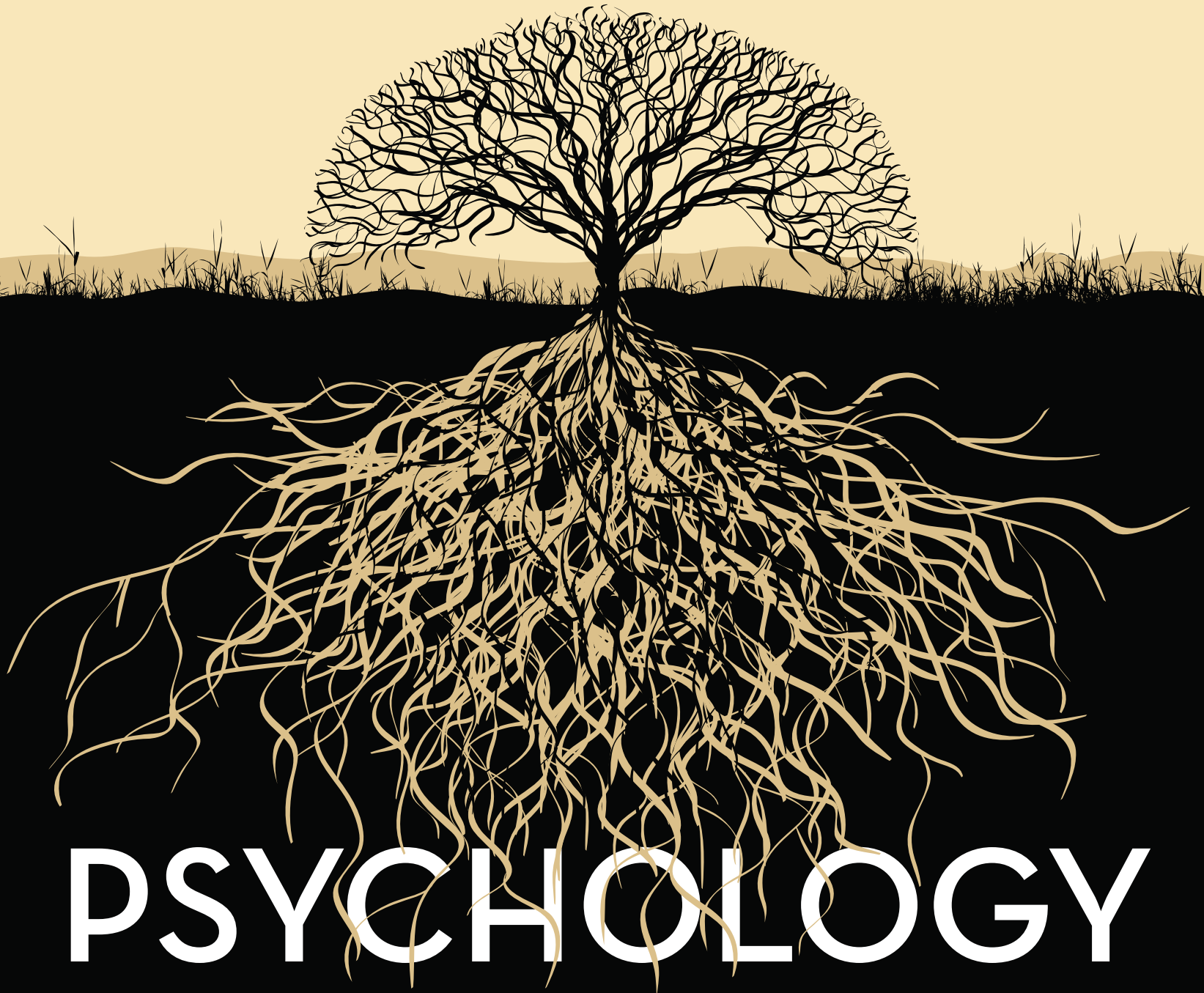


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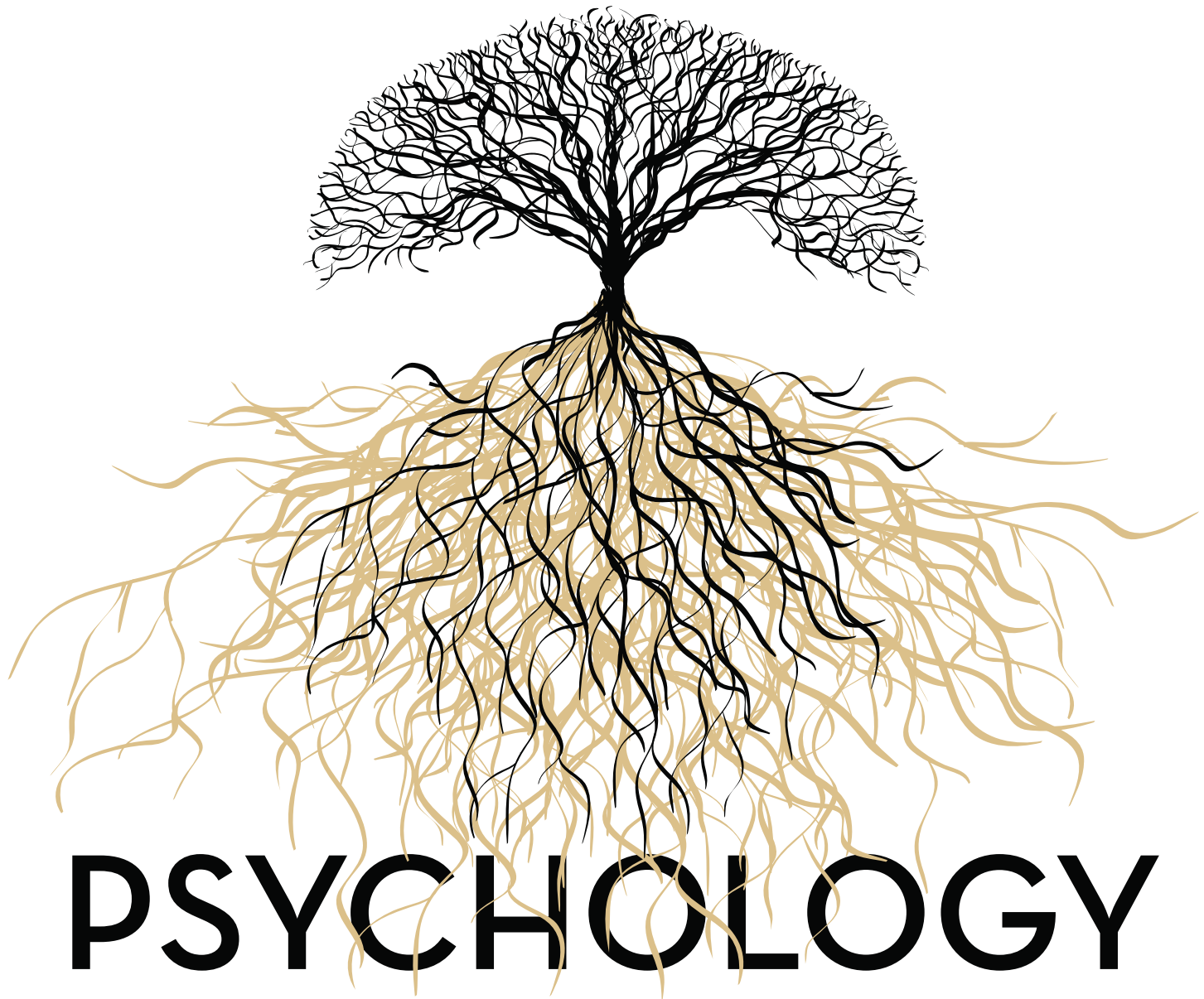
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Preface

Mind and behaviour is a fascinating area of study. Through *Psychology: The Science of Mind and Behaviour 3e*, we have the pleasure and privilege of sharing this with you. The study of psychology has something to offer everyone, whether it is the development of new approaches to everyday life issues, an appreciation for the myriad ways psychological research has changed human understanding, or engagement with new concepts and theories.

This third edition of *Psychology: The Science of Mind and Behaviour* has been fully revised to help you achieve your personal goals in your psychology studies. Feedback from lecturers, tutors and students across Australia has contributed to making this edition the best learning resource for you.

This textbook is a core source of information to help you with your studies. We know that not everyone learns best by reading long extracts of content. That is why each chapter is filled with features to help you study in the way that best suits you. While the emphasis is on Australian research and experience, each chapter has a global focus to give an international perspective.

The learning experience also moves beyond the pages of this textbook and into the interactive and engaging Connect and SmartBook platforms. These are powerful resources that are proven to improve grades and get you to where you want to be.

FOLLOWING WHERE THE SCIENCE LEADS . . . TO CRITICAL EXAMINATION

While reading this text we want you to critically examine the content you are learning. To support this critical examination, we first help you understand the content. As we move from topic to topic, and from chapter to chapter, we don't want to leave you feeling that psychology is merely a massive collection of disjointed facts. And, to those of you who may be expecting answers to important personal and intellectual questions, we must tell you that behaviour is complex, so answers to such questions are rarely simple.

To meet these challenges, we start with the science. Genetic and neurological contributions to behaviour, memory and perception are covered in clear and relevant ways. By following where the science leads, you can learn the core concepts involved in language and thinking, intelligence, normal human development and personality and are ushered through the process of critical examination of recent discoveries in these areas. Psychologists typically deal with issues that affect mentally well people, but there is also a need to consider psychological disorders and the effectiveness of the available treatments from a critical standpoint.

We recognise that psychologists study behaviour from multiple vantage points that emphasise biological, psychological, and environmental and social determinants. This recognition will show you that, despite the wide ranging topics psychologists study and the diverse approaches they use, there is an underlying commonality to how any topic can be examined.

To show you where the science leads and how to follow the trail, *Psychology: The Science of Mind and Behaviour 3e* will help you develop basic tools of critical examination through a wealth of features both in this text and online.

Felicity Allen
Lead Editor

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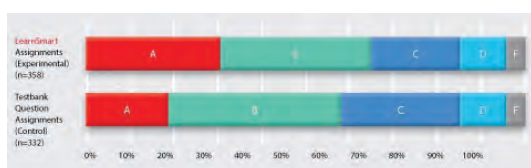
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LearnSmart maximises learning productivity and efficiency by identifying the most important learning objectives for each student to master at a given point in time. It knows when students are likely to forget specific information and revisits that content to advance knowledge from their short-term to long-term memory. LearnSmart is proven to improve academic performance, ensuring higher retention rates and better grades.



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Digital resources

McGraw-Hill Connect brings every learning resource that accompanies this text together in one place, and can also integrate and interact with your LMS. Connect gives instructors the opportunity to provide a blended or flipped classroom approach to their teaching.

INTERACTIVE ACTIVITIES

Interactive activities not only help students to master the core concepts, but give them an opportunity to practise and apply them through experiential learning.

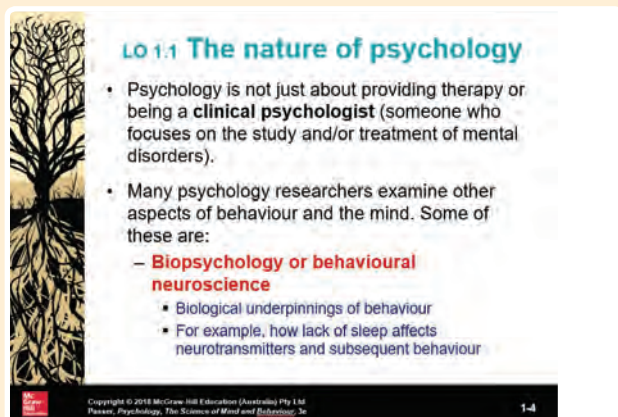


1. What is the best way to characterize the attachment patterns of very young infants such as Colin?

- Babies don't seem to notice other people and are happy as long as they are comfortable and fed.
- Any adult will do as long as they are gentle and loving.
- Mothers are the primary attachment figure and infants can be comforted only by her.
- Women seem to be preferred over men.

POWER OF PROCESS


Power of Process guides students through the steps of critical reading, analysis and writing. Teachers select journal articles for students to analyse and comment upon, gaining insight into application of the scientific method.



LO 1.1 The nature of psychology

- Psychology is not just about providing therapy or being a **clinical psychologist** (someone who focuses on the study and/or treatment of mental disorders).
- Many psychology researchers examine other aspects of behaviour and the mind. Some of these are:
 - Biopsychology or behavioural neuroscience**
 - Biological underpinnings of behaviour
 - For example, how lack of sleep affects neurotransmitters and subsequent behaviour

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Passer, Psychology: The Science of Mind and Behaviour, 3e



Rorschach's Inkblots

start over

Okay, now let's switch hats from examined to examiner. Look at your own responses in the context of what examiners know to be common responses and interpretations. Do you think these guidelines for interpretation offer insight into someone's motives and personality?

(Remember there is no "right" answer; some answers are just more common than others. In an actual clinical setting, subjects can rotate and manipulate the card which also influences the most reported responses.)

Click "continue" when you have finished.

back continue

The most common response: **Bat, butterfly, moth**

Card II: The first reaction of many people to this card is to see a winged creature. Additionally, the blot lends itself to the perception of human figures especially female. Individuals who are focused on their bodies may see anatomical features such as a pelvis.

Source: The Rorschach Technique, 4th Edition (Boston, MA: Houghton Mifflin Co.) (2nd Edition, Pp. 18) (Source: Alex Q. Scazzano, Sandra L. Goren (2008). Rorschach and: assessing and interpreting. New York: Intentional Press, Inc.)

view inkblot

VIDEO AND ANIMATION QUIZZES

Videos and animations cater to students who study better with more visual and interactive content, with accompanying questions to test the knowledge they have acquired.



connect

Power of Process

Select Strategies

Before Reading During Reading After Reading

Click the title or likely prompt to add the full of any process strategy.

Note: If you have a student with visual or motor skills accessibility needs, do not use strategies that require annotation.

- Consider the title (What does the title make you think the article will discuss? What do you expect to learn from this article based on the title?)
- Analyze the title (What details about the author's methodology are included in the title? What does the title tell you about the type of design used in this study? What details are not included in the title?)
- Recognize prior knowledge (What have you already learned that relates to this topic?)
- Consider the methodology (What information do you already know about the type of methods used to study this topic? What conditions can you manipulate about the particular methodology used in this article?)

INSTRUCTOR RESOURCES

Instructor resources, including a Testbank, PowerPoint presentations, an Instructor's Manual, sample exams, additional cases and Artwork Library, will assist lecturers and tutors in delivering their Introductory Psychology course.

Text at a glance

DEVELOPED FOR AUSTRALIAN STUDENTS BY AUSTRALIAN AUTHORS

This third edition of *Psychology: The Science of Mind and Behaviour* has been fully revised by expert Australian authors to help students to engage with and apply the concepts and theories of psychology.

Each chapter includes work by Australian and New Zealand academics and researchers, local statistics, cases and examples. In each chapter's Australian Focus feature we explore a uniquely Australian topic. These features include 'The evolutionary history of Indigenous Australians' (chapter 3), 'Forming an ethnic identity in multicultural Australia' (chapter 12), 'The typical life experience of an Indigenous Australian' (chapter 14), and 'Immigration to Australia: social psychological principles in action (chapter 17). In chapter 18 we look closely at **Indigenous and**

cross-cultural psychology within an Australian context. We aim to encourage active engagement with the topic and emphasise critical reflection and the development of frameworks and strategies to assist in future study and work.

The importance of cross-cultural psychology and the need to be informed of international developments in psychology has led to a new collection of Global Focus cases, which examine topical applications for psychological research from around the world. Topics include 'Terrorist or terrorised' (Chapter 1), 'Culture can impact the way we perceive the world' (Chapter 5) and 'Hero rats detect landmines' (Chapter 7).

AUSTRALIAN FOCUS

The use and misuse of research



Autism spectrum disorder (ASD) is a developmental disorder characterised by difficulties in communication, social interactions, and a restricted range of interests and activities demonstrated since early childhood (APA, 2013). It is a complex disorder with no single cause. The research interests of Jon Brock and colleagues, from Macquarie University in Sydney, focus on the cognitive and neural aspects of developmental disorders including ASD.

In 2002 Brock and colleagues published a review article entitled 'The temporal binding deficit hypothesis of autism'. This article did not detail results from a specific study they had undertaken. Instead, it presented a summary of existing research about ASD culminating in a suggestion (or hypothesis) that ASD may be partially caused by reduced communication between different regions of the brain. In other words, it was an idea that needed to be tested through research.

You can imagine their surprise, then, when a colleague alerted them to a chiropractic doctor who claimed to have used this paper to inform his 'evidence-based' treatment of

2. The doctor did not explain how he treated ASD through chiropractic means.
3. The doctor failed to recognise, or at least mention, that the paper being referred to provided no empirical evidence to support the idea that there was decreased communication between brain regions in people with ASD.
4. The doctor did not explain how chiropractic techniques could address this supposed deficit in neural communication.
5. The doctor grossly oversimplified the nature of ASD, and over-exaggerated current understandings of the mechanisms that lead to its expression.

Brock tried to contact the doctor to clarify the perceived misunderstanding, without success. He has, however, written a witty blog about this event (available at <http://crackingtheenigma.blogspot.com.au/?q=chiropractor>), using it as a platform to remind us all about the importance of (a) accurate use of research and (b) critical thinking skills

GLOBAL FOCUS

Sensational statistics



There is a long history of statistics being used and abused to sensationalise issues across many mediums including the media, blogs and politics.

A recent example of this was reported by journalist Amanda Taub, who found herself questioning a news article which cited a report detailing that United Nations aid workers had raped 60 000 humanitarian victims over a 10-year period. This was a horrifying statistic, and one with far-reaching implications for the safety of humanitarian victims, as well as the United Nations organisation. Using good critical thinking skills, and employing key principles of the scientific method, Taub asked, 'where's the evidence this is true?'

By contacting the author (Andrew McLeod) of the original report on which the news story was based, Taub found that:

1. Although McLeod had once worked for the United Nations, he released this information well after his departure from the organisation. The information released coincided with the launch of a not-for-profit organisation by McLeod and colleagues (so he had a vested interest in receiving high levels of publicity).
2. The information on which McLeod based his report was derived from a publicly accessible 2017 United Nations report detailing 311 cases of sexual exploitation (not restricted to rape, as suggested by McLeod) being perpetrated by peacekeepers toward

who perpetrated sexual offences against humanitarian victims each year. There was no statistical evidence to support his estimate. It was simply an estimate he decided on. So, with 311 peacekeeper and an assumed 289 non-peacekeeper perpetrators, he came to the conclusion that there were 600 victims in 2017. There was no population-specific data to support his estimate of the number of civilian offenders in this regard and, as such, the number is nothing more than a guess.

4. From here, McLeod estimated that only 10 per cent of incidents were actually recorded. Therefore, he multiplied his initial estimate by 10 to reach a figure of 6000 victims per year. In order to estimate the number of victims over a decade, he then multiplied this figure by 10 to reach 60 000.

In essence, although the logic of McLeod's calculations is apparent, his estimate of 60 000 victims is based on nothing more than his own beliefs—and as we know, beliefs are not a form of objective evidence. The reality is, there is insufficient data to know exactly how many victims there are; it could be that 60 000 is somewhat accurate, or it could be that there are many more, or many less.

McLeod emphasised to Taub that he never intended for people to interpret his report as containing peer-reviewed statistical data and analyses. Instead, he claimed

CRITICAL EXAMINATION

This text has been written to help Introductory Psychology students develop critical examination skills by providing tools within the text.

An understanding of how research leads to discovery

To help students understand the research process, each chapter's **Research close-up** presents a specific research study in the format of a simplified journal article. These high-interest studies and their accompanying 'Research design' graphics help students understand how correlational and experimental research are carried out. The 'Discussion' section provides a brief critical analysis of the study and its methodology. The 'Research close-ups' support the critical

examination of information by showing the nuts and bolts of psychological research and the knowledge research brings to the analysis.

Research close-up topics include 'Drinking and driving: decision-making in altered states' (Chapter 6), 'The future is now: Thinking about the future enhances self-control' (Chapter 9) and 'Drug versus psychological treatments for depression: a randomised clinical trial' (Chapter 16). **The ability to consider multiple factors to understand behaviour**

Levels of analysis emphasises how psychologists examine the interplay of biological, psychological, and environmental and social factors in their quest to understand behaviour; featuring contextual introductions and full descriptions of each area of analysis. Behaviours explored include 'Causal factors in

depression' (Chapter 1), 'Measuring exam stress' (Chapter 2), 'Drug-induced states' (Chapter 6) and 'Learning' (Chapter 7).

Levels of analysis

DRUG-INDUCED STATES

Drug-induced states involve an interplay of biological, psychological, and environmental and social factors. Some of these factors are summarised here.

Suppose a person consumes enough alcoholic drinks within 30 minutes to reach a blood alcohol content of 0.05. In one case, suppose all the drinks are the same: all beers or all the same kind of wine. In another case, suppose each drink is different: beer, red wine and tequila. Would you expect the person to feel equally intoxicated in both cases?

BIOLOGICAL LEVEL	ENVIRONMENTAL AND SOCIAL LEVEL	PSYCHOLOGICAL LEVEL
<ul style="list-style-type: none"> Drugs increase or decrease the activity of particular neurotransmitter systems. The body produces compensatory responses to counteract a drug's effect, possibly leading to tolerance. Withdrawal symptoms occur when drug use stops, but the body's compensatory responses continue. Genetic factors influence biological reactivity to specific drugs. 	<ul style="list-style-type: none"> Cultural norms and experiences can shape users' drug attitudes and expectations. The social context and behaviour of other drug users who are present can affect how a person responds to a drug. 	<ul style="list-style-type: none"> Drugs can alter numerous aspects of psychological functioning, including mood, memory, attention, decision-making, social inhibitions and pain awareness. Users' attitudes and expectations about drugs can influence their psychological reactions to a drug. A user's level of personal adjustment can influence the likelihood of a negative drug reaction.

An understanding of how information can be applied

In addition to the many applications discussed throughout the text's narrative, **Applying psychological science** demonstrates how knowledge derived from basic research can be applied at both personal and societal levels. To illustrate this

RESEARCH CLOSE-UP

Drinking and driving: decision-making in altered states

Source: Tara K. MacDonald, Mark P. Zanna, and Geoffrey T. Fong (1995). Decision making in altered states: Effects of alcohol on attitudes toward drinking and driving. *Journal of Personality and Social Psychology*, 68, 973–985.

Introduction

Most people have negative attitudes about drunk driving and say they would not do it. They realise that the cons (e.g. risk of accident, injury, death and police arrest) far outweigh the pros (e.g. not having to ask someone for a lift). Why, then, do so many people decide to drive after becoming intoxicated?

Based on alcohol-myopia principles, Tara MacDonald and her colleagues reasoned that when intoxicated people decide whether to drive, they may focus on the pros or the cons but do not have the attentional capacity to focus on both. If a circumstance that favours driving (a *facilitating cue*) is called to the intoxicated person's attention (e.g. 'It's only a short distance'), she or he will latch onto it and fail to consider the cons. But in general situations that do not contain facilitating cues, intoxicated people's feelings about driving should remain as negative as when they were sober.

The authors made two predictions. First, intoxicated and sober people will have equally negative *general attitudes* and intentions toward drinking and driving. Second, intoxicated people will have less negative attitudes and greater intentions toward drinking and driving than sober people in situations that contain a facilitating cue.

Method

Laboratory experiment

Fifty-seven male introductory psychology students, all regular drinkers who owned

cars, participated. They were randomly assigned to either the sober condition, in which they received no alcohol, or the alcohol condition, in which they received three alcoholic drinks within one hour (the average BAC was 0.074 per cent, just below the 0.08 per cent legal driving limit in Ontario, Canada).

Participants then completed a drinking-and-driving questionnaire. Some items asked about general attitudes and intentions (e.g. 'I will drink and drive the next time that I am out at a party or bar with friends'). Other items contained a facilitating cue, a special circumstance that suggested a possible reason for drinking and driving ('If I had only a short distance to drive home... If my friends tried to persuade me to drink and drive... I would drive while intoxicated'). Participants rated each item on a 9-point scale (1 = 'strongly disagree'; 9 = 'strongly agree').

Party/bar diary study

Fifty-one male and female university students recorded a telephone diary while at a party or bar where they were



RESEARCH DESIGN

Question: If sober people hold negative attitudes toward drinking and driving, then why after becoming intoxicated do they decide to drive? Does focusing on 'special circumstances' play a role?

Type of study: Experimental

Independent variables

- Alcoholic state (intoxicated versus sober)
- Drinking-driving situation (special circumstance versus general situation)

Dependent variables

- Attitude toward 'drinking and driving'
- Intention to drive while intoxicated

science-into-application theme, several of these features focus on skills that can enhance learning and performance. These topics include research derived principles for studying effectively (Chapter 1), behavioural self-modification (Chapter 7) and memory enhancement (Chapter 8).

To complement this, new **In the News** cases provide current, practical examples of how psychological science and theories are put into practice in research, clinical or commercial applications. Topics include 'Uses and abuses of crime data in Australia' (Chapter 2), 'The use of LSD in therapy' (Chapter 4) and 'That dress: blue and black or white and gold?' (Chapter 5).

IN THE NEWS

The APS Apology to Aboriginal and Torres Strait Islander Peoples

As already discussed, psychologists in Australia directly and indirectly contributed to the forcible removal of Indigenous and Torres Strait Islander children from their families—children who are referred to as the 'Stolen Generation'.

In 2016, the Australian Psychological Society (APS) formally apologised to Aboriginal and Torres Strait Islander people for '... psychology's role in contributing to the erosion of culture... and mistreatment' of Indigenous Australians (Australian Psychological

Torres Strait Islander people. You can access the full-text version of the APS apology to Aboriginal and Torres Strait Islander people at <https://www.psychology.org.au/Assets/Files/Apology-final-version.pdf>.

This apology does not signify the end of such efforts, or that we have met the goals of further enhancing the lives of Aboriginal and Torres Strait Islander people. Ongoing projects are designed to action the promises made in the apology to:

- listen more and talk less
- follow more and steer less
- advocate more and comply less
- include more and ignore less
- collaborate more and command less.

... increasing recruitment and retention of Indigenous psychology students, integrating Indigenous studies in psychology courses for all students, and facilitating training pathways for Indigenous mental health workers (AIPEP). To learn more about the work of AIPEP, go to <http://www.indigenouspsych.org.au/about/overview>.

The APS Reconciliation Action Plan (Australian Psychological Society, 2016) has also been developed to assist all psychologists to better respond to and meet the needs of Aboriginal and Torres Strait Islander people. The key components of the plan focus on: cultural awareness, responsiveness

Putting critical examination into practice

Thinking critically activities allow students to apply their developing critical examination skills. These activities question a belief or information presented in the text, or pose a situation that requires analysis, and then ask students to construct an answer using their critical examination tools. For most activities students can then compare their answer to one provided at the end of the chapter. Topics include 'Are the students lazy?' (Chapter 1), 'Should you trust internet and pop media surveys?' (Chapter 2), 'Would perfect memory be a gift or a curse?' (Chapter 8) and 'Do I have that disorder?' (Chapter 15).

THINKING CRITICALLY

Are the students lazy?



Imagine that you are a high school teacher. Whenever you try to engage your students in a class discussion, they gaze into space and hardly say anything. You start to think that they're just a bunch of lazy kids. From a radical behavioural perspective, is your conclusion reasonable? How might you improve the situation? Think about it, then see the solution at the end of the chapter.

SUPPORTING STUDENT LEARNING

Psychology: The Science of Mind and Behaviour 3e supports student learning of concepts throughout each chapter.

- Learning objectives**, tagged to headings throughout each chapter, help to pinpoint what students will learn from each section.
- Concept checks** at the end of each major section provide concise summaries of the key content from that section to aid with revision and study.
- Review questions** aligned to learning objectives test students' critical thinking and application skills as well as their understanding of key concepts from the chapter.
- Chapter summary and Key terms and concepts** features direct students to key ideas from the chapter.

Case matrix

Chapter	Case	
1 The science of psychology	Australian focus: Why it pays to think scientifically	Page 8
	Research close-up: Would you marry someone you didn't love?	Page 18
	Applying psychological science: How to enhance your academic performance	Page 29
	Global focus: Terrorists or terrorised?	Page 10
	In the news: The APS Apology to Aboriginal and Torres Strait Islander Peoples	Page 20
	Levels of analysis: Causal factors in depression	Page 25
2 Studying behaviour scientifically	Levels of analysis: Measuring exam stress	Page 41
	Research close-up: Very happy people	Page 49
	Australian focus: The use and misuse of research	Page 60
	Applying psychological science: Evaluating claims in research and everyday life	Page 68
	Global focus: Sensational statistics	Page 61
	In the news: Uses and abuses of crime data In Australia	Page 66
3 Genes, environment and behaviour	Applying psychological science: Gene manipulations and therapies	Page 78
	Research close up: Sex differences in the ideal mate: evolution or social roles?	Page 98
	Levels of analysis: Gene–environment research	Page 102
	Australian focus: The evolutionary history of Indigenous Australians	Page 103
	Global focus: The decline of aggression and war?	Page 100
	In the news: Australia Day or Invasion Day?	Page 90
4 The brain and behaviour	Applying psychological science: Understanding how drugs affect your brain	Page 116
	Research close-up: Splitting the brain: one body, two minds?	Page 135
	Australian focus: Language development and the cochlear implant	Page 140
	Levels of analysis: Brain, behaviour and environment	Page 141
	Global focus: Reading the brain	Page 124
	In the news: 'Turn on, tune in, drop out'—The use of LSD in therapy	Page 133
5 Sensation and perception	Australian focus: Parallel pathways in the brain	Page 149
	Applying psychological science: Sensory prosthetics: restoring lost functions	Page 169
	Research close-up: Stalking a deadly illusion	Page 183
	Global focus: Culture can impact the way we perceive the world	Page 177
	In the news: That dress: blue and black or gold and white?	Page 158
	Levels of analysis: Sensation and perception	Page 189

Chapter	Case	
6 States of consciousness	Applying psychological science: Treating phantom limb pain	Page 206
	Levels of analysis: Sleep and dreaming	Page 216
	Research close-up: Drinking and driving: decision making in altered states	Page 220
	Levels of analysis: Drug induced states	Page 225
	Australian focus: Ghosts in your brain	Page 228
	Global focus: A consciousness meter	Page 200
	In the news: Reading brain activity, and predicting dream content	Page 213
7 Learning: the role of experience	Australian focus: Stranger danger! Teaching predators to avoid cane toads	Page 249
	In the news: Harnessing the power of delayed reinforcers: Choosing between healthy snacks and unhealthy treats	Page 252
	In the news: Behavioural addictions	Page 260
	Global focus: Hero rats detect landmines	Page 262
	Applying psychological science: Using operant principles to modify your behaviour	Page 263
	Research close-up: Using social-cognitive theory to prevent AIDS: a national experiment	Page 272
	Levels of analysis: Learning	Page 274
8 Memory	Australian focus: Alzheimer's disease within Australia's Indigenous population	Page 302
	Research close up: Memory illusions: remembering things that never occurred	Page 304
	Global focus: Memory error: cannot retrieve file. Challenging the computer–brain analogy	Page 310
	Levels of analysis: Memory	Page 314
	In the news: Can memories transcend generations?	Page 315
	Applying psychological science: Improving memory and academic learning	Page 316
	In the news: The Australian perspective	Page 316
9 Language and thinking	Global focus: Does the language we speak affect the way we think?	Page 341
	Levels of analysis: Language	Page 343
	Research close-up: The future is now: Thinking about the future enhances self-control	Page 347
	Australian focus: Problem-solving in real life	Page 350
	Applying psychological science: Guidelines for creative problem-solving	Page 352
	In the news: Why are doctors missing heart attack symptoms in women?	Page 354
	Levels of analysis: Thinking processes	Page 358

Chapter	Case	
10 Intelligence	Australian focus: Inspection time and intelligence	Page 382
	Global focus: The Lothian Birth Cohort Studies	Page 384
	In the news: Work on identifying the genes for intelligence continues and helps us to understand misconceptions of intelligence	Page 387
	Applying psychological science: Early-childhood interventions: a means of boosting intelligence?	Page 388
	Research close-up: Sex hormones, gender stereotypes and cognitive performance	Page 394
	Levels of analysis: Intellectual functioning	Page 399
11 Motivation and emotion	In the news: Same-sex marriage in Australia	Page 423
	Applying psychological science: Systematic goal setting: a motivational approach that works	Page 428
	Australian focus: Aboriginal expressions of emotion	Page 438
	Research close-up: Cognition-arousal relations	Page 443
	Global focus: What makes us happy?	Page 446
	Levels of analysis: Emotion	Page 447
12 Development over the life span	Applying psychological science: Understanding how divorce and remarriage affect children	Page 472
	Global focus: Child development in the danger zone	Page 477
	Australian focus: Forming an ethnic identity in multicultural Australia: the challenge for refugees	Page 485
	Research close-up: What does it take to become an adult?	Page 488
	In the news: When should adulthood legally begin?	Page 490
	Levels of analysis: Life-span development	Page 495
13 Personality	Research close-up: Does avoidant attachment influence what we remember?	Page 509
	Global focus: Traits and culture: how universal are personality traits?	Page 521
	Applying psychological science: Understanding the Granny Killer: what can the personality perspectives tell us?	Page 532
	Levels of analysis: Conceptions of personality	Page 536
	In the news: Cyberculture and personality in the digital era	Page 537
	Australian focus: Personality, culture and the Stolen Generations	Page 543
14 Health and well-being	Global focus: What is diabetes?	Page 556
	Australian focus: The typical life experience of an Indigenous Australian	Page 565
	Research close-up: Stress resilience, coping and illness	Page 579
	Levels of analysis: Stress and resilience	Page 581
	In the news: Euthanasia: a clash of compassions?	Page 586
	Applying psychological science: How to be happy: guidelines from psychological research	Page 590

Chapter	Case	
15 Psychological disorders	In the news: Can your guts make you anxious?	Page 607
	Global focus: Does social media use affect your mental health?	Page 616
	Applying psychological science: Understanding and preventing suicide	Page 618
	Levels of analysis: Anxiety and depressive disorders	Page 620
	Australian focus: Psychological disorders in Indigenous Australians	Page 626
	Research close-up: Inside the brains of successful and unsuccessful psychopaths	Page 630
16 Treatment of psychological disorders	In the news: Mindfulness: a cure for all problems or a useless fad with no scientific evidence?	Page 662
	Australian focus: Cultural competence: improving mental health services for Indigenous Australians	Page 671
	Levels of analysis: Therapeutic change	Page 675
	Research close-up: Drug versus psychological treatments for depression: a randomised clinical trial	Page 681
	Global focus: Using online treatments to improve mental health around the world	Page 685
	Applying psychological science: When and where to seek therapy	Page 688
17 Social thinking and behaviour	Research close-up: The dilemma of obedience: when conscience confronts malevolent authority	Page 707
	In the news: Social media and group-level behaviour: fear of missing out and phubbing	Page 714
	Applying psychological science: Making close relationships work: lessons from psychological research	Page 719
	Global focus: Decreasing prejudice	Page 726
	Australian focus: Immigration to Australia: social psychological principles in action	Page 732
	Levels of analysis: Aggression	Page 733
18 Indigenous and cross-cultural psychology	Applying psychological science: Research insight into student experience	Page 740
	Research close-up: Working in unfamiliar territory	Page 747
	In the news: Celebrating Australia Day: To change or not to change? That is the question	Page 753
	Australian focus: Considering identity: will the 'real' Indigenous person please stand up?	Page 754
	Global focus: Fear and fascination: regarding the savage	Page 757
	Australian focus: A practising psychologist on the topic of working with Indigenous clients	Page 765
	Global focus: In the frame: Charlottesville	Page 768
	Research close-up: Cultural agility and diverse cultural contexts: a qualitative examination of the 'Indigenous mental health arena'	Page 776
	Levels of analysis: An ecological approach	Page 777

CHAPTER ONE

The science of psychology

Kimberley Norris

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LEARNING OBJECTIVES

- LO 1.1** Define psychology and describe its goals
- LO 1.2** Describe how different psychological perspectives explain behaviour
- LO 1.3** Explain how the different perspectives of psychology can be integrated
- LO 1.4** Identify how psychological science affects society and our lives

Let's begin our exploration of psychology with a quick exercise. Read the paragraph below, unscrambling the words as you go.

Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttar waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat lttres are at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit a porbelm. Tihs is bcuseae we do not raed ervey lteter by istlef but the wrod as a wlohe.

Type 'jumbled words', 'jumbled paragraph' or 'scrambled letters' into an internet search engine, dig around and you'll find multiple sites and blogs about this paragraph. Back in 2003 it was all the rage and it has been in the news since then (*Daily Telegraph*, 1 April 2009). The paragraph spread across the internet (with the misspelling 'rscheearch') and reached countless email inboxes as people—amazed by how easily they could read it—passed it along (if you had trouble, that's okay; see the unscrambled version at the end of the chapter). Show the paragraph to people you know and see how they do.

Do you accept the claim that if the first and last letters of a word remain intact, ‘The rset can be a toatl mses and you can sitll raed it wouthit a porbelm’? From the paragraph’s immense popularity, we speculate that many people did. After all, the evidence is concrete; it’s right before our eyes. Well, whether you do or don’t accept it, here’s a challenge: can you think of reasons why this particular jumbled paragraph is easy to read? Even better, can you create a short jumbled paragraph—keeping the first and last letters of the words intact—that people would find hard to read? We’ll return to this challenge later in this chapter.

So what does a jumbled paragraph have to do with psychology? If you view *psychology* as synonymous with *therapy*, *shrinks* or *couches*, then your answer might be ‘not much’. But as we’ll see, psychologists study a tremendous diversity of topics, and language—including how we recognise words—is one of them (Mousikou et al., 2010).

The paragraph raises other key psychological issues, such as how we acquire knowledge and form beliefs about our world, which we will discuss shortly. Among the countless beliefs we hold and claims we hear about human nature and behaviour, how do we separate fact from fiction, myth from reality? The science of psychology leads us to engage with these questions.

LO 1.1 THE NATURE OF PSYCHOLOGY

Psychology is the scientific study of behaviour and the mind. The term *behaviour* refers to actions and responses that we can directly observe, whereas the term *mind* refers to internal states and processes—such as thoughts and feelings—that cannot be seen directly and that must be inferred from observable, measurable responses. For example, we cannot directly see a person’s feeling of love or admiration for someone else, but we can infer how the person feels based on observable verbal statements and actions (e.g. saying ‘I love you’, mimicking another’s behaviour as a sign of admiration).

To many people, when you say the word *psychologist*, the first image that comes to mind is that of a therapist. This reaction is understandable, as many psychologists work in a subfield called **clinical psychology**: *the study and treatment of mental disorders*. Many clinical psychologists diagnose and treat people with psychological problems in clinics, hospitals and private practice. Some are also scientists, who conduct research on the causes of mental disorders and the effectiveness of various treatments. Yet many psychologists have no connection with therapy and instead conduct research in other subfields (**Figure 1.1**). For example, **cognitive psychology** *specialises in the study of mental processes, especially from a model that views the mind as an information processor*. Cognitive psychologists examine topics such as consciousness, attention, memory, decision-making and problem-solving. An area within cognitive psychology, called *psycholinguistics*, focuses on the psychology of language. The jumbled-word exercise relates directly to psycholinguistics.

In Australia, there are nine areas of psychology practice endorsed by the Australian Health Practitioner Regulation Agency (AHPRA): clinical neuropsychology, clinical psychology, community psychology, counselling



Figure 1.1 Psychologists study diverse topics. Subfields that may not immediately occur to you include organisational psychology, educational psychology and psychology and the law.

(left) © NASA (middle) © Shutterstock / wavebreakmedia (right) © Aaron Roeth Photography

psychology, educational and developmental psychology, forensic psychology, health psychology, organisational psychology, and sports and exercise psychology. To further illustrate psychology's diversity, here are a few other subfields:

- **Biopsychology or behavioural neuroscience** focuses on the biological underpinnings of behaviour. Students of biopsychology examine how brain processes, genes and hormones influence our actions, thoughts and feelings. Some seek to explain how evolution has shaped our psychological capabilities (e.g. our capacity for advanced thinking and language) and behavioural tendencies (e.g. acting aggressively or altruistically).
- **Developmental psychology** examines human physical, psychological and social development across the life span and the effects of ageing on cognitive and behavioural processes. For example, some students of developmental psychology explore the infant's emotional world, while others study how different parenting styles affect children psychologically, or how our mental abilities change during adolescence and adulthood.
- **Experimental psychology** focuses on basic processes such as learning, sensory systems (e.g. vision, hearing), perception and motivational states (e.g. sexual motivation, hunger, thirst). Most research in this subfield involves laboratory experiments, often with non-human subjects. Although this subfield is called 'experimental' psychology, be aware that researchers in many psychological subfields conduct experiments.
- **Industrial-organisational (I/O) psychology** examines people's behaviour in the workplace. I/O psychologists study leadership, teamwork and factors that influence employees' job satisfaction, work motivation and performance. They develop tests to help employers identify the best job applicants and design systems that companies use to evaluate employee performance.
- **Personality psychology** focuses on the study of human personality. People who study the psychology of personality seek to identify core personality traits and the way different traits relate to one another and influence behaviour. They also develop tests to measure personality.
- **Social psychology** examines people's thoughts, feelings and behaviour pertaining to the social world: the world of other people. Students of social psychology study how people influence one another, behave in groups and form impressions and attitudes. They study social relationships involving attraction and love, prejudice and discrimination, helping and aggression.

Note that the topics studied in different subfields often overlap. Consider decision-making, which is examined in all of the areas mentioned above. A cognitive psychologist might study how wording the same information in different ways affects people's decisions, while a social psychologist might study decision-making in groups and a developmental psychologist could examine how children's decision-making strategies change with age (Joslyn et al., 2009; Toma & Butera, 2009). Moreover, many psychologists have interests that bridge different subfields. Thus, a clinical psychologist might be interested in the biological bases of how adolescents with anxiety disorders make decisions. They could have adolescents who do and who don't have an anxiety disorder perform decision-making tasks, and use brain-imaging techniques to compare the neural activity of the two groups (Krain et al., 2008).

We'll encounter other branches of psychology throughout the text, but we hope you already get the picture. Psychologists do study the causes of mental disorders, provide therapy and evaluate therapy effectiveness, but their interests and research span the entire realm of behaviour. Indeed, the scope of modern psychology stretches from the borders of medicine and the biological sciences to those of the social sciences (Figure 1.2).

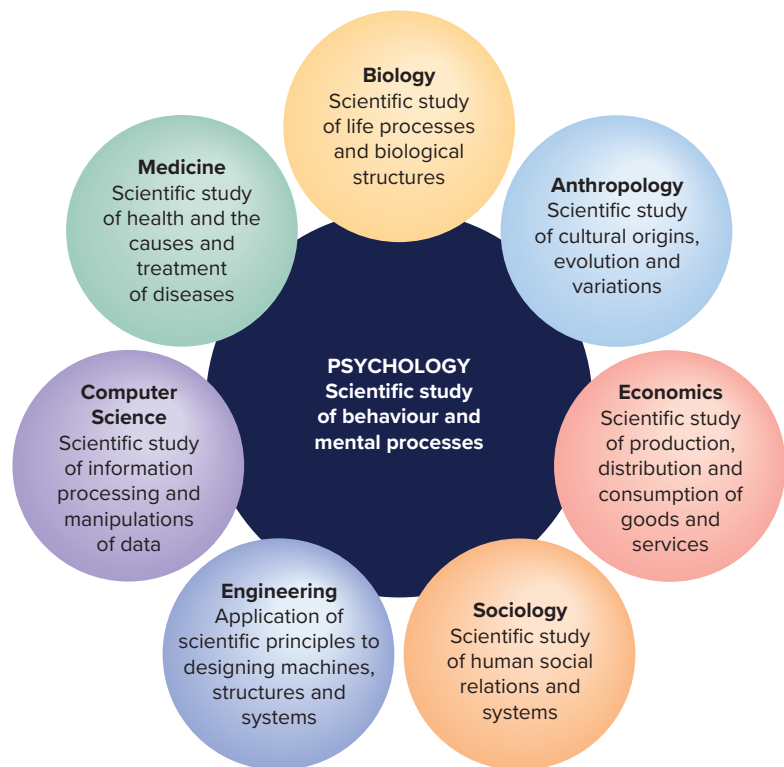


Figure 1.2 Psychology as a scientific hub Psychology links with and overlaps many sciences.

Psychology's scientific approach

Across psychology's diverse subfields, researchers share a common underlying scientific approach to studying behaviour. *Science* is a process that involves systematically gathering and evaluating empirical evidence to answer questions and test beliefs about the natural world. *Empirical evidence* is evidence gained through experience and observation. It includes evidence obtained from manipulating or 'tinkering around' with things and then observing what happens (this is the essence of experimentation). For example, if we want to know how people's intellectual abilities change as they age, we don't rely on intuition, pure reasoning or folk wisdom to obtain an answer. Rather, we collect empirical data by exposing people to intellectual tasks and observing how they perform. Moreover, in science these observations need to be *systematic* (i.e. performed according to a system of rules or conditions) so that they will be as objective and precise as possible (Shaughnessy et al., 2011).

Understanding behaviour: some pitfalls of everyday approaches

Science is only one of many ways that we learn about human behaviour. Family and friends, great works of literature, secular and religious teachings, the internet and popular media all provide us with messages about human nature. Mix in our own intuition, the knowledge that each of us acquires from years of personal experience interacting with people and so-called conventional or folk wisdom, and we have potent ingredients for generating our personal beliefs about what makes people tick.

The problem is, in everyday life there are many ways in which these sources can end up promoting misconceptions. Other people—via conversations, books, the internet and popular media—may provide us with information and insights that they believe to be accurate but which really are not. Even personal experiences can lead us to form inaccurate beliefs. Although our experiences and everyday observations provide us with empirical information, unlike scientific observations, everyday observations are usually casual rather than systematic, and we rarely critically evaluate them in a scientific manner. Our own experiences may also be atypical and not representative of what most people experience, yet we may not routinely acknowledge this.

As we'll explore in later chapters, misconceptions can also result from our own faulty thinking. For example:

- We often take *mental shortcuts* when forming judgements, shortcuts that sometimes serve us poorly (White, 2009). Judging someone's personality based solely on stereotypes about his or her physical appearance would be an example of a mental shortcut.
- Because many factors in real life may operate simultaneously to influence behaviour, we may *fail to consider alternative explanations* for a behaviour and assume that one factor has caused it when in fact some less obvious factor was the major cause (Lassiter et al., 2007).
- Once our beliefs are established, we often fail to test them further. In this vein, we tend to display a *confirmation bias* by selectively paying attention to information that is consistent with our beliefs and downplaying or ignoring information that is inconsistent with them (Hart et al., 2009).

Using science to minimise everyday pitfalls

Yes, scientists are human too and may fall victim to all of these pitfalls, and more. But by adopting a scientific approach, psychologists can take concrete steps to avoid or at least minimise biases and problems that can lead to inaccurate conclusions. For example, rather than relying on imprecise casual observations, psychologists use various instruments (e.g. video cameras, questionnaires, brain-imaging devices) to objectively and precisely record people's responses. When directly watching people, several researchers can independently observe the same behaviours and compare their findings to ensure that their observations are reliable. To further reduce subjectivity, psychologists typically use statistics to analyse their data. To minimise erroneous conclusions about what has caused what, psychologists are often able to examine behaviour under highly controlled experimental conditions in which they intentionally manipulate one factor, try to keep other factors constant and see how the manipulated factor influences behaviour.

Science is also a public affair, as occurs when psychologists publish their findings. This enables scientists to scrutinise and challenge each other's findings if they wish. Collectively, this reduces the risk of confirmation bias. As new studies are conducted, the original findings are put to the test and may be contradicted, forcing scientists to modify their beliefs and to conduct further research to sort out the reason for the contradictory results.

To be sure, science has limitations and its own pitfalls. It is ideally suited to examining testable questions about the natural world. Psychologists can study questions such as 'Do happy people differ from unhappy people in their degree of religiousness or spirituality?' and 'What do people believe gives their life meaning?' But science cannot answer

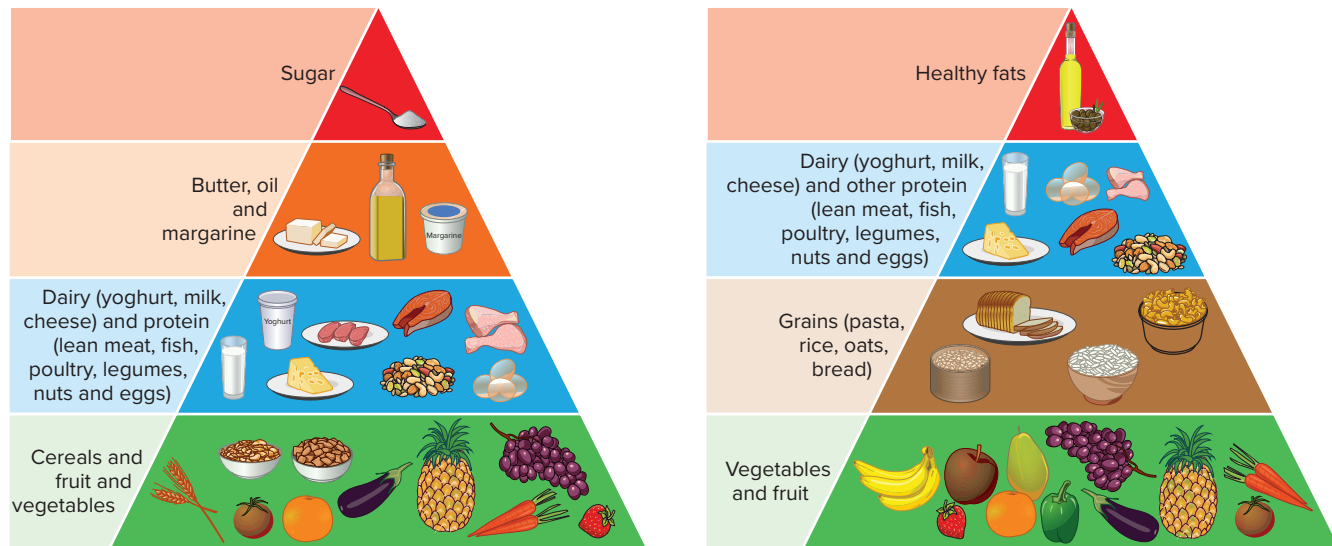


Figure 1.3 Healthy eating pyramid The pyramid has changed significantly in the last 30 years in response to scientific progress. Compare the recommendations from 1986 (left) with those from 2015 (right).

Based on Nutrition Australia, 1986, 2015.

questions such as ‘Does God exist?’ and ‘What is the meaning of life?’ The former is a question of faith that is beyond scientific measurement; the latter is a question answered by personal values. As for pitfalls, poorly designed or poorly executed studies can produce misleading data that lead to invalid conclusions.

Even when studies are designed well and conducted properly, ‘false starts’ can occur in which other researchers are later unable to duplicate the original researchers’ findings. Additionally, over time, new research often modifies or completely overturns existing scientific beliefs. But it’s important to realise that these aren’t weaknesses of the scientific approach. Rather, they reveal one of its great strengths: *in principle, science ultimately is a self-correcting process*. At any point in history, scientific knowledge represents a best estimate of how the world operates. As better or more complete information is gathered, that best estimate may continue to be supported or it may need to be changed. Understandably, to many people (and students!), such change can be frustrating or confusing, as demonstrated each time a new healthy eating pyramid is released. The healthy eating pyramid has been updated numerous times over the past 30 years, with variations in the types of foods and recommended daily portions with each iteration. However, the most recent 2015 guidelines were quite different in that only healthy fats (such as avocado and olive oil) were included in the pyramid, whereas prior to this, added fats and sugars (as found in sweets and the like) had been included, with the caveat that they be consumed in small amounts (Nutrition Australia, 2015). An example of how the healthy eating pyramid has changed over time can be seen in **Figure 1.3**. While some may dismiss the ongoing changes regarding healthy eating habits as confusing or unnecessary, to scientists such change represents an evolution of knowledge called ‘scientific progress’. The healthy eating pyramid is a prime example of such scientific progress—constantly changing in response to new research findings.

Thinking critically about behaviour

Because behaviour is so complex, its scientific study poses special challenges. As you become familiar with the kinds of evidence necessary to validate scientific conclusions, you will become a better-informed consumer of the many claims made in the name of psychology (and all other sciences). For one thing, this course will teach you that many widely held beliefs about behaviour are inaccurate. It will also teach you that in the absence of appropriate evidence, it’s not possible to form a sound scientific opinion. With this in mind, read through the statements contained in **Table 1.1** and see if you can identify the valid from the invalid claims.

Don’t worry if you don’t know the answers at this early stage of your course. The purpose of this exercise is to practise critical thinking, rather than to know the answer.

In many ways, more important than the concepts you learn in this course will be the habits of thought that you acquire—habits that involve *critical thinking*. Critical thinking involves taking an active role in understanding the world around you, rather than merely receiving information. It’s important to reflect on what that information means, how it fits in with your experiences and what implications it has for your life and society. Critical thinking also means

Table 1.1 Widely held beliefs about behaviour: fact or fiction?

Directions: decide whether each statement is true or false.
1. Most people with exceptionally high IQs are well adjusted in other areas of their life.
2. In romantic relationships, opposites usually attract.
3. Overall, married adults are less happy than adults who aren't married.
4. Graphology (handwriting analysis) is a valid method for measuring people's personality.
5. A person who is innocent of a crime has nothing to fear from a lie detector test.
6. People who commit suicide usually have signalled to others their intention to do so.
7. When you negatively reinforce someone's behaviour, the person becomes more likely to behave that way.
8. On some types of mental tasks, people perform as well or better when they are 70 years old than when they are 20 years old.
9. Usually it is safe to awaken someone who is sleepwalking.
10. A schizophrenic is a person who has two or more distinct personalities, hence the term <i>split personality</i> .

ANSWERS: Items 1, 6, 8 and 9 are supported by psychological research. Item 7 is true by definition. The remaining items are false. (If you correctly answered nine or ten of these items, you've done significantly better than random guessing.)

evaluating the validity of something presented to you as fact (Levy, 2010). For example, when someone makes a claim or asserts a new 'fact' such as those above, ask yourself the following questions, just as a scientist would:

- What, exactly, is the claim or assertion?
- Who is making the claim? Is the source credible and trustworthy?
- What is the evidence and how good is it?
- Are other explanations possible? If so, can I evaluate them?
- What is the most appropriate conclusion?

The jumbled-word challenge

Let's think critically about the jumbled-word paragraph presented earlier. First, *what's the claim?* There are three, actually: (1) that people can read jumbled words without a problem as long as the first and last letters stay in the same place, (2) that this occurs because we read 'words as a whole' rather than reading each letter by itself and (3) that this finding is based on research at Cambridge University.

Second, *who is making the claim?* Unfortunately, the jumbled-paragraph's author is anonymous, which is *caution flag #1*. We can't evaluate the author's credibility and trustworthiness.

Third, *what's the evidence and how good is it?* The evidence begins with a claim implying that research was conducted at Cambridge. No reference information (researchers' names, publication location or date) is given: this is *caution flag #2*. Indeed, it seems that there was no such research done at Cambridge, although unpublished research at another university may have been the source (Davis, 2003; Rawlinson, 1999).

There's also the dramatic evidence of your own experience: reading the jumbled paragraph easily. But this is only one short paragraph. Also, overall, the transposition (i.e. switched ordering) of letters is minimal. This is *caution flag #3* and leads to the next question.

Fourth, *are other explanations possible* for why the paragraph is easy to read? Here are some to consider:

- Sixty-five per cent of the words either aren't jumbled (because they have only one to three letters) or—with four-letter words—there is only one possible transposition (switching the second and third letters), which makes unscrambling them easy.
- For the words with five or six letters, in all but one case, the transposition is minor because only a single letter is out of sequence (e.g. for 'mttaer', only the 'a' is out of order).
- Thus, in total, 83 per cent of the words are either unjumbled or have only minor transpositions. This preserves much of the way the words sound when we read them. Further, these words provide contextual information that makes it easier to anticipate the meaning of some of the few longer, scrambled words.

In everyday life, you're unlikely to conduct a scientific study to test these alternative explanations, but you can gather additional evidence by constructing sentences with longer words and more complex transpositions and having some people try to read them. Try reading this paragraph (the section at the end of the chapter contains the unjumbled version) and see if it changes your belief about the ease of reading jumbled words.

A plciaiioth dieend the mtnaalueghsr of a clgaloeue, but was coinctetvd and dlepoeevd sreeve macedil cdointonis in posirn, wrhee he deid. Arnodiistitman of agctannloauit dgurs ptttnaioeed the eefctfs of atehonr durg, and rprsoiearty frliaue rleeutsd.

Lastly, *what is the most appropriate conclusion to draw?* The claim that it's relatively easy to read words as long as the first and last letters are intact appears to be too broad, too absolute. Stated as such, it's clearly wrong. Stated in qualified terms of 'under some conditions', the claim has support, although one study found that even minor transpositions of interior letters slowed reading speed by 11 per cent (Rayner et al., 2006). In some languages, however, such interior transpositions may make words very difficult, if not impossible, to read (Davis, 2003).

Of astrology and asstrology: potential costs of uncritical thinking

Suppose someone swallows the bait of the original jumbled-word paragraph and now erroneously believes that it's always easy to read words with transposed letters. Unless it's a smart-aleck student or worker who plans to turn in jumbled essays or work reports (citing 'scientific justification' for doing so), what's the harm in holding this little false belief? Perhaps the immediate personal consequences are minimal, but misconceptions can add up and contribute to an increasingly misguided view of how the world operates.

Unfortunately, people uncritically accept many misconceptions that do have concrete harmful consequences. For example, in the hope of making their babies smarter, consumers shelled out about \$200 million annually to purchase Baby Einstein videos that the Walt Disney Company advertised as educational, despite a lack of scientific support for such educational claims (Zimmerman et al., 2007). Under government and consumer-group pressure, Disney eventually dropped the 'educational' claim and later agreed to partially refund consumers (Lewin, 2009).

Despite a lack of scientific evidence, people spend untold amounts of their hard-earned money to have their personalities analysed and their futures forecast by astrologers, graphologists (handwriting analysts), tea-leaf readers and other so-called fortune tellers—including 'rumpologists' (sometimes referred to as 'asstrologers'), who 'read' people's buttocks to obtain their presumed psychic insights (Wyman & Vyse, 2008). Money aside, it's impossible to estimate how many people have made major life decisions based on fortune tellers' unscientific advice. It's also hard to know how many people have not only wasted money on bogus therapies for ailments, diseases and mental disorders but also experienced needless continued distress or further bodily harm by failing to employ scientifically validated treatments. Unfortunately, *pseudoscience*—fields such as astrology, graphology, rumpology and so on that are dressed up to look like science but which lack credible scientific evidence—appears to attract many believers.

Goals of psychology

As a science, psychology has four central goals: *description*, *explanation*, *control* and *application*. Description is the most basic goal; psychologists seek to describe how people behave, think and feel. Second, psychologists strive to explain—to understand—why people act as they do. Explanations typically take the form of hypotheses and theories that specify the causes of behaviour. Third, psychologists exert control by designing experiments or other types of research to test whether their proposed explanations are accurate. Finally, many psychologists apply psychological knowledge in ways that enhance human welfare—for example, applying knowledge of social cognition processes to reduce stereotypes and prejudice.

Consider Schweitzer et al.'s (2005) research on attitudes toward refugees in a sample of Australian participants. Schweitzer and his team first conducted a review of existing research and determined that negative attitudes were held by some white Australians toward refugees (*description*). Next, they needed to develop a hypothesis to try and *explain* why these attitudes might be held. To do this, they again turned to existing research and found two social psychology constructs that had been shown to explain negative attitudes toward people from different backgrounds (referred to as 'out-groups')—these were symbolic and realistic threat. Symbolic threat occurs when perceived differences in cultural practices (including beliefs, values and morals) are believed to 'impinge' on existing cultural practices (Stephan & Stephan, 1996). Realistic threat occurs when 'out-group' members are perceived to pose competition for resources such as jobs, healthcare, accommodation and the like (Stephan & Stephan, 1996). As such, Schweitzer and colleagues

proposed that the same mechanisms of realistic and symbolic threat would be able to explain why these negative beliefs were held by white Australians toward refugees who may be perceived as posing a threat to cultural practices (i.e. the ‘Aussie’ way of life) and resources (such as jobs). To test their assumptions, Schweitzer et al. conducted a study in which they asked participants carefully *controlled* questions about their attitudes toward refugees, as well as questions designed to assess realistic and symbolic threat. They found that realistic and symbolic threat were indeed related to attitudes toward refugees, which supported their hypothesis. The knowledge gained has already led other psychologists to examine the role of realistic and symbolic threat in shaping prejudicial attitudes (e.g. Suhnan et al., 2012), and can inform efforts to reduce negative attitudes toward refugees and other out-groups (*application*).

AUSTRALIAN FOCUS

Why it pays to think scientifically



Failing to think scientifically can have serious and long-lasting consequences. Consider, for example, how failing to think scientifically contributed to the oppression and stigmatisation of Australian Aboriginal and Torres Strait Islander people.

During the early to mid-20th century, many researchers compared the performance of Indigenous and non-Indigenous Australian children (and later, adults) in tests of intelligence. The results of such studies were mixed and often difficult to interpret; for example, some studies found large differences between these groups in favour of non-Indigenous people (e.g. Porteus, 1917), while others did not (e.g. Fowler, Traylen & McElwain, 1941, as cited in Kearney, 1973). Despite these differences in results, the media primarily focused on those results which suggested that Indigenous Australians were ‘less intelligent’ than non-Indigenous Australians (Kearney, 1966), as these results were consistent with the prejudice held by non-Indigenous society at the time, for example the view that white people were ‘better than’ or ‘superior to’ indigenous people (Rickwood et al., 2010). In other words, the media and society were demonstrating a confirmation bias—a pitfall of everyday thinking. Another shortcoming of research at the time was that it overemphasised the biological level of analysis (i.e. attributed the comparatively lower performance on intelligence tests to the genetic makeup of Indigenous Australians) and largely neglected psychological, and environmental and social influences on behaviour.

Clearly, there was a discrepancy in performance on these tests, but did this really mean that Indigenous Australians were less intelligent than white Australians? No, but what it did mean was that the researchers had fallen prey to another pitfall of everyday thinking—failing to consider alternative explanations for their results. Specifically, the researchers failed to consider that most tests and items in them measure culturally specific knowledge. Take, for example, the question, ‘How many months are in a

year?’—easy, right? Maybe for those who have grown up in a Western culture. But consider the difficulty in answering this question if you come from a culture (as do Indigenous Australians) in which a year is measured by seasons rather than months. Does an inability to answer this question reflect a lack of intelligence or a lack of familiarity with Western culture? Interestingly, some researchers at the time found that Indigenous Australians who had greater interactions with white Australians performed ‘better’ on these tests than those who had not, suggesting that results may in part have been explained in terms of the degree of familiarity with Western culture (e.g. McElwain & Kearney, 1973).

Despite the culturally biased nature of these and other assessments, the results contributed to policies of ‘Aboriginal protection’, which ultimately led to the removal of Aboriginal children from their families because of the perceived mental and moral deficiencies of their communities (Rickwood et al., 2010). Thus, although psychologists are not known to have been involved in physically removing Indigenous children from their families, their research did contribute to policies that led to this practice. Due to the inaccurate belief that white people were superior, a further rationale for this practice was that placement with white families would allow Indigenous children to develop European values, which was seen as more desirable than protection and celebration of Indigenous culture and values (Dudgeon & Hirvonen, 2014).

The children who were affected by these policies are often referred to as the ‘Stolen Generation’ (Read, 1999). This is a tragic example of how failing to think scientifically can have serious and long-lasting consequences. Thankfully, developments in psychological research (such as the work on mother–infant bonding and attachment by John Bowlby) and improved critical thinking skills being employed by researchers later helped to bring an end to these policies (Rickwood et al., 2010), although by then many thousands of children had been negatively

affected through being removed from their communities (Read, 1999). Sadly, despite changes in government policy, Indigenous Australians continue to experience psychosocial stressors (including poverty and violence) stemming from the experience of the stolen generation. These ongoing challenges, and failure to appropriately work with Indigenous communities to address quality of life issues, also mean that Indigenous children continue to be over-represented in out-of-home care arrangements. It is imperative that we work towards improving this situation.

Around the world, psychologists—both Indigenous and non-Indigenous—fulfil many different roles in areas such as research, education and therapy. A priority for psychologists, regardless of the field in which they work, is to be aware of the impact social and cultural (i.e. environmental), as well as biological and psychological, factors have on influencing people's behaviour. This typifies the biopsychosocial approach to health and is a very different approach from that demonstrated by early researchers as described previously. Awareness of how culture influences behaviour is raised by increasing the involvement and recognition of people with diverse cultural backgrounds within the psychology profession. Examples of this increased involvement include the establishment of the Australian Indigenous Psychologists Association (AIPA, 2011) and the Australian Psychological Society (APS) interest groups, including Aboriginal and Torres Strait

Islander Peoples and Psychology, Psychology and Cultures, and Psychology from an Islamic Perspective (APS, 2011).

Ultimately, this increased participation means greater awareness and understanding of different cultural needs, meaning that psychologists are better informed and able to help people from a variety of cultural backgrounds and experiences. We also hope that it means there is less likelihood of falling prey to the pitfalls of everyday thinking when it comes to interacting with members of other cultures.



Figure 1.4 intelligence tests can be culturally biased and can have wide-reaching negative effects, as was experienced by many indigenous Australians in the past.

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Basic and applied research

Science involves **basic research**, which reflects the quest for knowledge for its own sake, and **applied research**, which is designed to solve specific, practical problems. For psychologists, most basic research examines how and why people behave, think and feel the way they do. Schweitzer et al.'s (2005) research on prejudice represents basic research. Their main intent was to explore the role of social cognition in attitudes and thereby increase our understanding of why prejudicial attitudes toward refugees exist. Although the knowledge gained from their study has obvious applied relevance, the purpose of their study was not to apply that knowledge or directly modify people's attitudes. Basic research may be carried out in laboratories or real-world settings, with human participants or other species. Psychologists who study other species usually attempt to discover principles that will ultimately shed light on human behaviour, but some study animal behaviour for its own sake.

In applied research, psychologists often use basic scientific knowledge to design interventions. For example, we could use the basic knowledge obtained from Schweitzer et al.'s (2005) research to design and test the effectiveness of an intervention program aimed at altering prejudicial attitudes toward refugees. Similarly, researchers have used basic research findings—such as principles concerning how people learn by observing the behaviour of others—to design and implement HIV/AIDS-prevention programs around the world (Lerdboon et al., 2008).

Psychology's broad scope: a simple framework

Because we are biological creatures living in a complex social world, psychologists study an amazing array of factors to understand why people behave, think and feel as they do. At times, this diversity of factors may seem a bit overwhelming, but we would like to provide you with a framework that will greatly simplify matters. We call it *levels of analysis*: behaviour