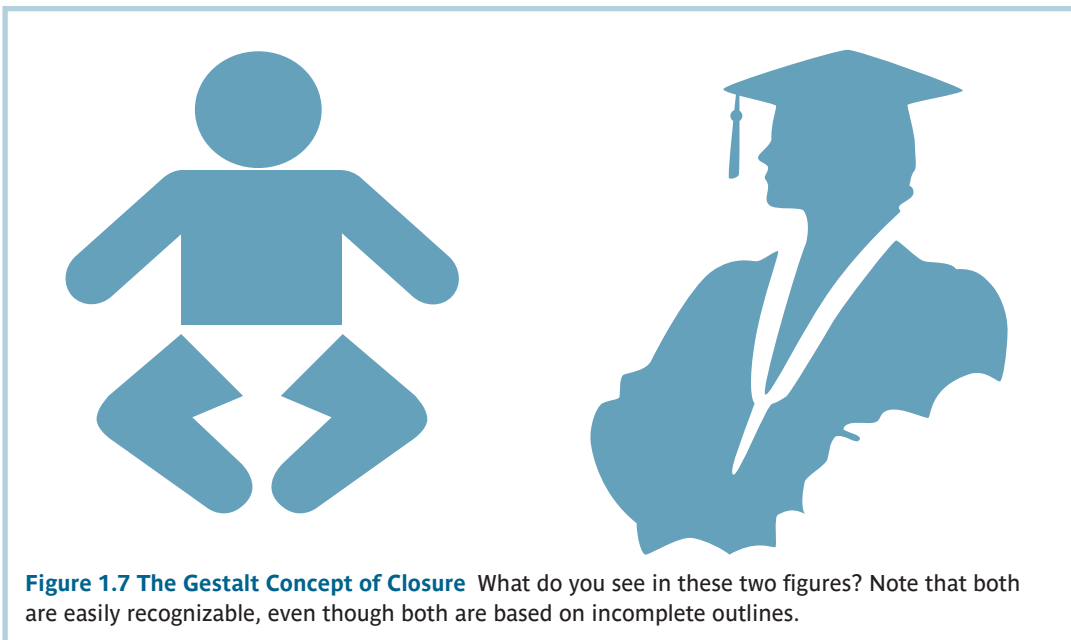 interpret sensory data to create a meaningful pattern – even if this means modifying in some way the original stimulus information. Closure helps to explain why tasks like proofreading can be difficult: we tend to see what we expect to see (a correct word), instead of what actually appears on the page (an error).

The interpretations we make when perceiving are seldom random; instead, they reflect the way we have structured our previous knowledge and experience. From early infancy, we organize and interpret our experiences, seeking patterns to help us make sense of the world. Some of these patterns are fairly simple concepts, like 'food' or 'chair'. As our experience and knowledge grow,

schema (pl., 'schemata') a mental framework which organizes knowledge, beliefs and expectations, and is used to guide behaviour.

we form more complex structures called **schemata**. Some schemata are scripts to guide our actions in particular situations. For example, a 'restaurant' script tells us that when we dine out we order from a menu, are served by someone, and are expected to pay for what we order, among other things. Schemata can also be used to organize our knowledge of objects and people. For example, a schema for 'bedroom' would include knowledge of the various objects found in a bedroom, as well as their functions.

Figure 1.5 The Gestalt Concept of Similarity Note how we tend to see the figure as columns rather than rows, because of grouping the similar shapes.

Figure 1.6 The Gestalt Concept of Proximity Note how we tend to see the figure as rows rather than columns, because of grouping those which are closer together.

Figure 1.7 The Gestalt Concept of Closure What do you see in these two figures? Note that both are easily recognizable, even though both are based on incomplete outlines.
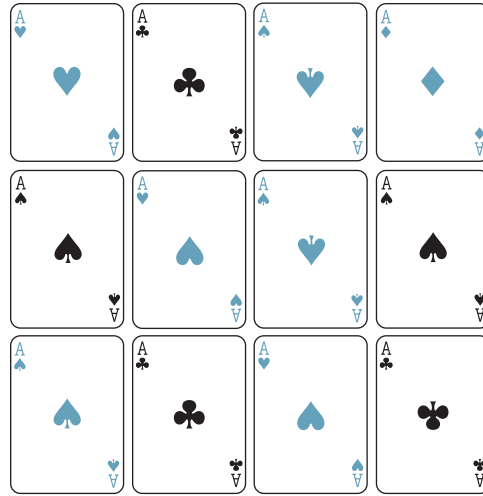
Figure 1.8 Expectations and Perceptions Quickly count how many spades you see in this picture. If you found only two or three, this can be understood in terms of the fact that past experience led you to expect that spades should be black (a cognitive schema about cards); non-black spades violate your expectations, which in turn influence what you perceive.

Whether simple or complex, schemata influence the way we perceive the world around us. Depending on the schema one has, the same situation may be interpreted differently: an old chair at a flea market may be perceived as junk by one person; another person, more knowledgeable about furniture, may recognize it as a Georgian antique. A Brazilian settler may see a rainforest as something to be cleared in order to create a farm; an environmental activist may see the same forest as a priceless ecosystem.

In many cases, it is impossible to label a particular interpretation as correct or incorrect. Thus, in each of the above examples, both points of view have meaning. At the same time, it should be obvious that the use of schemata also creates the risk of distortions in the way we see the world. Sometimes the distortions may be relatively benign, but in other cases the errors may be more serious – especially when our schemata involve faulty or inaccurate assumptions. Consider our attitudes towards people: such **stereotypes** can also be considered schemata (Baldwin 1992). Social stereotypes are often formed initially from some specific experience, or from observations of one or more individuals. These specific impressions become a stereotype when this information is then generalized to apply to *all* members of a group, regardless of circumstances. This creates difficulties when circumstances change, but the stereotype does not, or when a stereotype is used as a substitute for gathering accurate information about a person. For example, a friend once reported an experience that his 6-year-old son had at school. The teacher had asked the children to 'draw a picture of your father relaxing'. When the teacher saw the boy drawing a picture of a man chopping wood, she said, 'No, I said draw him *relaxing*.' Bursting into tears, the 6-year-old exclaimed (correctly), 'But my Daddy *does* chop wood to relax!' (By contrast, his father's 'work' involved sitting at a desk all day.) The teacher's stereotype, not the boy's drawing, was the problem. Stereotypes, as mental schemata, can lead us to prejudge others – and *all* schemata carry this risk of distorting reality.

Even when we are not consciously aware of using schemata, they are part of our perceptual process. Our perceptions of friends and family members are based on many, many experiences. Over time, the schemata we create from these experiences can have more influence on our perceptions than the present reality. Consider the following examples: as parents, we tend to overlook the changes in our maturing children, and fail to recognize that they are no longer as dependent as they were as toddlers. As adults, we can be shocked to realize that our elderly parents now need to be cared for as if *we* were the parents. Friends may change both physically and emotionally, but we still perceive them as they *used* to be. In each case, the mental schema is inconsistent with the person before us. Typically, we are unaware of these distortions; somewhat ironically, we tend to believe that family and friends are the people we know best, because we have such elaborate schemata to deal with them.

confirmation bias a form of cognitive error based on the tendency to seek out information which supports one's beliefs, and to ignore contradictory information.

The likelihood that we will recognize such distortions is reduced by a phenomenon called **confirmation bias**. Generally, we tend to focus on information that confirms our beliefs, and ignore potentially contradictory information. Ironically, the more confident we are in our beliefs, the more likely is the danger of distortion, because we are less likely to look for information that might reveal our error. Thus, a doctor with 30 years of experience is less likely to recognize when he has made a diagnostic error than a newly-graduated intern – precisely because greater experience instils greater confidence (Halpern 1989). As another example, when we fall in love, we become supremely confident that we know the object of our affections well, and we point out all his or her wonderful qualities to our friends. Sometimes we are amazed that our friends are sceptical of our appraisals, seeing other qualities which are significantly less than wonderful in our loved one. But we, in our infatuated state, ignore or find justifications for all the information that does not fit our conviction that our beloved is magnificent. Sometimes, later, we wonder how we could have been so blind – now that we have a new, less positive schema of the former beloved, we can see only his or her negative qualities, and this now confirms our new opinion!

This is not to say that schemata are undesirable – most of the time, they aid us in efficiently and accurately processing the vast amount of sensory information that we encounter. Rather, it is to emphasize that perception is an imperfect process, even as it is a crucial one in our dealings with the world. Schemata help us to make sense of the wealth of sensory information around us. On balance, the risk of errors is largely offset by the benefits gained from organizing our experiences. In addition, by *understanding* the perceptual process, we are more likely to avoid the kinds of errors we have discussed.

Perception and Theorizing

We began this discussion of perceptual processes in response to the question, 'Why different approaches?' By now it should be obvious that researchers depend on the same perceptual processes as other people, with the same limitations. Still, it may not be apparent how these perceptual limitations have led to divergent approaches within psychology. To understand this, recall what was said earlier about the challenges involved in studying behaviour. In particular, we noted that human behaviour is almost infinitely complex and variable. Faced with this complexity and variability, how is a researcher to proceed?

Since 'studying everything' is impossible, some degree of selection is inevitable in research. Researchers make choices, focusing on one aspect or type of behaviour (for example, physiological processes, or a problem like aggression), or sometimes one species (humans, primates

or bees, etc.). The choices made may reflect the researcher's interests, theoretical assumptions, or other aspects of the individual's schemata. In other words, the process of deciding what to study, and how to study it, is influenced by the processes of perception which we have been discussing.

Thus, the process of doing research involves selection in the same sense that perception in general does. Faced with a range of choices, many individuals interested in behaviour decide to follow a research path already defined by others. In some cases, however, circumstances and schemata combine in a way that leads certain individuals to break new ground. In effect, they make choices of what to study, and how, that come to define a new framework or approach to the study of behaviour. In the long run, the development of any approach involves the contributions of many people, but in the beginning there is usually a key figure, whose personal choices play a key role in defining the nature of the approach.

Psychology as a discipline is characterized by not one, but several, different approaches. Most of this book will be devoted to exploring five major ones: the biological, behaviourist, cognitive, psychodynamic and humanistic approaches. In each case, we will explore the origins of the approach, the individuals involved in its development, and the assumptions and methods which characterize it. Inevitably, you will find points of disagreement between the approaches, as well as apparent limitations in each. Faced with this situation, you may well wonder which approach is the 'real' psychology. While such a query is natural, it may not be the most productive way to view the situation.

It is frequently noted in introductory texts that psychology is a relatively young field, tracing its origins back only about 100 years or so. This is just as frequently followed by statements about how one cannot expect much coherence from a young field, as if apologizing for a toddler who is a messy eater – that is, one shouldn't expect much more. This sentiment not only downplays the accomplishments of psychology, but is also likely erroneous, because it assumes that coherence is *necessary* to a mature field. (Modern physics, by comparison, still grapples with differing models of basic forces, without having a unified theory.)

This general issue deserves more detailed exploration, but the purpose here is to suggest that disagreement is not always a weakness. (See Chapter 10 for a further discussion.) Physics, a much older discipline than psychology, has long recognized the concept of **complementarity** – different frameworks may be separately valid, without being reducible one into the other (Blackburn 1971). For example, light can be described as a wave or a particle, depending on the circumstances. Each representation has value, without implying that one is right and the other is wrong in an absolute sense. In the same way, the differing approaches to behaviour that we will consider may also reflect complementarity. Seen in this way, the basic concern becomes how *useful* each approach is, not which is completely correct. Indeed, despite the historical disagreements, it is not unusual today to see researchers combining concepts and methods of different approaches (such as the biological and cognitive) in order to advance the understanding of behaviour. (See also *Putting It All Together* at the end of this chapter.)

complementarity a concept developed by physicists to deal with the existence of two models which are both useful, but not directly reconcilable.

If the preceding discussion of complementarity seems abstract, consider the following story: a group of blind men were making a pilgrimage together in India, when they met a man leading an elephant. None of the blind men had ever encountered an elephant before, and they proceeded to touch it. One man, grasping the trunk, exclaimed, 'Oh! An elephant is like a snake!' Another, wrapping his arms around one of the elephant's legs, said, 'No! An elephant is like a tree, with

rough bark!' A third, grasping the end of the elephant's tail, countered, 'You're both wrong! An elephant is hairy, like a camel!' They proceeded to argue vehemently, never realizing that they were each partly right, but that none was completely right. Their disagreements stemmed from making different observations, and making different interpretations based on those observations. In a similar way, each approach to psychology may be only a partial view of the whole subject. And, like the interpretations of the blind men, each approach may have something valuable to offer in our attempt to understand behaviour, even if no one approach can answer all questions.

In considering the five approaches, the process of perception can help us understand how the origin of each approach is related to the experiences and schemata of the individuals who pioneered it. In addition, we will need to consider the intellectual and social context in which the approaches were developed, because people do not live (or work) in a vacuum; each of us is influenced by the ideas and attitudes of the society we live in. (Consider, for example, differences in social customs and attitudes in London today compared to a hundred years ago, or the prairies of Canada compared to the jungles of the Amazon.) In this sense, the lives of the pioneers of psychology, and the cultural contexts in which they lived, are not simply historical details, but important clues to understanding each approach.

The impact of culture is a broad issue, and no complete analysis can be given here. As should be evident, people in all cultures have striven to understand human behaviour, and have developed different types of frameworks and explanations. In that sense, the five approaches on which we will focus represent frameworks that have been particularly significant, not the only possible ways of seeking to understand behaviour. Throughout the book, we will look at examples of how culture influences both individual behaviour and the way people think about behaviour (see Box 1.1).

In the end, it is important to remember that psychology is a science, but all science is a human endeavour. Understanding the richness of that endeavour requires acknowledging the people who contribute to its development, and the social contexts in which they live. For the moment, let us consider the general context in which psychology as a discipline emerged (for further discussion of the issues of theory formation, see Chapter 10).

THE ORIGINS OF PSYCHOLOGY

Psychology did not exist as a specific discipline until the end of the nineteenth century. Formally, its inception is usually traced to the creation of Wilhelm Wundt's laboratory of experimental psychology, established in Leipzig in 1875. While it is convenient to point to a specific date, psychology is not a baby with a specific birth date; its genesis really involved a number of elements, from the creation of laboratories, to the formation of university psychology departments, to the growth of public recognition of the discipline. In this sense, its 'birth' really extends over roughly the last three decades of the nineteenth century.

In a broader sense, it can be argued that the origins of psychology go back even further. What has been called the first 'psychology experiment' was performed in ancient Egypt, in about 700 BCE (Hunt 1993). In order to explore the origins of language, the king of Egypt arranged for a child to be reared by a shepherd, who was ordered never to speak to the boy. When the grown child was later presented to the king, supposedly the first sounds he made sounded like the Egyptian word for bread. The king concluded that the Egyptian language must be innate, thus demonstrating the inherent superiority of Egyptian culture!

Box 1.1 *The Problem of Interpretation in Research*

Interpretation is a basic part of research in psychology as well as everyday perception. While psychologists may observe specific behaviours, they then often make inferences about the intent or meaning of these behaviours. Like all human beings, researchers tend to interpret behaviour in terms that are meaningful to them. But are these interpretations necessarily objective and unambiguous? Often, the answer is no. Consider the following example (inspired by a television comedy): if Malcolm calls Dewey a nerd, what does this mean? Psychologist A says, 'Malcolm feels contempt for Dewey. If I called someone a nerd, it would be because I was angry and had contempt for that person.' Psychologist B says, 'No, Malcolm loves Dewey. If I called someone a nerd, it would be because I was comfortable enough with that person and respected that person enough that I could affectionately tease him or her.' Which psychologist is right? Only by standing in the shoes of the actors can we know; otherwise, we are making assumptions that can't be directly tested, and that may in fact be wrong.

The problem with interpretation becomes more acute when we look at the behaviour of people from cultures other than our own. For example, is Yäel being an unthinking conformist when she agrees to go along with a class plan that she has private reservations about? Or is she reflecting the spirit of collectivism, emphasizing group interest, that is part of her upbringing on a kibbutz in Israel? Is Mr Takehashi being unfriendly when he fails to join his new American workmates for lunch? Or is he reacting according to the Japanese norm that says it would be rude to join his co-workers without an explicit invitation? How one answers these questions may depend on the culture in which one lives.

Psychologists can also be influenced in various ways by the culture in which they live and do research. Ideally, researchers are seeking to develop theories that apply to human beings in general, but there is always the possibility that interpretations are limited by culture and/or historical context. While this does not mean that theories can never apply to all people, the question of cultural influence is relevant to understanding how theories are developed and evaluated. Of course, culture is not the only factor that influences how people (including psychologists) interpret the world, but it is easily overlooked because it is always present, surrounding us, like the air we breathe. As we consider the different approaches discussed in this book, we will look at a number of specific examples of the challenges involved in interpreting behaviour, including the role of culture.

Try it Yourself

Schemata influence how we perceive more complex social situations. To understand the variability we show in our schemata and how our own perceptions of the world may be influenced by our previous experiences, indicate how you would interpret the following situations. Then ask one or two friends how they would interpret the same situations. Are there differences?

1 Someone you barely know suddenly becomes very friendly and helpful, even offering to run errands for you and lend you money.

2 Your closest friend is uncharacteristically withdrawn and quiet.

3 You have a choice as to which of the following people you will have dinner with: an artist, an accountant, a car mechanic, a nuclear physicist. What would you expect the dinner conversation to be like with each? Which would you choose? Is your choice based on a stereotype, or some personal schema?

In general terms, psychology emerged out of two traditions: philosophy and natural science. Philosophers have always been concerned with understanding the meaning of human experience, and many basic concepts in psychology trace their origin back to philosophy. For example, John Locke was deliberating the role of learning in behaviour in his *Essay Concerning Human Understanding*, published in 1690. In addition, philosophy, like the humanities more generally, has posed questions about awareness, motivation and values that have also been of concern to psychologists. Along with philosophy's interest in human experience, psychology has been influenced by the study of the natural world. Physics and the other natural sciences have been important to psychology both conceptually and in terms of methods of study. In particular, the success of the physical sciences in using experiments to develop explanations based on causation led to psychology seeking to do the same. Later, as the biological sciences began to develop, they too became sources of influence in the development of psychology. An often-cited example is the impact of Darwin's work on evolution, with its emphasis on understanding the innate origins of behaviour.

Hence, both philosophy and science have been influential in shaping the nature of psychology. The continuity of these influences is indicated in a review of research on memory by Tulving and Madigan (1970). Looking at the then-current findings, they began by suggesting, only partly in jest, that there was very little that would have surprised Aristotle (perhaps the greatest of the early Greek philosopher-scientists)! To see more clearly how psychology developed from these sources, we will consider two of the great pioneers: Wilhelm Wundt and William James. Taken together, their contributions laid the foundation for most of modern psychology, while reflecting the impact of philosophy and natural science.

The son of a Lutheran pastor, Wilhelm Wundt was born in Baden, Germany, in 1832, and received a medical degree at the University of Heidelberg, graduating at the top of his class in 1855. Shortly after, he went to Berlin to study under Johannes Müller, who had earlier established the first laboratory of experimental physiology. While Wundt's association with Müller was fairly brief, it had a significant influence on him, inspiring him to give up medicine to pursue research in physiological processes. Wundt's training led him to study behaviour by examining elementary sensory processes. His background in medicine made it natural to emphasize physiological aspects of behaviour, though he also hoped that eventually psychology could analyse higher mental processes. He was a prolific writer, publishing almost 500 articles and books and writing papers on all aspects of psychology, from physiological processes to social behaviour. By today's standards, his equipment and techniques were primitive, but the impact of his work was far-reaching.

At this time, psychology did not exist as a distinct discipline; as a result, Wundt's appointment at the University of Leipzig was as a professor of 'scientific philosophy' (as opposed to classical philosophy). Thus, a man whose training was in medicine and physiology became a founder of psychology, while teaching as a philosopher! Out of these unusual circumstances emerged the new discipline, and Wundt played a significant role, both through his own work and his impact on his students: although Wundt himself was designated a 'philosopher', he advocated the creation of a new field of experimental psychology. By the end of the century, psychology departments had been created at several universities, and some of the founders of these programmes (for example, E. B. Titchner and J. M. Cattell) studied under Wundt. As a result, Wundt's conception of an experimental psychology – physiologically-oriented, emphasizing basic sensory processes – was an important influence in the early development of psychology, and many regard him as the founder of modern psychology.

Key Thinker: **William Wundt**

Wilhelm Wundt (1832 – 1920) was born in Baden, Germany, the son of a Lutheran pastor. He received a degree in medicine from the University of Heidelberg in 1855, graduating at the top of his class. Over time, his interests turned toward research in physiology, particularly sensory processes. This led him to an interest in psychology, and in 1875 he founded what is regarded as the first laboratory of experimental psychology at the University of Leipzig. Wundt hoped that eventually the study of sensory processes would lead to an understanding of higher mental processes, and he wrote papers on all aspects of psychology, from physiological processes to social behaviour. A prolific writer as well as researcher, he published almost 500 articles and books, totalling almost 60,000 printed pages. As a teacher and researcher, he influenced many early psychologists, but the approach he took to the study of behaviour, called structuralism, has been supplanted by other approaches within psychology. Despite this, Wundt is often regarded as the founder of modern psychology.

Interestingly, one of the other early giants of psychology, William James, also began as a medical student. James, the elder brother of the novelist Henry James (*The Turn of the Screw* is often considered the first of the psychological novels), was born to a wealthy family in Boston, Massachusetts, in 1842. Unlike Wundt, James was an indifferent student, and tried several fields before finally receiving a medical degree from Harvard when he was almost 30. At this point (1872), he was asked to teach half of a course in physiology at Harvard; within three years the course had evolved into a study of 'The Relations Between Physiology and Psychology'. Three years after that, he dropped the physiological component, and began teaching a course which was explicitly psychological.

It was at this time that James was asked by publisher Henry Holt to prepare a textbook on psychology. He accepted, thinking it would be a straightforward task. After all, he was fluent in German and French as well as English, and knew most of the existing literature (including Wundt's work). Writing the book turned into a mammoth enterprise, consuming almost 12 years, and resulting in two massive volumes totalling approximately 1000 pages. James himself was ultimately dissatisfied with his efforts, telling Holt, '*1st*, that there is no such thing as a *science* of psychology, and *2nd*, that W. J. is an incapable' (quoted by Fancher 1979, p. 160). In fact, by the time of the publication of *Principles of Psychology* (1890), James's interests had turned towards philosophy, and with the exception of *Varieties of Religious Experience* (1902), his significant later work was all philosophical, not psychological. In his later years, his appointment at Harvard was in philosophy.

From this brief biography, and James's own comment, one might conclude that his efforts in psychology had little impact on the developing field. In fact, nothing could be further from the truth. Like his brother Henry, William James was a gifted writer, and his *Principles of Psychology* was both influential and widely read – it is probably the best-selling textbook in the history of psychology (and is still in print). More importantly, he was an incisive thinker, and his analysis of basic problems set the framework for later research in many areas, from emotion to consciousness. Doing experiments did not particularly appeal to James (although he *did* set up a laboratory for teaching purposes in 1875, the same year as Wundt); he preferred analysing how the mind functioned rather than trying to observe its basic parts. Consequently, he expressed little interest in Wundt's approach, which he

Key Thinker: **William James**
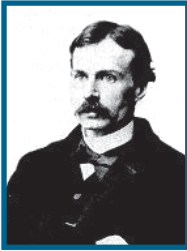
William James (1842 – 1910) was one of the most influential and articulate of the early American psychologists. Indeed, his writing is so clear and engaging that it has been said that he wrote like a novelist. (Interestingly, his younger brother Henry is often regarded as the creator of the psychological novel.) He came from a wealthy family, and travelled extensively during his career, from the salons of Europe to the jungles of Brazil. His academic career was spent at Harvard University, first as a student, then as a professor. His student career was undistinguished: he started in chemistry, switched to medicine, took a foray into biology and eventually, after several interruptions, finished his medical degree when he was almost 30. He began his teaching career as an instructor in physiology at Harvard, but gradually incorporated more psychological content, so that by 1878 the course was purely psychological in focus. At this time, he was approached to write a psychology textbook; the task took more than a decade to complete, but his *Principles of Psychology* became one of the most influential texts in the history of the discipline, and is still in print. Over time, however, his interests shifted towards philosophy, and he ended his career in the philosophy department at Harvard. Within psychology, he is perhaps best known for coining the phrase 'the stream of consciousness'; the approach he founded, called functionalism, has remained influential, particularly among cognitive psychologists.

once compared to trying to understand a house by studying each of its bricks (James 1884). In turn, Wundt was less than impressed with James, saying of *Principles of Psychology*, 'It is literature, it is beautiful, but it is not psychology' (quoted by Fancher 1979, p. 128).

Wundt and James each played a major role in shaping the direction of psychology as a discipline. As contemporaries, they each began as a medical student and ended as a professor of philosophy (at least in title, if not content). In this sense, they highlight the double heritage of psychology – the natural sciences and philosophy. At the same time, they differed significantly in their approach to the study of behaviour and the mind. James's approach, with its emphasis on how the mind works, came to be known as **functionalism**, while Wundt's study of basic mental processes became known as **structuralism**. Wundt was a precise and prolific experimenter, while James cared little for the laboratory. Yet, taken together, they point toward two crucial aspects of modern psychology: the importance of making careful observations, and the importance of asking the proper questions. While neither man's views are accepted completely today, their efforts and insights provided much of the foundation for the new discipline. If psychologists today seem to see further than they did, it is partly because (as Isaac Newton once said of his own accomplishments) they are standing on the shoulders of giants.

functionalism an approach to the study of behaviour pioneered by William James, which emphasizes the analysis of the processes by which the mind works.

structuralism an approach to psychology pioneered by Wundt which attempted to analyse the contents of the mind, using the introspectionist method.

Psychology, then, traces its origins to rather divergent roots. This diversity is still evident in the current form of the discipline, which extends in many directions. Today, there are individuals involved in psychology who look at everything from intracellular chemistry, to the causes of forgetting, to the nature of romantic love. In some cases, they may feel more comfortable talking with colleagues in other disciplines than with other types of psychologists. Some would see this as a failing, and it is *possible* that time will support that view. At present, though, one can view

this diversity as simply a reflection of the complexity of both psychology's origins and its subject matter. One might draw an analogy to the medieval world view, which saw man as the measure of all things, and therefore placed humanity at the centre of the universe: psychology is clearly not the measure of all things, but it is perhaps fitting that the study of human behaviour should have links extending into all the domains of human knowledge, from the natural sciences to the humanities.

Try it Yourself

William James emphasized asking good questions over gathering data; Wilhelm Wundt was concerned with gathering data. Which aspect appeals to you? Examine your own behaviour: do you prefer thinking about why a situation is occurring or why people are behaving in certain ways, or do you prefer to bide your time while closely observing people and situations to gather information? Are these two orientations necessarily antagonistic? Could you find a way to reconcile the orientations of Wundt and James? How could you convince each man that the orientation of the other was necessary?

METHODS OF STUDYING BEHAVIOUR
The Role of the Scientific Method in Psychology

Given the complexity and diversity of human behaviour, how does one go about studying it? While the five approaches differ in the methods they emphasize, all psychologists share a belief in the observational methods of science as the foundation of psychological research. We noted earlier that psychology is distinguished from pursuits like astrology or phrenology, or even common-sense wisdom like proverbs, by being a science. But what exactly does that mean?

empirical based on making observations, as in an empirical theory.

First and foremost, psychology is **empirical** – that is, it is based on making observations. Precisely what observations researchers are interested in varies according to the approach, but there is a common emphasis on *objective* observation; normally, this means that observations can be verified by different observers. In this sense, psychology is a public endeavour, which cannot depend on secret knowledge or mystic inspiration. (More will be said about this in conjunction with introspectionism.)

The emphasis on empiricism is important, but does not directly tell us what to observe, and how. Suppose someone likes to 'people watch' by sitting in a sidewalk café; if a friend joins in, does that make their observations scientific? To decide, one has to remember that the goal of psychology is to understand behaviour – and understanding requires more than a random cataloguing of observations. By itself, counting how many people go past a sidewalk café has no scientific value. At the very least, one must *classify* those observations in some way, which may lead to relating them to something else (perhaps the weather, or time of day, or some other factor). That is, science depends on *organized observation*, based on the belief that classification of observations will ultimately lead to an explanation of those observations (Robinson 1985). Understanding and explanation require the formulation of general principles; at the highest level,

theory a structured set of principles intended to explain a set of phenomena.

a structured set of principles is called a **theory**. A theory provides a coherent structure for relating various observations, and often permits prediction of future observations. Traditionally, theories in science have explained observed events by identifying their causes; at

the very least, a theory provides a way of generalizing across specific observations. Hence, observations and theories are complementary to each other: observations suggest a theory, a theory is tested by observations, observations suggest modifications of the theory, and so on.

induction a process of reasoning based on forming general principles from specific observations.

deduction the process of drawing specific conclusions from a set of general principles.

hypothesis a statement describing a proposed relationship between variables; a specific outcome or prediction derived from a theory which can be evaluated by making further observations.

Essentially, observations and theory are connected by two basic cognitive processes – inductive and deductive reasoning. **Induction** involves forming general principles from specific observations. The story of Isaac Newton discovering gravity by being hit by a falling apple is doubtless folklore. What is *not* folklore is that Newton saw a connection between falling apples and orbiting planets – that is, gravity was a general principle that was derived from the specific observations of falling apples and orbiting planets, and could be used to link these observations. **Deduction**, by contrast, involves drawing specific conclusions from a set of general principles. For example, Freud believe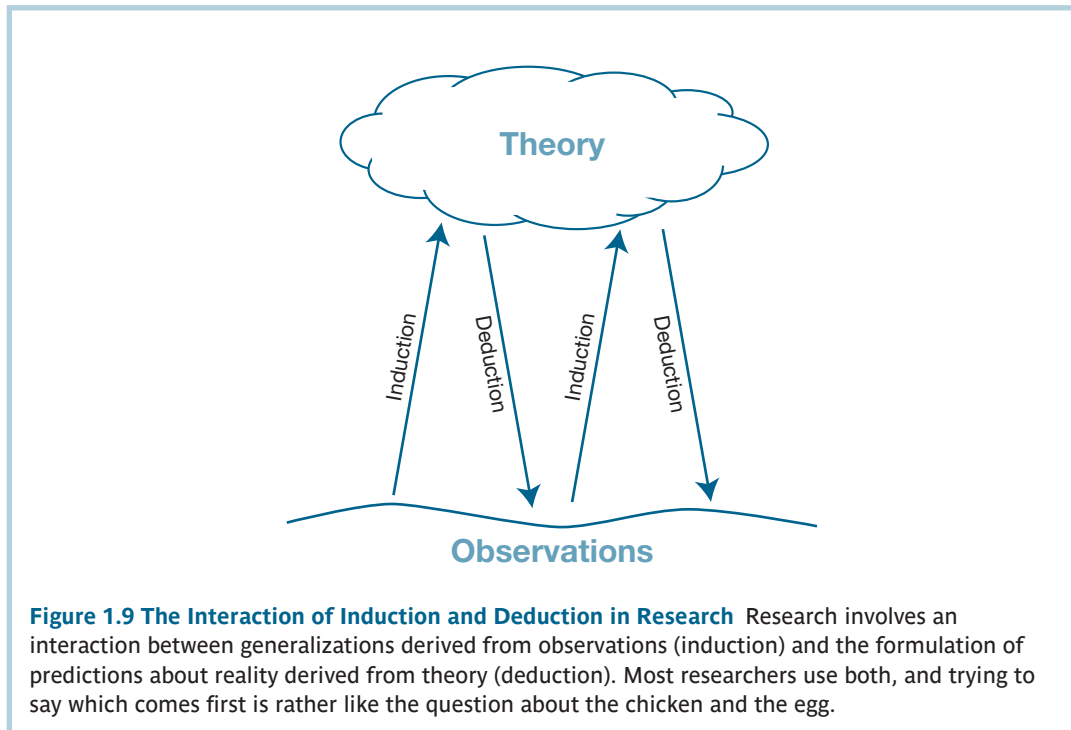d that aggression is an innate drive which can be expressed in destructive behaviour (a general principle). From this, it follows that if someone commits murder, it is because of this innate drive (a specific conclusion). Most commonly in science, deduction is used to derive a **hypothesis** – a specific outcome or prediction derived from a theory, which can then be evaluated by making further observations.

Which comes first, you may ask – inductively forming principles from observations, or deductively deriving hypotheses to be tested by observing? In reality, this is much like the old chestnut about whether the chicken or the egg comes first: there is no clear answer. In practice, researchers use both processes, in a more or less continuous interaction (see Figure 1.9). Sometimes, past experience will lead to an interest in particular phenomena, and then observations will lead to a theoretical insight. Alternatively, thinking about a theory may lead to the discovery of a new implication, which then must be tested for accuracy by making appropriate observations. As we will see in the following chapters, both processes have played important roles in the development of the five approaches. As supporters of the scientific method, all approaches share common concerns: to make careful, consistent observations, to avoid errors, and to develop clear theories. Despite the general agreement on these principles, there is still room for a range of particular techniques when gathering information.

Introspectionism and Public Observation

At first glance, it might seem that the best way to learn about behaviour would be to carefully analyse your own behaviour. After all, whom do you know more intimately than yourself? This

introspectionism a method of gathering data in which the individual attempts to analyse the content of their conscious mind; associated with the structuralist approach.

approach, called **introspectionism**, was, in fact, used in various forms by a number of early psychologists, including Wundt and James. Despite its early popularity, introspectionism (literally, 'looking within') proved to be a questionable technique. Even when it involved carefully structured forms of self-analysis, as in Wundt's case, the method ultimately failed to provide clear answers. In part, this was due to the limitations inherent in the process of perception, as we have discussed. But a second weakness stems from trying to use private experiences as data. Suppose two people, trained in Wundtian introspection, view two colour samples. One person says one sample is red, and the other is pink – that is, they differ in one sensory characteristic, colour. The other person says that both samples are the same colour, but that they differ in

Figure 1.9 The Interaction of Induction and Deduction in Research Research involves an interaction between generalizations derived from observations (induction) and the formulation of predictions about reality derived from theory (deduction). Most researchers use both, and trying to say which comes first is rather like the question about the chicken and the egg.

saturation (purity of the colour), with the 'pink' one being a mixture of red and white. In essence, the two observers disagree as to whether their experience of the stimuli reflects one quality, or two. How can we resolve this dispute? One may be wrong, or each may be correct about their own experience, but since we have no way to determine, we are no closer to a general understanding of what is involved in perceiving a colour sample.

To indicate the importance of this interpretation issue, consider what happened in the history of taste research. One of Wundt's students, named Federico Kiesow, did pioneering research on taste, and borrowed an analogy from colour in order to describe taste phenomena – that is, he argued that we experience *mixtures* of salty, sour, bitter and sweet, just as we experience mixtures of colours. It turned out that this interpretation is wrong, and although another researcher, Hjalmar Ohrwall, argued that the four taste qualities were *discrete*, his view was overlooked for almost a hundred years, creating a major setback in taste research! (Bartoshuk 2003).

To avoid the problems of introspection, psychology, like other forms of science, has come to emphasize *public* techniques of observation, which make it possible for observers to agree on what has occurred. Even so, this principle takes many forms, since researchers sometimes disagree as to what is 'public'. In general, any aspect of behaviour which can be observed consistently (that is, produces agreement among observers) is considered open for possible study. For example, an arm movement is public. Many physiological responses can also be considered public, in that the technologies used for measuring them produce results which observers can agree on. When one refers to mental states, it becomes more ambiguous: some psychologists believe that reports of mental states are inherently unreliable, and cannot be considered public. Others argue that as long as the *results* of such reports are consistent, then it is possible to devise public measures of mental events. For example, studies of memory

depend on what people are able to report remembering, and those reports are typically considered a public measure of memory.

Some researchers also extend the requirement for public observation to the way terms are defined. So-called **operational definitions** must be based on observable events. For example, to define *love* as 'a feeling in the heart' is not acceptable as an operational definition, because it is not based on an observable event. However, defining it

operational definition a term whose meaning is defined by the processes or observable events used to measure it.

as 'giving a dozen roses to someone' is operational. The difficulty with such definitions, as this example suggests, is that sometimes an operational definition seems unrelated to the concept which it supposedly defines. Defining love as giving roses may be operational, but does it really reflect what people mean when they talk about love? If not, how is the definition useful? Similarly, cultural differences can make it difficult to define the meaning of gestures in operational terms. For example, an 'O' formed by the thumb and index finger may mean 'OK' in North America, but 'zero' or 'no' in France (Hall 1981). In the end, while all researchers accept the importance of using public processes to confirm observations, not all psychologists see value in operational definitions.

Try it Yourself

Basing a definition on something observable is not itself enough to make a definition operational, because different observers may still define what is to be observed differently. Try this simple example: light a candle and sit quietly around it with two or three other people. For five minutes, let each person silently count the number of times the candle flame flickers. After five minutes, compare your counts. Do not be surprised to see numbers varying from 2 to 2000. Yet each of you was watching the same candle flame! The problem was that each of you was defining 'flicker' in a different way. Now, work as a group to develop a common definition of 'flicker', and then watch the flame again for five minutes. Using this agreed-upon definition of 'flicker', do the individual number counts of the group come closer to agreement?

How could you measure the following so that the observations would meet the requirements of an operational definition?

> hunger   joy   fatigue   grief   aggression

Measures of Behaviour, Research Settings and Research Methods

In doing research on behaviour, there are a number of ways to gather information. As a result, a researcher must make choices in terms of how to measure behaviour, what sort of setting to use, and what type of research method to employ. In the remainder of this chapter, we will be looking at the various possibilities in some detail. However, before doing so, it is useful to describe briefly the kinds of options that exist.

self-report a method of gathering data which involves asking an individual to describe their behaviour or mental state in some way, such as an interview, survey or psychological inventory.

Since research requires making observations, the most basic question is what sort of *measure of behaviour* to use. Generally speaking, observation can be based on two different ways of measuring behaviour: self-report and direct observation. **Self-report** involves asking the person to indicate their behaviour or mental state in some way; that is,

think-aloud protocol a transcript of the comments made when an individual is asked to describe their thoughts and behaviour while working on a task such as problem solving.

what they have done or are doing and what they are thinking or feeling. Such procedures are used in many situations, but most commonly in interviews, surveys and psychological testing. For example, a survey might ask individuals how often they consume alcohol. Self-report has the attraction of seeming very direct, and in some cases it allows researchers to access information which is otherwise unobtainable, such as mental processes. For example, in cognitive research, experimenters may ask people to think aloud while trying to solve a problem. The comments are transcribed as **think-aloud protocols**, which may reveal information about the participants' thought processes.

direct observation any observational technique which depends on direct measurement of behaviour by the researcher, rather than asking an individual to report their behaviour.

The alternative to self-report procedures is for researchers to use **direct observation** of the behaviour of interest; in this case, the researcher observes behaviour in some way that does not depend on what the individual says. Direct observation by an independent person tends to be more neutral or objective than self-report, and is more easily verified by having multiple observers. Overall, direct observation is used most frequently in experiments, although observational methods take many forms, as we will see. The choice between self-report and direct observation as a method of measuring behaviour represents one of the basic decisions a researcher must make when beginning the study of a particular issue. In addition, there are decisions about what type of setting to use, and the type of research method.

research setting the context in which research is conducted, either a laboratory setting (which involves having participants come to a special location), or a field setting (which requires going to where the people are whom the researcher wishes to study).

The choice of **research setting** concerns whether to observe behaviour in a *laboratory setting*, which involves having participants come to a special location (the laboratory), or in a *field setting*, which requires the researcher going to where the people are that he or she wishes to observe. In a laboratory setting, it is possible to create particular conditions, in order to see how people behave in that situation. However, bringing individuals to a laboratory is also somewhat artificial, since participants will be very aware of being observed. (Recall the earlier comments about self-awareness and reactivity.) A field setting may seem more natural, but is necessarily more difficult to control. For example, a researcher may be interested in how children interact while playing. Bringing them into a laboratory would make it possible to control what toys are available and other factors, but may also lead to non-spontaneous behaviour. By contrast, going to a playground to observe such interactions would be more natural, but would allow no control over what was played, by whom, or for how long, thus making comparisons more difficult. Hence, each type of setting has advantages and disadvantages.

research method a procedure for examining a problem and gathering observations; in broad terms, research methods are either experimental or non-experimental

non-experimental methods research methods which do not involve direct control of any factor, in contrast to experiments; sometimes called descriptive/correlational designs.

The choice of setting is often closely linked to the **research method** chosen. An *experiment* is a procedure whereby a researcher systematically varies one or more factors in order to see what effect the changes have on behaviour. For example, in order to examine the effects of alcohol on coordination, a researcher might systematically vary the amount of alcohol which different subjects consume in the experiment. Experiments are normally conducted in a laboratory setting, since this makes it easier to control the factors one wishes to systematically vary. **Non-experimental methods**, sometimes called descriptive/correlational designs, do not involve direct control of any factor, in contrast to experiments. For example, testing individuals' coordination before and

after they visit a bar would not provide any direct control over how much alcohol people drank. Consequently, such comparisons would not directly tell us anything about how alcohol affects coordination. Non-experimental methods include naturalistic observation, case studies and surveys, among others. *Quasi-experiments*, as the name suggests, are similar to experiments, but do not provide the same degree of control. Typically, quasi-experiments are used when studying characteristics which cannot be manipulated by the researcher (such as gender, age or medical condition), or in circumstances where manipulation would be unethical (for example, requiring people to smoke in order to see if smoking causes health problems). All three types of research method will be discussed in more detail later in this chapter.

The three characteristics of research – method, setting and measurement type – can be used to describe virtually all of the techniques used in psychological research. As we consider some specific techniques, you should ask yourself where they fit in terms of these characteristics.

At this point, the description of research techniques may seem very abstract. Why, for example, would a researcher choose to use self-report in a particular situation? To understand how psychologists make such decisions, let us consider a real-world problem: why do people help or not help in an emergency? In recent years, there have been all-too-frequent reports in the media of situations where someone is in trouble, and onlookers don't get involved. In one well-known case, a young woman named Kitty Genovese was on her way home from her job as a waitress in a New York restaurant. It was late, and the street was virtually deserted as she neared the building where she lived. Unfortunately, before she reached it, a man attacked her, stabbing her. She screamed, and her assailant ran off. Before she could reach home or other shelter, he returned. This time, a man leaned from his apartment window to yell at the attacker, who then retreated again. Kitty then tried to seek refuge in the lobby of an apartment building, only to be attacked again. Sadly, she died as a result of the attack (Latané and Darley 1969).

As shocking as this story is, most people were more shocked to learn that despite her screams, *no one telephoned the police*, even though the whole sequence took nearly 40 minutes. At first glance, it appears to be a case of utter callousness: someone must have heard; why wouldn't they call? The police and reporters combed the area to seek witnesses, and found 38 people living close to the scene who acknowledged having been home at the time. (One man said the sound of his window air conditioner blocked outside noise – on a night when it was nearly freezing!) Obviously, none of these people phoned the police. How can we understand this? Is it really the result of callousness and apathy? The tragic death of Kitty Genovese, and other similar incidents,

bystander apathy the failure of onlookers to intervene in an emergency; despite the label, the cause is often unrelated to apathy.

led to the coining of a new term: **bystander apathy**, used to describe situations where people do not intervene in an emergency. For researchers, as for society in general, the challenge is to understand why such incidents happen; ideally, such understanding might lead to ways of increasing helping behaviour in the future. Faced with a problem like this, it is possible to proceed in many ways. Let us explore this situation further, seeing how psychologists might try to learn more about the underlying behaviour.

Non-experimental Methods: Interviews and Surveys

interview a method of gathering data in which a researcher asks an individual questions; the format may be pre-planned and highly structured, or relatively free-flowing and unstructured.

The police and reporters in the Kitty Genovese case used **interviews** as a research method. In an interview, a researcher asks questions, which may be pre-planned and highly structured, or relatively free-flowing and unstructured. The responses from the person interviewed

Try it Yourself

To understand how self-reports and direct observations can yield different results, consider the example of eating. How much do you eat during a typical day? How many calories do you consume? Give a rough estimate. Now spend a day actually recording what you eat and calculate the number of calories you consumed. Do the results match your estimate? Did measuring your consumption make you feel self-conscious about your eating behaviour? Is it possible your food choices changed because of this? When people are asked how much they normally eat, they are usually quite inaccurate. This is why a standard technique used to help people diet is to ask them to keep a record of their food consumption: many people are appalled at how many calories they ingested without being aware of it! Not surprisingly, being aware can itself cause changes in (eating) behaviour (*reactivity*). As a result, the choice between self-report and direct observation can be a complicated decision for a researcher.

represent *self-report* data, since the person is describing his or her own behaviour. In the Genovese case, for example, a number of the people interviewed reported hearing the screams, or even watching the attack from their windows, and wondering why the police hadn't arrived. Rather than being apathetic, these people seemed very upset. When questioned as to why they hadn't phoned the police, these people typically stated that they *assumed someone else* had done so already. (The reality was that no one had.) If we accept the self-reports as accurate (as opposed to being a rationalization for not having helped), the interviews showed that these people had failed to phone because of a faulty assumption, *not* because they were apathetic. By suggesting an alternative to apathy as an explanation of the incident, the self-reports were very useful.

survey a technique for determining attitudes of many individuals by providing a pre-planned series of questions to which individuals respond.

Another approach to the issue of bystander apathy would be to do a survey. A **survey** is a technique for determining the attitudes of a large number of people. Some surveys use predetermined response options; this is commonly called a *fixed-alternative* survey. For example, a researcher might ask, 'Would you be willing to aid a stranger in distress?' and allow the answers, 'Yes', 'No' or 'I'm not sure'. To provide a bit more choice, the researcher might give a rating scale, with several options, from very positive to very negative, or from very likely to not at all likely. The fixed-alternative technique has several advantages, including being easy to administer and analyse. Its major limitation is that it allows little flexibility in answers, and thereby limits how much information can be obtained from respondents; in the worst case, the questions and response alternatives may be seen as inappropriate by the person responding. For example, asking a traditional Muslim woman if she would be willing to help a male stranger may lead to a 'no' – not because she wouldn't care, but because her religious beliefs and/or culture prohibit contact with male strangers. Rephrasing the question to ask, 'Would you be willing to ask your father or brother to help a male stranger?' might well lead to a 'yes' response. Thus, culture is one of many factors that affect people's responses, and how one asks the question is often crucial to getting meaningful results.

By contrast, *open-ended* surveys use skilled interviewers; they ask prearranged questions, but allow the respondent to give a spontaneous response. At first glance, this may seem more useful than a survey with fixed alternatives, but it has several drawbacks. First, it requires a skilled interviewer to get clear responses without coaching or leading the interviewee. (Coaching could

of course lead to **bias**, a systematic distortion of results.) Second, it takes considerable effort to analyse the sometimes lengthy responses, and it becomes difficult to summarize responses from a large group of people. Even if one is willing to face these obstacles, responses may not always be very meaningful. In one survey which asked people 'What do you think is the most pressing problem facing the world today?', the majority of responses simply restated the day's newspaper headlines! Without adequate time to reflect on the questions, there is a danger of such superficial responses; the more complex the issue, the greater this problem is likely to be. In such cases, a series of carefully developed fixed-alternative questions may actually give more meaningful information about people's views than will open-ended questions.

Surveys, even when open-ended, are more structured than interviews, and are employed to gather information from a relatively large number of individuals. Today, surveys are used extensively by government, political groups, corporations, the news media and other groups. Sometimes it seems as if we are bombarded by reports of survey results, many of which are less than insightful. (Does it surprise you, for example, that people who have lost their job are less optimistic about the economy than those who are employed full-time, as one survey reported?)

Surveys and Sampling Procedures

Whether the issues are earth-shaking or trivial, all surveys face a common problem: who to survey? At first glance, this may seem very straightforward – simply select a large number of people. Unfortunately, large numbers do not guarantee that a survey will provide meaningful results. To understand why, we need to consider two concepts: population and sample. A **population** is the group whose views one wishes to determine; a **sample** is the sub-group of the population which one actually studies. For example, if a political party wished to determine the attitudes of Canadian voters towards the prime minister, the population would be all Canadians eligible to vote. Since contacting some 20 million people would obviously be impossible, the researchers must use a smaller sample group. (In a case like this, they would probably contact between 200 and 1000 people, depending on the number of sub-groups and desired variance.) In selecting a sample, the goal is to obtain a **representative sample** – that is, one which fairly represents the population of interest – and thereby reduce the likelihood of bias in the results. In the case of the election poll, suppose the researcher went to a large shopping centre in Toronto at lunch time, and stopped every third person that went by. This procedure would not result in a representative sample, since not all Canadian voters are equally likely to be found at that site. (For example, it is unlikely that anyone working a night shift would be in a mall at lunchtime!) While various techniques exist for selecting a sample, they all share the goal of seeking a balanced representation of the population of interest.

As you might expect, sampling procedures in surveys (and in other forms of research) always have some potential for error. In order to deal with this, proper surveys always calculate the probable margin of error, and report this with the results. If you don't see such figures indicated, be cautious – especially in comparing numbers which are close in size. For example, an election survey reported the percentage of people who favoured each political party in an upcoming election (Toulin 1993). In this survey, the margin of error was ± 2 per cent, meaning if a reported value was 12 per cent, the actual figure in the population was likely to be between 10 and 14 per

population in statistics, the group whose characteristics one wishes to determine, and from which a sample is chosen.

sample in statistics, a sub-group drawn from a population; in research, the group which one actually studies.

representative sample in statistics, a sample whose composition matches the population from which it is drawn.

cent. In this case, the margin of error meant that the apparent difference between the third place party (12 per cent) and the fifth place party (8 per cent) was more apparent than real.

Obviously, the process of obtaining a sample for a survey is not a simple matter, and one must be cautious in looking at survey results – especially when the numbers are taken out of context. Nonetheless, when properly conducted, surveys provide an excellent tool for determining the views of a large group of people. (For further information on sampling, see the Appendix.)

Limitations of Self-reports

Self-report procedures, like interviews and surveys, are an important method of measuring behaviour; but their use also poses some problems (Schwarz and Oyserman 2001). One basic concern is *accuracy*: is self-report an accurate reflection of behaviour? After all, individuals may not always be clear about their own behaviour, owing to lapses of attention, memory distortions or other factors. This problem was highlighted by a classic study of racial discrimination, which examined attitudes of restaurant and hotel owners toward racial minorities (LaPiere 1934). Because the study was done in the USA in the 1930s, there was little human rights legislation to influence behaviour and attitudes. Travelling across the country with a young Chinese couple, LaPiere kept records of their experiences. Out of 251 establishments visited, only *one* refused to serve the couple (who typically went in first). Six months after their trip, a letter asking about policies was sent to the same establishments. The letter asked, 'Will you accept members of the Chinese race in your establishment?' Overall, 51 per cent replied to the letter, and of these, 92 per cent said they would *not* serve Chinese people. In this case, the owners *claimed* to be more discriminatory than they actually *behaved*!

More commonly, a person may lie to a researcher in order to create a more favourable impression. For example, the man who said his air conditioner prevented him from hearing anything when Kitty Genovese was attacked was presumably lying, given the cold weather; in this case, the lie served to justify his failure to intervene. Because of such uncertainties, researchers using self-report procedures must always consider the possibility that what people say is not what they really do (Wicker 1971). Furthermore, in many cases, such as surveys of sexual behaviour, there is no way to determine the accuracy of what people say (Rutter 2002). Consequently, researchers do not rely solely on surveys and similar self-report procedures as a means of under-standing behaviour.

Naturalistic Observation and Unobtrusive Measures

Since self-reports may be distorted in various ways, one might prefer to study behaviour through direct observation. One form of direct observation is **naturalistic observation**, which, as the name suggests, involves observing behaviour in a natural setting. Depending on the type of behaviour a researcher is interested in, this technique may be relatively simple, or quite difficult. In the case of bystander apathy, a major hurdle is the unpredictability of emergencies, which makes it almost impossible for a researcher to be present as events unfold. When the behaviour of interest is more frequent and/or more predictable, naturalistic obser-vation has the advantage of presenting behaviour in a real-world context. Observing in a natural setting avoids the potential artificiality of the laboratory, and for many behaviours, such as social interactions, this can be a great benefit. For example, naturalistic observation has frequently been used in studying children's play.

naturalistic observation a research method which is based on observing behaviour in a natural setting, without interfering or attempting to control conditions.

At the same time, naturalistic observation has some limitations. One obvious concern, referred to earlier, is *reactivity*: when people know they are being watched, they may act differently. In practice, this is often not a serious concern, since there are a number of ways to conceal the observation process. One technique, made famous by the American television show *Candid Camera*, is to use a hidden camera. In other cases, researchers will be able to use a one-way mirror, or other form of blind, to make their presence less noticeable. (The day-care centre at our university has a one-way mirror, allowing students in the early learning programme to observe the children at play.) Sometimes, simply staying in a situation long enough to make one's presence familiar is sufficient to reduce reactivity. Alan King, a Canadian documentary filmmaker, is noted for spending weeks or months with the people he wishes to film. He has commented, 'I carry the camera from day one, but there's no film in it for the first week or so. After that, they're so used to it, they forget about my presence.' In one memorable film, *A Married Couple*, King ended up recording the break-up of a marriage (King 1971).

participant observation a non-experimental research method in which the researcher becomes part of a group he or she wishes to observe.

Very close to King's approach is a variation of naturalistic observation called **participant observation**, in which the researcher becomes part of a group he or she wishes to observe. One example is described in *Among the Thugs*, where author Bill Buford joined a group of English rowdies to learn more about fan violence (Buford 1991). His involvement became so intense that he was injured during a post-game riot! Apart from personal risk, participant observation also poses a risk of biasing the results, since the researcher's interaction with the group may alter what would otherwise occur. In addition, as involvement with the group increases, the researcher's objectivity is likely to be reduced.

unobtrusive measure an indirect measure of behaviour intended to avoid the reactivity which can occur with direct observation; such measures typically require making complex assumptions about the relationship of the measure to actual behaviour.

In order to avoid the problem of reactivity, researchers will sometimes use **unobtrusive measures** as a means of recording behaviour. As the name implies, unobtrusive measures involve recording behaviour indirectly, rather than possibly disrupting it by direct observation. Examples would include checking the frequency of borrowing of various library books as a means of determining which is most popular, or checking sales of travel insurance after an airline crash to measure changing levels of anxiety among travellers (Webb *et al.* 1972). Inventing unobtrusive ways to measure various behaviours can be a creative exercise, but such measures can also be very difficult to interpret. In one instance, an archaeologist attempted to determine whether men or women lived longer in ancient Rome by counting the number of tombstones for each sex. The assumption was that among married couples, the first to die would be more likely to receive a tombstone; thus, finding more tombstones for men meant women lived longer! Of course, this ignores a wide number of possible factors, from cultural norms about death to the impact of war on male mortality rates. Consequently, when using unobtrusive measures, there is always a need to make sure that the characteristic observed is in fact measuring what one intends.

Case Studies

case study a detailed description of a single individual, typically used to provide information on the person's history and to aid in interpreting the person's behaviour.

One of the most fascinating aspects of psychology for many readers is the use of case studies. A **case study** is a detailed description of a single individual. Like a well-written biography, a good case study

seems to capture the essence of a particular person's behaviour. While this sense of drama is certainly one of the attractions of case studies for general readers, the value of this method as a research tool stems from the contextual detail it provides on the behaviour of an individual. Case studies basically arose out of medical practice, where developing a clear picture of a patient's background and current symptoms served as an important diagnostic tool. Many basic advances in psychological understanding have come from case studies, particularly in the area of brain function.

Try it Yourself

Imagine you want to measure soft drink preferences unobtrusively. How would you do this? Think about this before you go on reading.

You probably thought about sitting in a restaurant or school cafeteria and counting the number of people who bought certain soft drinks. But did you consider that not all soft drinks may be available in this particular location? Did you consider the time of day (since some people may prefer caffeinated soft drinks but will avoid them in the evening, or some people who don't normally choose caffeinated drinks might choose them in the late afternoon when their energy level is low)? What about other factors that could affect your measurements? Thinking about this now, do you trust your original method to give accurate results?

For example, the discovery of the speech area in the brain came about through the study of a patient who lost the ability to speak after a head injury (see Chapter 2 for more detail). Case studies are found in other areas as well. For example, Sigmund Freud (whose training was in medicine) emphasized case studies as a basic tool of psychoanalysis.

An effective case study can aid treatment, and can also deepen our insight into behaviour in general. However, like other methods, case studies have their limitations. One important concern is *representativeness*: a case study is essentially a sample of one, and consequently a researcher must be careful in generalizing to a larger population. For example, if a researcher studying Kitty Genovese's death focused on a single observer to the crime, the person might or might not reflect how other observers reacted. Fortunately, in many situations, the important aspects of a case may well be applicable to a broader group – for example, when studying basic neurological functions. (One of my (WEG) early psychology mentors, whose specialization was the visual system, used to comment, 'In physiology, a sample of one is sufficient.') Unfortunately, one cannot always be certain whether a case is representative or not. In one well-known instance, Russian neurologist A. R. Luria reported on a man who had a remarkable memory – so remarkable that he essentially never forgot *anything* (Luria 1968). In fact, the man (referred to as S.) would write down things which he *wanted* to forget, in the hope that his mind would no longer be obliged to retain them! As Luria studied S., he discovered that he was also unusual in that his senses appeared 'cross-wired': sounds could create visual images, and had textures and colours as well. This sensory linkage, called *synaesthesia*, apparently was a factor in his unusual memory. Luria's account makes remarkable reading, but it is not clear how relevant the case is to our general understanding of either memory or sensory functioning. Such cases are extremely rare: Richard Cytowic, an American neurologist who has studied another individual with synaesthesia, estimates that fewer than ten people in a million show any real indications of the phenomenon (Cytowic 1993). Consequently, such cases seem rather unrepresentative. As disappointing as this is, it does point out one of the ways that researchers evaluate representativeness – by looking for similar cases. If similar cases are found, this bolsters the representativeness of the behaviour.

A second limitation of most case studies is not so easily remedied. By their nature, clinical cases arise when someone seeks treatment; as a result, the doctor/researcher is presented with a situation whose causes are not directly known (one of the purposes of developing a clinical history, of course, is to try to learn what preceded the current situation). This frequently limits the ability to draw conclusions about causation, particularly for behaviour. For example, a doctor examines a teenage boy who has been in trouble with both school officials and the police. The case history reveals that the boy's delivery at birth was difficult, which may have resulted in minor brain damage. His mother died when he was 7, and his father, who has remarried, is emotionally remote and physically abusive. Which of these factors, if any, account for the boy's current problems? In this type of situation, it is difficult to draw clear conclusions, and there is a risk of confusing factors which may be significant and those which may be coincidental. Even in situations where some type of pre- and post-treatment comparisons might be possible, ethical standards require that concerns for the patient's well-being transcend any research goals. Consequently, case studies can be helpful in suggesting further directions for research, but are generally a poor tool for understanding the *causes* of behaviour.

Try it Yourself

Case studies can be fascinating reading and are often very compelling. The presentation of a real person instead of vague numbers (e.g., 'Sam' instead of '200 people') induces us to relate more to the person in the study, and we often put more faith in the case study because of this. (This is the reason why advertisers rely more on testimonials from satisfied customers than on statistics.) Unfortunately, the vividness of a case study does not demonstrate that it is representative. For example, an advertisement may relate the story of 'Joan's' success with an exercise programme, even though 'Joan' may be the only person to have been satisfied!

Think of an example of a testimonial ad you've seen: on what basis do you decide whether the case is representative or not? What else might you want to know in making your assessment?

Correlations and Non-experimental Research

Like surveys and naturalistic observation, most case studies represent non-experimental forms of research. Typically, the purpose of a case study is simply *descriptive*, to provide an accurate portrait of behaviour in a particular situation. While accurate descriptions of behaviour are an important starting point in research, description cannot conclusively tell us why behaviour occurs. Instead, a researcher may look for patterns which link different aspects of behaviour, such as age and willingness to help in an emergency. Any characteristic which can vary (like age) is called a **variable**; a pattern observed between two variables is called a **correlation**. Thus, if people's willingness to help others increases with age, then this would represent a correlation. This correlational approach is commonly used in non-experimental studies, since finding patterns is one of the important ways of increasing our understanding of behaviour. Correlational methods are used to identify possible relationships between factors being studied (in the example above, age and willingness to help).

variable any measured characteristic which shows variation across cases or conditions.

correlation a pattern or relationship observed between two variables.

Correlations can enable researchers to make sense out of what might otherwise seem a jumble of data. For example, Figure 1.10 shows performance on a term examination compared to term

correlation coefficient a descriptive statistic measuring the degree of relationship between two variables. For positive correlations, it is a number which varies between 0.0 and +1.0, and for negative correlations between 0.0 and −1.0; in both cases, the closer the value is to 1, the stronger the relationship between the two variables.

paper grades for students in a course I (WEG) recently taught. In this situation, I wanted to see how performance on the exam compared to that on the papers, since the scores reflect different types of assessment. By using a measurement called a **correlation coefficient**, it is possible to show that there is a moderately strong relationship between the two variables – that is, students tended to get similar grades on the two evaluations. Without the aid of correlational techniques, it would be difficult to know if there is a pattern or not. Thus, a researcher looking for links between measured variables can find correlations very helpful. (For a more detailed discussion of correlations and how they are measured, see the Appendix.)

The desire to find patterns in observational data is part of a larger goal, which is to understand how and why behaviour occurs. In fact, the desire to find correlations as a way of making sense of what we observe is not restricted to researchers. Studies have shown that the search for patterns is a natural human trait. Most of the time, finding patterns in our environment is adaptive – for instance, a young child quickly learns that brightly glowing objects, like stove burners and lights,

illusory correlation a cognitive error in which an individual perceives a relationship between variables where none actually exists.

are usually hot. Unfortunately, sometimes we see patterns where none actually exist; when this happens, it is called an **illusory correlation** (Halpern 1989). B. F. Skinner, the behaviourist, suggested that many forms of superstitious behaviour arise when people falsely perceive connections between their behaviour and a desired or feared outcome (Skinner 1948a). In essence, such superstitions arise out of illusory correlations. Our favourite example from everyday life is what people do while waiting for elevator doors to close: often they tap the edge of the door, push the 'Close' button repeatedly,
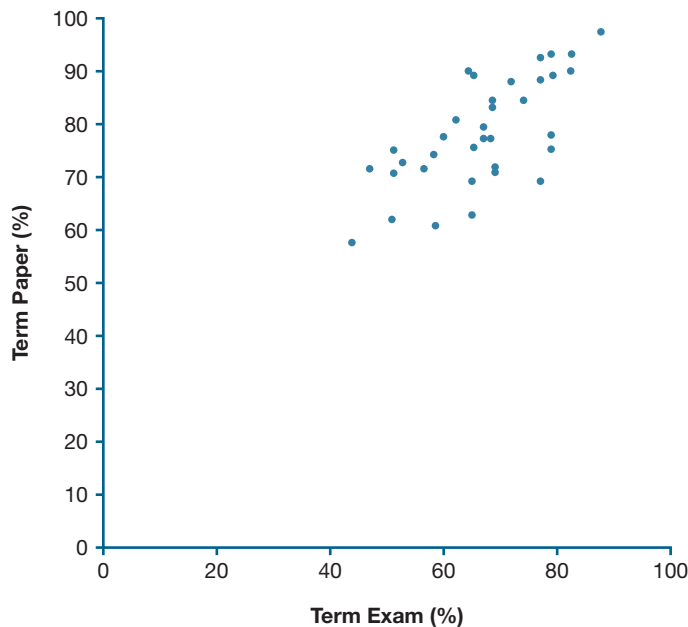

Figure 1.10 Correlation of Academic Grades These data, obtained from an actual class, show that there is a positive correlation (+.75) between performance on term exams and on term papers.

or engage in other actions which may actually do nothing to alter the programmed cycle of the elevator. In fact, this behaviour has been observed in an elevator in which the 'Close' button was disengaged and the door closed after a set period of time. Yet, because the action sometimes coincided with the doors closing, people become convinced it worked! Hence, while seeking patterns can be useful, in everyday life we should be wary of our tendency to see patterns even where none exist.

While finding patterns can help us to make sense of the world, correlations (including those found in non-experimental research) are limited in what they can tell us. The most important limitation concerns explaining *why* an observed pattern occurs. Ideally, we would like to be able to say something like 'A causes B' when we observe a correlation between variables A and B. Unfortunately, a correlation does *not* prove causation. In the example given above, rather than exam performance directly causing term paper performance (or vice versa), it is likely that there are underlying factors (such as ability and hard work) that affect both types of grades.

It can be very tempting to draw conclusions about cause and effect when we see a pattern in events, but this is also a very error-prone process. For example, most people know that different species of birds have distinctly different songs – robins vs. sparrows vs. finches, for instance. That is, there is a relationship between song type and species. From this, one might conclude that each species sings its particular song *because* of its species (that is, that the song is genetically programmed). While this is consistent with everyday observations and plausible in terms of genetic theory, in fact it is wrong – birdsong requires *learning*, somewhat like human language does (Marler 1970). Or consider this example: a study done in Hamburg, Germany, found that over a period of years, there was a correlation between the number of storks nesting in the city and the number of human babies born. That is, more storks were found nesting in those years in which more human babies were born. Obviously, folk tales about storks bringing babies are not true, despite this observed pattern! (The reason for this pattern *may* be a series of underlying links in terms of storks choosing chimneys as nesting sites, and the number of chimneys increasing as human population grows – *or*, it may be coincidence!)

In the end, finding a correlational pattern doesn't tell us *why* the pattern occurred; further research is required to find out its origin. Generally, one of three possible explanations applies:

1 one variable actually causes changes in the other;
2 there is a third factor linking the observed variables (for example, ability in the case of student grades); or
3 the observed pattern is really coincidental, and would not reoccur in a new set of similar observations.

Try it Yourself

Have you ever thought about someone when suddenly they telephoned you or appeared? This is the 'speak of the devil' effect. Given the three possible explanations of correlations, how would you interpret this phenomenon? Test the correlation yourself: concentrate on a friend you haven't seen for quite a while, and wait five minutes. Did he or she call or appear? Try concentrating on a few more friends in this way. How often do they call or appear as you concentrate? Does your testing affect your view of the 'speak of the devil' effect?

While one might gather further information by doing additional descriptive or correlational research, the best way to address questions of causation is by doing experiments.

Experiments

All of the methods we have discussed thus far, from interviews to naturalistic observation, share the same limitation: they cannot answer questions about the causes of behaviour. This difficulty stems partly from the complexity of behaviour, but also relates to the fact that non-experimental research methods cannot assess the many possible influences on it. To understand this, let us consider again the case of Clever Hans, the 'educated' horse. As was described in the introduction to this chapter, Hans's owner spent several years trying to teach him maths, geography and other information, and seemed to have succeeded: Hans was able to answer questions correctly by tapping his foot to spell words, or shaking his head to answer yes or no. Finally, after Hans had become rather famous, a psychologist named Oskar Pfungst came to observe (Pfungst 1911).

Mr von Osten, the horse's owner, had already invited a number of psychologists and animal trainers to observe Hans, and all had come away convinced that the horse's ability was real. However, their assessments were limited to observing Hans perform – a type of *naturalistic observation*; by comparison, Pfungst asked Hans to perform some simple experiments. One experiment showed that Hans could still perform if his owner was absent (thus ruling out fraud by the owner). A second test involved comparing how Hans performed with or without a blindfold. The results led to the conclusion that Hans used some sort of visual cues to determine his responses, since his performance was poor when wearing blinkers. Eventually, by varying the conditions, Pfungst was able to identify the mechanism by which Hans figured out answers: members of the audience who knew the answer would unconsciously make minor head and facial movements in anticipation of Hans's response (for example, slightly tilting the head down when expecting him to tap). While the cues varied from person to person, the general conclusion was supported by a further experiment, in which no one in the horse's view knew the answer; under these conditions, Hans could not answer correctly. Thus, rather than learning mathematics, history and geography, Hans had learned to read non-verbal cues in the onlookers, as a way of getting rewards of praise and carrots!

experiment a research design in which the experimenter uses a controlled situation and manipulates one or more factors (called independent variables) in order to determine their effect on one or more measures of behaviour (called dependent variables).

field experiment an experiment done in a natural setting, usually without the explicit awareness of participants; as contrasted to experiments done in a laboratory setting.

What is most striking in this story is how successful Hans was, and how long it took to discover the truth. Note that his owner was *not* engaged in deliberate fraud – he genuinely believed Hans was clever, and encouraged scientists and others to find an explanation. Only Pfungst was able to do so – by conducting a series of experiments. **Experiments**, unlike the most careful of descriptive and correlational methods, allow us to manipulate and control conditions in ways that make determining causation possible. In essence, these two factors – manipulation of a variable of interest, and control of factors that might confuse the situation – are what distinguish experimental methods from other forms of research. The experiments that Pfungst did all involved testing the same subject (Hans) under various conditions (for example, with or without blinkers). As we will see, most experiments involve comparing different groups of individuals under different conditions (a procedure commonly called a 'between-groups design'). Since Pfungst did his tests in Hans's ordinary environment, it represents an example of a **field experiment** (as compared to experiments done in a *laboratory setting*).

independent variable a variable in an experiment which is systematically varied by the researcher, in order to see what effect it has on behaviour

dependent variable in an experiment, the behaviour measured in order to evaluate the effects of the independent variable.

In any experiment, the researcher begins with a *hypothesis*, a statement describing a proposed relationship between two types of variables; the experiment is then designed as a way of testing the accuracy of this hypothesis. One type of variable, called an **independent variable**, is controlled by the researcher, in order to see what effect it has on behaviour. For example, Pfungst looked at the effect of Hans wearing blinkers vs. no blinkers. The other type of variable, called a **dependent variable**, is a measure of the behaviour under study. In Pfungst's experiments, the dependent variable was always whether Hans answered correctly or not. In the simplest form of experiment, there is a single independent and a single dependent variable, although as we will see, more complex designs are frequently used.

In order to see how researchers use experiments to test hypotheses, let us return to the problem of bystander apathy. As you may recall, the results of interviews with nearby residents indicated that although no one intervened, those who observed the attack on Kitty Genovese were hardly apathetic about the experience. Faced with the phenomenon that people seemed concerned, but did not react, two social psychologists named Bibb Latané and John Darley decided to explore the issue further (Latané and Darley 1969). As noted previously, the interviews suggested that most people assumed *someone else* had already telephoned the police. Given that several apartment buildings overlooked the location, it seemed reasonable for someone to imagine that other people were also aware of the attack, and therefore that others would have telephoned already. This meant that people had acted according to what they thought others were doing. Latané and Darley recognized that emergencies represent an unfamiliar and sometimes ambiguous situation, and that in such circumstances people often guide their behaviour by what others do. Consequently, the researchers decided to explore the effects of the presence of others on behaviour in an emergency. They did a series of experiments, of which we will discuss two.

participant (alt., 'subject') in research, an individual who is the object of study or the participant in an experiment.

The first experiment was done in a laboratory, and was dubbed 'A Lady in Distress'. **Participants** were recruited through ads asking for volunteers to take part in a consumer research study. (Latané and Darley recognized that telling people the true purpose of the study might distort their responses.) Participants came either alone or with a friend; if alone, they found either another volunteer, a confederate of the researchers who was pretending to be a volunteer, or no one. These variations represented the levels of the independent variable – being alone, with a friend, with a stranger or with a stooge (confederate of the researchers). Latané and Darley wanted to see what effect these variations had on the likelihood of someone intervening in a (staged) emergency, so the measure of intervention became the dependent variable. In this experiment, the emergency involved an apparent injury to the woman conducting the consumer survey: when the subjects arrived, they were greeted by a woman wearing a white lab coat, who gave them a questionnaire, and then went into the next room. Through the partially opened door, subjects could hear the sounds of someone climbing on a chair, and then a crash, followed by a scream and sounds of evident distress. If you were sitting in the waiting room, would you go to help? Would it matter to you if a friend or stranger was present? What do you think Latané and Darley found?

The primary measure of helping behaviour was whether subjects did anything to intervene, ranging from going next door to simply calling out. (Latané and Darley also measured a second dependent variable – how long subjects waited before responding. While we will not discuss the results for this variable here, it is worth noting that experiments can have more than one

dependent variable.) The main result was that individuals who were alone were the most likely to help – 70 per cent intervened. Groups consisting of two friends also showed a 70 per cent response rate, but since there were two people present, this is actually lower than would be expected if they acted independently. (Probability theory says the likelihood that at least one would respond, given the 70 per cent figure for a single person, is 91 per cent.) When two strangers witnessed the emergency, only 40 per cent of the time did one or both react (again, this is significantly less than the 91 per cent expected if they acted independently). When a stooge was present who deliberately ignored the emergency, the rate of intervention by subjects dropped to 7 per cent! Clearly, in this situation, the presence of another person reduced the rate of intervention.
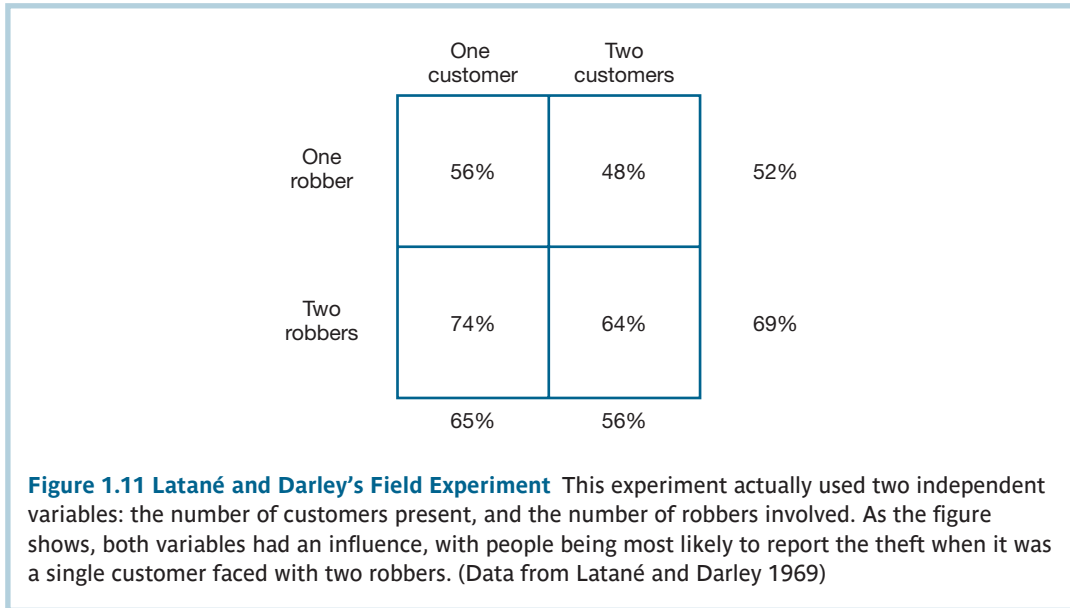
Despite the relatively high level of response by individuals who were alone, Latané and Darley were concerned that the situation may have been too artificial. After all, the participants had come to a laboratory for a form of psychological research, and may have been suspicious. While it would be difficult to conduct research on bystander apathy without some form of deception, Latané and Darley felt that the use of a laboratory design may have limited the usefulness of the research in terms of what is called **external validity** (which concerns the degree to which one can generalize the results beyond the specific situation). Obviously, if participants saw this situation as different from other types of emergencies, the experiment would have low external validity.

external validity an assessment of the degree to which one can generalize research results beyond the specific situation studied.

Faced with this concern, Latané and Darley decided to try a further experiment, which would be a *field experiment*. Like naturalistic observation, field experiments are done in a natural setting, without telling participants that their behaviour is being observed. Unlike naturalistic observation, field experiments involve the same elements of manipulation and control which are found in laboratory experiments. In this case, Latané and Darley decided to examine how people respond to a perceived theft in a store. Dubbed 'The Case of the Stolen Beer', the experiment involved repeatedly staging a 'theft' at a store selling beer in suburban New Jersey. (The store operator, of course, was a knowing participant, and the 'thieves' were actually confederates of the researchers.) As in the previous experiment, Latané and Darley were interested in the influence of another person's presence on response rates, but in this case they also added a second *independent variable*: the number of robbers (one or two). As before, their hypothesis was that an individual would be more likely to intervene when alone than when others were present. The robbery scenario was rehearsed to be consistent: while one or two customers (remember, the number of people present is an independent variable) were in the store, the robber (or robbers) would enter, ask the lone clerk for an item not on display, and while the clerk went to check the storeroom, would glance around, pick up a case of beer from a floor display, and walk out. When the clerk returned, he would ask the other customers if they'd seen what happened to the now-disappeared person(s). The customers, of course, did not know this was a staged event; from their point of view, the robbery was genuine. To measure rates of helping (the dependent variable), Latané and Darley defined helping as telling the clerk about the theft. (They felt it was unreasonable to insist on actively attempting to prevent the theft!)

One of the challenges of doing field experiments is the need to preserve consistency of conditions, while at the same time not revealing to participants that an experiment is in progress. (Note that, as in the previous study, this involved an element of deception.) In order to fulfil the conditions of the Latané and Darley experiment, it was necessary that the number of customers required (one or two) did not change during the staging of the robbery; thus, if a customer entered or left the store *during* the scenario, the staging was aborted. While a number of aborted trials occurred, eventually the researchers obtained results from 92 trials, half involving one

	One customer	Two customers	
One robber	56%	48%	52%
Two robbers	74%	64%	69%
	65%	56%	

Figure 1.11 Latané and Darley's Field Experiment This experiment actually used two independent variables: the number of customers present, and the number of robbers involved. As the figure shows, both variables had an influence, with people being most likely to report the theft when it was a single customer faced with two robbers. (Data from Latané and Darley 1969)

customer, and half involving two. Since the customers did not know that the robbery was staged, a secondary concern was to prevent harm to the confederates who were acting as robbers. Fortunately, no one attempted any heroic intervention that posed risk to those involved.

What would *you* do if you witnessed a theft like this? Would you attempt to stop the thieves, tell the clerk, or pretend you didn't notice the theft? The results from The Stolen Beer experiment are shown in Figure 1.11. Note that the data are presented in a two-dimensional matrix, because there are two independent variables: the number of customers (subjects) and the number of robbers (confederates). Look carefully at the results: note that overall, people were more likely to respond when there were two robbers rather than one! Why do you think this was the case? (One possibility overlooked by Latané and Darley is that failure to actively intervene was *easier to justify* when there were two robbers because of the increased risks, so that customers were more willing to admit having seen the robbery in this circumstance.) The pattern found in the previous study was also supported: people are more likely to intervene when alone than when others are present.

diffusion of responsibility a lessening of an individual's feeling of responsibility in a situation which involves other people.

social influence a general term for the various ways in which an individual's behaviour is affected by others, such as conformity pressures and social expectations and norms.

Therefore, the experiments by Latané and Darley support the hypothesis that the presence of others reduces helping behaviour in emergencies. This takes us a step further than interview data or naturalistic observation, in suggesting that it is not apathy, but a social process of some sort, that inhibits helping behaviour. What exactly is the nature of that social process? Latané and Darley offered two possibilities: diffusion of responsibility and social influence. **Diffusion of responsibility**, which can occur in any group situation, including committees, is the tendency to feel less personal responsibility when others are also perceived as responsible. (This is consistent with the reports in the Kitty Genovese case, when people assumed someone else must have called the police. While no real group existed, people apparently *perceived* themselves as part of a social unit defined by the locale.) **Social influence**, which is more subtle, reflects how others affect our behaviour – such

Try it Yourself

Have you ever heard the expression 'There's safety in numbers'? This saying reflects the belief that people are safer when with a number of people than when alone. Given the research on bystander apathy, what do you conclude about this saying now? Which study had the greatest influence on your outlook? Did you find the laboratory experiment, the field experiment or the case study of Kitty Genovese the most compelling? Why? Do you think that bystander apathy can be plausibly studied by doing experiments which simulate emergencies? Or should it be studied using naturalistic observation in real emergencies?

It may happen that in the future you will be with other people when you see someone have a minor accident (tripping, a sports injury, etc.). Knowing what you know now, what will you do?

as the tendency to look to others for guidance when facing an unfamiliar situation. For example, if you were at a formal banquet, and were uncertain which fork to use for the salad, you might try to see what fork other people were using. Unfortunately, the experiments described above cannot determine which of these two explanations is more important. However, in the Genovese murder, social influence seems less likely than diffusion of responsibility as an explanation, since the people who saw the crime were isolated from each other. (Subsequent work has indicated that in fact *both* factors play a role in most emergency situations, as will be discussed in Chapter 8.) What the research *does* tell us is that 'bystander apathy' is a misnomer, since when people don't intervene it doesn't necessarily mean they don't feel concern.

Quasi-experiments

Although experiments provide a powerful tool for exploring the causes of behaviour, it is not always possible to do experiments, for practical or ethical reasons. For example, it is unethical to perform experiments which might violate individuals' basic human rights. (Note that the customers in the second Latané and Darley experiment were not asked if they wished to participate; by some standards, this creates a violation of their rights.) Apart from ethical concerns (which will be discussed below), it is not always possible to establish the control of a variable which is required for a true experiment. For example, experiments which compare different groups of subjects (called 'between-subjects designs') require that subjects be randomly assigned to the various groups (Jones 1995). Yet if a variable like age, sex or height is being studied, the researcher clearly cannot alter the characteristics of an individual in order to create random groups. To deal with these situations, researchers use a method called a **quasi-experiment** (Campbell and Stanley 1966). In a quasi-experiment, the subjects are assigned to groups according to the particular characteristic under study (for example, smokers vs. non-smokers, or 8-year-olds vs. 10-year-olds). In this type of situation, any observed differences in behaviour may be due to *either* the identified characteristic, *or* some other systematic difference between the groups (for example, smokers may tend to exercise less than non-smokers). Clearly, quasi-experiments do not provide as clear an outcome as do true experiments, but they offer a middle ground between experiments and correlational methods.

quasi-experiment a research design in which participants are assigned to groups based on variables which cannot be manipulated by the researcher (e.g., age, height, sex)

To better understand how quasi-experiments work, let us consider an example related to sexual roles. People have long debated whether homosexuality is innate or learned. A study by LeVay attempted to address this by looking for structural differences in a part of the brain called

the hypothalamus, which is believed to play a role in sexual behaviour (LeVay 1993). Because of the measurement techniques used, the study required using brains of individuals who had died. To determine sexual orientation (and thus determine which group each brain belonged to), LeVay used *case-study* data indicating whether the individuals were known to have been homosexual, or presumed to have been heterosexual. As a control group, LeVay also examined the brains of women who were presumed to be heterosexual. Thus, the quasi-independent variable was sexual orientation, and the dependent variable was the size of the hypothalamus. The results indicated that the brains of the homosexual men were more like those of the women than those of the heterosexual men, implying that there is a biological link between brain structure and sexual orientation. Unfortunately, like all quasi-experiments, there are other possible interpretations of the results – for example, all of the homosexual group had died of AIDS, which might have resulted in changes in the brain. Alternatively, since brain structure can be influenced by experience, the structural differences might have been the *result* of sexual orientation rather than the *cause*. (While LeVay was very careful not to over-interpret his results, the popular press tended to be hastier in their coverage of the study – an example of why one should be cautious when reading media coverage of research results!)

In the end, quasi-experiments have their place in the repertoire of research methods, just as the other methods we have discussed do (see Box 1.2). Doing research requires making many choices, and good researchers always seek to balance a range of competing factors – not the least of which is a concern for ethical conduct.

Box 1.2 Basic Types of Research Methods in Psychology

Each method has its advantages and disadvantages, and researchers must consider the specifics of the research issue in order to determine which method is most appropriate for a particular situation.

Method	Description	Uses and limitations

CORRELATIONAL
  Survey
  Naturalistic
    observation
  Non-obtrusive
    measures
	Observing without controlling variables
	  Verbal self-reports of behaviour
	Observing in real-world setting
	
	Indirect measures of behaviour
		Useful where practical and/or unethical limitations prevent doing experiment, or for preliminary exploration of an issue
		Not possible to interpret cause of observed behaviour

EXPERIMENT
 	
  Laboratory
  Field
	Controlling situation and manipulating
	  independent variable(s)
	Subjects come to experimental setting
	Done in real-world setting
		Only method to permit making interpretation of causation
		Can be difficult to execute; sometimes not practical/ethical

QUASI-EXPERIMENT
 	
  Laboratory
  Field
	Controlling situation and selecting
	  subjects according to characteristic
	  of interest (e.g., age, gender)
	Subjects come to experimental setting
	Done in real-world setting
		Necessary for studying variables which cannot be controlled
		Provides only limited information about possible causes

Try it Yourself

It's often assumed that older people like different music than younger people. Try to design a quasi-experiment to test this. Try this before you read on.

Presumably you decided to ask older and younger people their music preferences. Did you specify what constitutes 'older' and 'younger' people? That is, did you consider that 20-year-olds and 15-year-olds (all of whom might be considered 'younger') may have different tastes? Similarly, what age groups did you designate as 'older people'? It is likely that your parents and your grandparents might differ from each other in their tastes in music as well. Clearly, the terms 'younger' and 'older' need to be specified. But there's more: are there other factors that may play a part? For example, older people raised in different countries may well have different preferences in music. Or younger people raised in a rural area as opposed to a city may differ. What other factors do you think might contribute to any differences observed?

Ethics in Psychological Research

As we have seen, the desire to understand behaviour has led to the development of a variety of methods based on scientific principles. Over time, the application of these methods has significantly increased our understanding of human behaviour. While it would be comforting to portray psychology as simply the neutral and impartial pursuit of understanding, it is also true that research can be intrusive, and possibly even harmful. To say this is not meant to portray psychologists as evil, like some lab-coated villain in a low-budget movie, but to acknowledge that no human activity is value-free. The concern for values applies to all scientific endeavours, but the focus on living beings (animals as well as people) in psychology makes concerns about ethics more immediate than in the natural sciences. In part to foster high standards, the psychological associations in every major country publish codes of ethics for their members (for example, American Psychological Association 2002a; British Psychological Society 2006; Canadian Psychological Association 2000). Despite this attempt at uniformity, ethical standards in research, like all social standards, are shifting thresholds, which seldom produce universal agreement. Nonetheless, concern for ethics in the conduct of all research is an increasingly significant issue for both researchers and society, as Joseph Rotblat, a winner of the Nobel Peace Prize, has affirmed (Rotblat 1999).

The most basic ethical concern is the desire to avoid causing harm. While this seems very straightforward, in practice it can be more ambiguous (see Box 1.3). Consider this example from medical research: in the late 1980s, it was discovered that the drug AZT had some possible benefit in the treatment of AIDS. Since the drug was unapproved, doctors began a double-blind study to test its safety and effectiveness. However, because no other treatment existed for AIDS (a fatal disorder), trials were halted before the study was completed, in order to provide AZT to all participants. In this case, the concern was that it was unethical to withhold a promising drug from those in need (the placebo group). Unfortunately, cancelling the study had the negative effect of slowing the process of evaluating AZT; consequently, it was not discovered until 1993 that AZT was not as beneficial for those who were HIV-positive but not yet showing symptoms of AIDS. Should the researchers have continued the original study, even if it meant denying some individuals with AIDS full access to AZT? Or did the immediate need outweigh the concern for future knowledge, and therefore the welfare of other individuals in the future? In circumstances like this, one sometimes finds conflicts between different ethical principles.

obedience to authority the tendency to act in accordance with instructions from someone who is perceived as having social authority, even when it is counter to one's own inclinations.

A case which directly involves psychological research relates to a famous study of **obedience to authority** (Milgram 1963). This study was concerned with how people respond to authority figures when instructed to do something they feel unwilling to do. (While often referred to as an 'experiment', Milgram's original study actually had no control group.) Participants were recruited through a newspaper ad to participate in 'a study of learning and teaching methods'. When they arrived at the laboratory, a researcher in a white coat showed them an impressive-looking device which, it was explained, was used to punish wrong answers with a series of electric shocks (see Figure 1.12). The volunteer was to be the 'teacher', while a 'learner' in the next room would receive the shocks. The teacher met the learner (actually a confederate of the experimenter) and watched while the electrodes were strapped to his wrists; the learner expressed some apprehension as to how the shocks might affect his heart condition. The researcher stated that, 'Although the shocks can be extremely painful, they cause no permanent tissue damage.' During the actual 'learning' session, the teacher and learner communicated from adjacent rooms, via an intercom. As the experiment progressed, the researcher instructed the subject to increase the shock each time a wrong answer was given.

debriefing discussing the nature of a research study with participants at its conclusion, in order to explain the true nature and goals of the research and to answer any questions or concerns.

(The shock apparatus had a series of switches in 15-volt increments, going from 15 to 450 volts – the latter was also labelled 'Danger XXX'.) Despite possible personal misgivings, protests from the learner, and finally, no sound at all from the learner, the subject acting as teacher was instructed by the researcher to go to the highest voltage level. It is hard, while sitting comfortably reading this account, to imagine how upsetting the participants found this situation. It may be even harder to understand why they continued – for in Milgram's original study, 65 per cent continued to the maximum shock level!

Milgram's study has subsequently become well known, both for its results and the controversy over its methods. After taking part in the study as described above, participants discussed the experience with the researcher. During this **debriefing**, participants were told that the apparatus,

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Box 1.3 *Research Ethics in a Multicultural World*

A basic principle of ethics in doing research is respect for persons (Smith 2003). Among other things, this means that one should try not to offend or insult people. But how can one be certain about what is acceptable or appropriate? This can be very tricky when we try to do research in a multicultural setting, or in cultures other than our own. What seems like a perfectly reasonable question or task may be perceived by people of other cultures as being inappropriate or even offensive. For example, it may be considered acceptable to ask couples about their sexual activity in downtown New York City, but it may be highly unacceptable in Islamic Pakistan. How one interprets research data can also vary with culture. Thus, a clinician attempting to diagnose a mental disorder is more likely to err when clinician and patient are from different cultural backgrounds (see Chapter 9). How does one define research ethics in a multicultural world?

In general, ethical codes expect psychologists to show cultural sensitivity (including awareness of, and respect for, cultural differences) – but applying this in practice is not always simple (Rice and O'Donohue 2002). It is a particular challenge when one considers individuals who are vulnerable, such as those seeking help for mental disorders (Baeaernhielm and Ekblad 2002; Bolling 2003). In such cases, researchers must seek to balance the interests and rights of the individual, along with the scientific concerns for representativeness and completeness. As with many such issues, there is no simple answer, but recognizing the problem is an important first step.
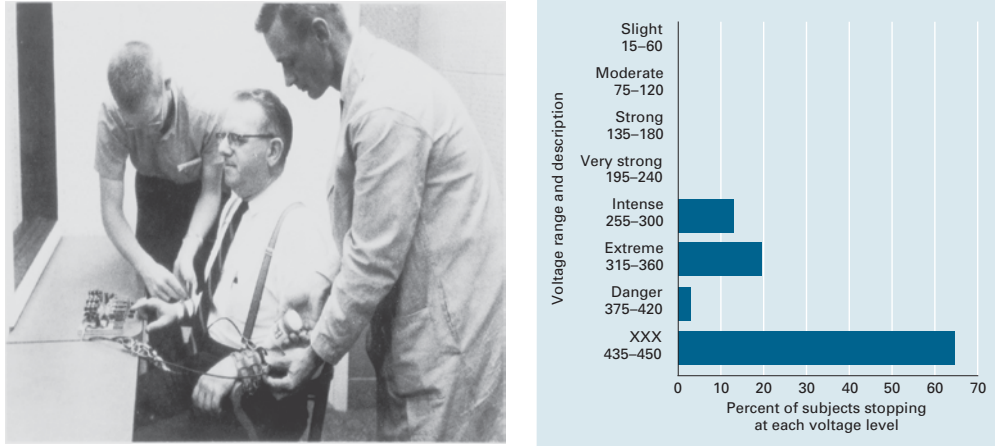
Figure 1.12 Milgram's Obedience Experiment The man being strapped in the chair and having electrodes attached is the 'learner' whom participants were instructed to punish for wrong answers by delivering electric shocks. As the graph shows, most participants continued to the maximum voltage level.

as well as the entire situation, was simply a ruse; the learner was never actually shocked, and his protests were carefully scripted acting. The *real* purpose of the study was to see how far people would go to obey an authority figure. The fact that most people went to the top of the scale, Milgram has argued, shows how important it is to understand the roots of obedience.

At the same time, many of Milgram's volunteers found that complying was very upsetting, since they believed that the learner was actually suffering real shocks. For those who fully complied, this upset was perhaps compounded by the realization that, had the shocks been real, they might have killed someone. The debate then comes down to this: does the knowledge gained about obedience offset the emotional upset to the subjects? Milgram himself has gone to great lengths to justify the study, and has used follow-up studies of the original subjects to indicate that no enduring trauma ensued: after one year, 84 per cent were either glad or very glad to have taken part (Milgram 1964). However, this might be explained by the theory of *cognitive dissonance*, which says we tend to alter beliefs to fit with past actions (Festinger 1957); from this viewpoint, the subjects might have been trying to justify their original behaviour.

Critics have suggested that Milgram was insensitive to the suffering of his subjects. For example, Baumrind criticized Milgram for statements like 'a mature and initially poised businessman … within 20 minutes … was reduced to a twitching, stuttering wreck' (Baumrind 1964). Brandt has offered a meta-analysis of the situation, suggesting that participants' willingness to inflict suffering in the name of research was paralleled by Milgram's own willingness in the same cause. From this viewpoint, Brandt argues, the experiment was unnecessary, since Milgram's own attitude would tell him how others would respond (Brandt 1982). It seems clear that Milgram was not deliberately malevolent, and did in fact take considerable care to debrief his volunteers after their participation. At the same time, it seems probable that a less harmful technique could have been found to test the concept of obedience. (It is also possible that the results of a less dramatic situation might be perceived as less applicable to the real world.) Ultimately, ethical standards *do* evolve, and it is probable Milgram's research would *not* be approved if it were to be proposed today. (At our university, the rules of the ethical standards code state that the perceived benefits

of research cannot be used to justify causing harm to research subjects.) In the end, Milgram's study highlights the difficulties of achieving consensus on ethical matters.

Milgram's study also points out the ethical conflicts raised by another issue: the use of deception in research. Technically, *deception* occurs whenever participants are not fully informed about their participation in research – although this is a rather stringent, and possibly unrealistic, standard. As has been noted already, the phenomenon of reactivity makes it impossible to provide full disclosure in all research situations. In naturalistic observation, for example, the researcher cannot typically seek the consent of those being observed before doing research, since that could lead to altered behaviour. In social psychology in general, whether observing in the field or doing experiments in the laboratory, research requirements often make it necessary to withhold information or even to actively deceive participants. Obviously, deception (and with it, the lack of opportunity for informed consent) is open to abuse, and must be used with caution. Most ethical codes allow deception to be used, with certain restrictions (American Psychological Association 2002a; British Psychological Society 2006; Canadian Psychological Association 2000). The guidelines typically require that the research cannot be done otherwise, that participants are not coerced to take part, that they will be fully debriefed after participating – and that there be a justifiable value to the outcome of the research (normally, an increase in understanding of behaviour). Most researchers agree with this approach, and argue that under these conditions no real harm occurs to participants (Christensen 1988). Nonetheless, the issue is still contentious. Kelman has argued that the use of deception can undermine the relationship between researcher and participants, and suggests that deception should be used only when there is no alternative way to do the research (Kelman 1967). Warwick goes even further, suggesting that the willingness to use deception contributes to undermining public perceptions of the trustworthiness of public institutions (Warwick 1975). Brandt has argued that essentially the APA code amounts to saying the end justifies the means – it's all right to deceive subjects if society gets something out of it (Brandt 1982).

The concern about long-term effects of deception is illustrated by a follow-up to Milgram's study, which sought to demonstrate that the same effects could occur in the real world (Hofling *et al.* 1966). In this case, researchers set up a field experiment, in which nurses at a hospital received a telephone call from an unfamiliar staff doctor, instructing them to administer what appeared to be a toxic dose of medication to a patient. The doctor explained that he was on his way to the hospital and would sign the authorization when he arrived (of course, the situation was designed to ensure no actual harm came to patients). True to expectation, 21 of 22 nurses tried to administer the 'toxic' dosage. This study demonstrated the external validity of Milgram's results, and is cited approvingly by Zimbardo (1992) for this reason. What is *ignored* by both the original researchers and Zimbardo is the question of how this experience affected the nurses subsequently: did it make them more distrustful, and if so, is that ultimately good or bad? The consequences of such deception seems to extend well beyond the confines of the experiment itself.

In the end, it is impossible to find universal agreement on this issue. Having served on ethical review boards, we know that good researchers recognize that they bear a moral responsibility for their work, although cases do arise where researchers are not sufficiently sensitive to possible ethical conflicts. Ethical boards exist, in fact, to ensure that the proponent of a study is not the only one to evaluate its suitability. In some research, such as research on cognitive processes, deception is not an issue, and the greatest risk to subjects is the possibility of boredom. However, some types of researchers have no such luxury, and must often balance the desire for knowledge against other kinds of values. At the very least, it is to the credit of the discipline that the debates about ethical issues are publicly argued. Psychology exists to enhance our understanding of

ourselves, and as long as researchers remain sensitive to the ethical responsibility this entails, then psychology will represent *humane* behaviour as well as *human* behaviour.

Try it Yourself

Imagine that you are a researcher asking an ethical review board to approve an experiment similar to Milgram's obedience study. What arguments would you make to the board? Now imagine that you are a member of the board. Are you convinced by the arguments? What alternatives might you suggest to address the underlying research goals?

CONCLUSION

In this chapter, we have looked at the history and nature of psychology as a discipline. In the process, two basic themes have emerged. The first is that psychology, like all science, is a human endeavour, and the process of understanding behaviour is influenced by the perceptual processes which we use in interpreting everything which we experience. One aspect of this is the selective nature of perception. Given the complexity of behaviour, researchers cannot avoid being selective in what they study, and this is reflected in the nature of the different approaches to psychology which this book considers. Perception is also important in that we actively interpret the world as a way of trying to make sense of it. The interpretations we make are based on the schemata which we use to organize our thinking, and reflect both our experiences and the culture in which we live. Psychological theories are a result of attempts to organize our understanding of the world. Hence, the existence of different approaches within psychology can be partly understood in terms of the processes of perception.

The second basic theme is that psychology faces specific challenges in the process of studying behaviour. Like the natural sciences, psychology is empirical, and emphasizes the importance of observations in developing an understanding of behaviour. However, physics or chemistry deal with inanimate matter, and the concepts can seem remote from personal experience. By contrast, psychology is concerned with the understanding of our own actions and experiences. Because people are self-aware, researchers must be careful that the process of observing does not alter the behaviour of interest. This concern underlies many of the research methods employed, from naturalistic observation to field experiments. In addition, because psychology deals with living creatures, ethical concerns exist which do not arise in the natural sciences. These two factors make psychology very different from the natural sciences.

At this stage, you may feel that the challenges are overwhelming, not only for psychologists as researchers, but also for you as a reader. If so, don't despair. This chapter has tried to outline some basic themes, but it cannot tell the whole story. Indeed, while much of the meaning lies in the themes, the excitement lies in the details – the specifics of how we act, and why. In the chapters ahead, you will encounter more of the specifics, and also develop a better understanding of the broader themes and issues. As you proceed, you will find that each chapter adds to your understanding of both behaviour and the way psychologists study it.

Each of us has wondered what we are, and why; psychologists have dedicated their lives to answering these questions. While no final answers can be offered, in the chapters ahead, we will see that even partial answers can offer both excitement and insight.

Putting It All Together

As you read about the various approaches in the next several chapters, you will find that there are many issues on which different approaches disagree. This is not surprising, given that competing theories are a natural part of the scientific process, and currently no one approach can fully explain human behaviour. However, while competition exists, it is also true that in many ways the approaches can provide complementary insights. Consequently, when taken together, they can often provide a more complete view of human behaviour than does any one approach alone. To help you understand this, consider the example presented below. As you read about each approach you will find another section like this one, discussing a different aspect of the person and behaviour. By putting the discussions together as you go, you can gain a more complete understanding of the underlying behaviour, and of how the approaches relate to each other.

Scenario

Sam is a first-year university student. He is bright, friendly and easy-going, the type of person that people say is a 'really good guy'. He comes from a stable, middle-class family, and his parents have always been loving and supportive. They instilled in him a desire to work hard in order to achieve success in life. Both parents work; one is an accountant, and the other is an interior designer. They always told him, 'You have the ability to be the best, and that's what we know you will be.'

Sam worked hard to get into university, and he thought that he was well prepared for the challenges. He was admitted to a well-regarded university (his first choice) in a city some distance from the small town where he grew up. At first he found being away from home difficult, but now he has begun forming new friendships. He is now midway through the school year, and to his dismay, things have not gone as well academically as he had anticipated. In his first semester, he found the workload to be much greater than he expected, and he found himself worrying about whether he would be successful. He started getting very anxious about tests, and as the semester went on, he began feeling overwhelmed with the amount of work he had to do. But instead of tackling the work, Sam found himself procrastinating. He would put off getting started on his studying and his assignments until the last minute, choosing instead to socialize with his friends, Nigel and Rajiv, play video games, and watch TV. At the same time, these activities were not that enjoyable, because thinking that he should have been working left him feeling guilty. He has met Vanessa too, and he found himself spending a great deal of time fantasizing about whether she might become his girlfriend in the near future. But he's afraid to ask her to go out with him – what if she says no? She's an independent young woman with a strong desire for a career, and Sam fears that he might be too traditional a man for her. By cramming for exams and staying up all night writing essays, Sam managed to pass his first semester, but found he was exhausted, and ended up in bed with flu for a week during the semester break. Now, facing his second semester of university, Sam is even more anxious: the workload is not going to decrease, and just thinking about it leaves him feeling knots in his stomach. Yet Sam is already finding himself procrastinating, and feeling badly about himself; he wonders if he really is capable of succeeding academically. And will he get the courage to ask Vanessa for a date before she finds someone else?

Given Sam's background and prior behaviour, how can we understand his current situation?

CHAPTER SUMMARY

- Psychology is defined as 'the scientific study of behaviour'. By *behaviour*, researchers variously mean observable responses, inner experience (thoughts, feelings, etc.) or both – the variations are one of the factors that distinguish the different approaches within psychology. It is *scientific*, in that it is based on the methods of systematic observation and analysis which are part of all science.

- The task of understanding behaviour can be related to *perception*. Rather than being a passive representation of sensory input, perception is an active process of *selecting* and *interpreting* the information provided by our senses. Faced with the complexity and diversity of behaviour, psychologists make choices in terms of what aspects to study, the research methods to be used, and other issues.

- These choices are reflected in the various *approaches* to the study of psychology, which differ in their basic assumptions about behaviour, as well as their methods and theories. In effect, each approach represents a distinct framework for the understanding of behaviour.

- Psychology developed from two different traditions, associated with philosophy and natural science. The influence of the natural sciences is seen in the work of Wilhelm Wundt, who founded the first major laboratory for psychology at Leipzig in 1879. The influence of philosophy is reflected in the ideas of William James, an American contemporary of Wundt's who wrote a highly influential text on psychology.

- Five major approaches have been influential within psychology: the *biological, behaviourist, cognitive, psychodynamic* and *humanistic.*

- In psychology there are many possible ways of collecting observations, which vary in terms of *measurement techniques* (*self-report* or *direct observation*), *setting* (in a *laboratory* or in the *field*) and *research method (experimental, non-experimental* and *quasi-experimental*).

- Non-experimental techniques include *interviews, surveys, case studies, naturalistic observation* and the use of *unobtrusive measures*. Non-experimental methods are *correlational* – that is, they assist us in finding patterns in behaviour, but do not directly identify the causes.

- Experimental methods always involve systematically varying one or more *independent variables* in order to see how the changes affect behaviour. This systematic manipulation, together with control of other factors in the situation, is intended to aid in understanding the *causes* of behaviour.

- Quasi-experimental methods are used to study variables that cannot be directly controlled, like age or gender, or in situations where manipulating a variable would be unethical. Quasi-experiments offer more insight into causation than do non-experimental methods, but can be more susceptible to interpretation problems than true experiments.

- One issue which is common to all psychological research is the importance of *ethics*. Among particular concerns are the possibility of causing harm, and the role of deception vs. informed consent.

🔑 Key terms and concepts

psychology	population
causality	complexity
perception	representative sample
Gestalt theory	naturalistic observation
schema	unobtrusive measure
empirical	case study
theory	correlation
hypothesis	experiment
self-report	independent variable
interview	dependent variable
survey	quasi-experiment
sample	debriefing

Test yourself questions

1 Why are different approaches to psychology necessary?
2 How does perception affect the study of psychology?
3 Why does psychology use the scientific method?
4 What are the differences between correlational methods and experiments?

Online *Learning* Centre

When you have read this chapter, log onto the Online Learning Centre website at **www.openup.co.uk/glassman** where you will find answers to these Test Yourself questions and suggested answers to the Try it Yourself activities, plus many more learning resources to help you study psychology.

Suggestions for Further Reading

- **Fancher's** *Pioneers of Psychology* (1996) provides a highly readable historical overview of psychology, focusing on the major figures who helped shape the discipline.
- **Luria's** *The Mind of a Mnemonist* (1968) is a short book which shows the value of case studies, while also providing a vivid account of an individual with a truly remarkable memory.
- **William James** was both an influential psychologist and a wonderful writer. *The Varieties of Religious Experience* (1902), his last book on psychology, offers both an excellent introduction to James's thinking, and a still-relevant exploration of one of the most profound aspects of human experience.
- If you are interested in learning more about research methods, you should read **the Appendix** of this book (which also includes suggestions for further reading).
- *Unobtrusive Measures: Non-reactive Research in the Social Sciences* (1972), by **Webb *et al.*,** is an interesting account of how to do research without intruding.
- *On Being a Scientist: Responsible Conduct in Research*, published by the **National Academy of Science,** provides a thought-provoking discussionof ethical issues, including many specific examples. (It is available on the web at www.nap.edu/readingroom/books/obas/contents/values.html.)