BURTON | WESTEN | KOWALSKI

Psychology

4TH AUSTRALIAN AND NEW ZEALAND EDITION

WILEY

Psychology

4TH AUSTRALIAN AND NEW ZEALAND EDITION

Psychology

4TH AUSTRALIAN AND NEW ZEALAND EDITION

LORELLE BURTON

DREW WESTEN

ROBIN KOWALSKI

WILEY

Fourth edition published 2015 by
John Wiley & Sons Australia, Ltd
42 McDougall Street, Milton Qld 4064

First edition published 2006
Second edition published 2009
Third edition published 2012

Typeset in 10/12.5 pt Times LT Std

Australian edition © John Wiley & Sons, Ltd 2006, 2009, 2012, 2015

Authorised adaption of *Psychology, 4th edition,* published by John Wiley & Sons, Inc., New York, United States of America. © 2005 in the United States of America by John Wiley & Sons, Inc. All rights reserved.

The moral rights of the authors have been asserted.

National Library of Australia
Cataloguing-in-Publication entry

Author:	Burton, Lorelle, 1971–
Title:	Psychology / Lorelle Burton, Drew Westen, Robin Kowalski.
Edition:	4th Australian and New Zealand ed.
ISBN:	9780730304685 (pbk.)
Notes:	Includes bibliographical references and index.
Subjects:	Psychology — Australia — Textbooks. Psychology — New Zealand — Textbooks.
Other Authors/Contributors:	Westen, Drew, 1959– Kowalski, Robin M.
Dewey Number:	150.994

Reproduction and Communication for educational purposes
The Australian *Copyright Act 1968* (the Act) allows a maximum of one chapter or 10% of the pages of this work or — where this work is divided into chapters — one chapter, whichever is the greater, to be reproduced and/or communicated by any educational institution for its educational purposes provided that the educational institution (or the body that administers it) has given a remuneration notice to Copyright Agency Limited (CAL).

Reproduction and Communication for other purposes
Except as permitted under the Act (for example, a fair dealing for the purposes of study, research, criticism or review), no part of this book may be reproduced, stored in a retrieval system, communicated or transmitted in any form or by any means without prior written permission. All inquiries should be made to the publisher.

Cover and internal design images: © sianc/Shutterstock.com; © Photodisc; © Digital Vision; Brand X Pictures Nearly Famous.

Typeset in India by diacriTech

Printed in China by
Printplus Limited

10 9 8 7 6 5 4 3 2 1

Brief contents

Preface xiii

About the authors xvi

Accompanying resources xvii

How to use this book xviii

Australian and New Zealand content at a glance xxii

1 Psychology: the study of mental processes and behaviour 1

2 Research methods in psychology 39

3 Biological bases of mental life and behaviour 75

4 Sensation and perception 115

5 Consciousness 171

6 Learning 209

7 Memory 245

8 Thought and language 287

9 Intelligence 331

10 Motivation and emotion 363

11 Personality 413

12 Physical and cognitive development 457

13 Social development 497

14 Health, stress and coping 543

15 Psychological disorders 597

16 Treatment of psychological disorders 649

17 Attitudes and social cognition 689

18 Interpersonal processes 733

19 Cross-cultural and indigenous psychology 777

Solutions to application questions 833

Acknowledgements 837

Glossary 840

References 862

Name index 944

Subject index 962

Contents

Preface xiii
About the authors xvi
Accompanying resources xvii
How to use this book xviii
Australian and New Zealand content at a glance xxii

1 Psychology: the study of mental processes and behaviour 1

The boundaries and borders of psychology 5

FROM BRAIN TO BEHAVIOUR The boundary with biology 5

History of psychology 7

Philosophical roots of psychological questions 7
From philosophical speculation to scientific investigation 8

Perspectives in psychology 10

The psychodynamic perspective 10
The behaviourist perspective 12
The humanistic perspective 15
The cognitive perspective 16
The evolutionary perspective 18

COMMENTARY Putting psychological perspectives in perspective 23

Psychology in Australia and New Zealand 24

Education and training to become a psychologist 24
Major subdisciplines in psychology 25

ONE STEP FURTHER Investigative psychology 27
Professional associations for psychologists 28
Careers in psychology 29

How to study effectively 30

Developing effective time management skills 30
Setting a study schedule 31
Becoming an active learner 31
Successfully completing assignments 32
Effectively preparing for exams 33
Summary 36
Key terms 37
Review questions 37
Discussion questions 37
Application questions 37
Multimedia resources 37

2 Research methods in psychology 39

Characteristics of scientific psychological research 43

Quantitative research 44
Qualitative research 44
Theoretical framework 44
Standardised procedures 45
Generalisability from a sample 45
Objective measurement 46

ONE STEP FURTHER What kind of music of the mind will you make? 49

Experimental research 50

The logic of experimentation 50
Steps in conducting an experiment 51

COMMENTARY How many types of significance are there? 54

Limitations of experimental research 55

Descriptive research 57

Case study methods 57
Naturalistic observation 58
Survey research 59

Correlational research 61

FROM BRAIN TO BEHAVIOUR Imaging techniques and the brain 63

The internet and psychology research 65

Positive opportunities for psychology research 65
Challenges for psychology research 66
A phenomenon in its own right 66

Ethics in psychological research 66

Deception in psychological research 67
Ethics and animal research 67

How to evaluate a study critically 68

Critical thinking 69
Summary 72
Key terms 73
Review questions 73
Discussion questions 73
Application questions 73
Multimedia resources 74

3 Biological bases of mental life and behaviour 75

Neurons: basic units of the nervous system 78

Anatomy of a neuron 79
Firing of a neuron 80
Transmission of information between cells 82

The endocrine system 86

The peripheral nervous system 86

The somatic nervous system 87
The autonomic nervous system 87

The central nervous system 89

The evolution of the central nervous system 89
The spinal cord 92
The brain 93

COMMENTARY Too much coffee gets you high 98
The cerebral cortex 99
ONE STEP FURTHER Auditory sensory memory: from basic psychophysiology to clinical applications 103
FROM BRAIN TO BEHAVIOUR Personality alterations and frontal lobe lesions 104
■ Brain, gene, behaviour 108
Genetics 108
Behavioural genetics 109
Summary 111
Key terms 112
Review questions 112
Discussion questions 112
Application questions 112
Multimedia resources 113

4 Sensation and perception 115
■ Basic principles 119
■ Sensing the environment 120
Transduction 120
Absolute thresholds 121
Signal detection 122
Difference thresholds 123
Sensory adaptation 125
Subliminal perception 125
■ Vision 126
The nature of light 126
The eye 127
Neural pathways 132
Perceiving in colour 135
■ Hearing 137
The nature of sound 137
The ear 139
ONE STEP FURTHER Music perception as a lens on entrainment, sensory integration and expertise 140
Neural pathways 142
COMMENTARY Sensory development 144
■ Other senses 144
Smell 145
Taste 146
Skin senses 147
FROM BRAIN TO BEHAVIOUR Personality and pain 151
Proprioceptive senses 151
■ Perception 152
Organising sensory experience 153
Interpreting sensory experience 161
Summary 168
Key terms 169
Review questions 170
Discussion questions 170
Application questions 170
Multimedia resources 170

5 Consciousness 171
■ The nature of consciousness 175
Functions of consciousness 175
Consciousness and attention 176
The normal flow of consciousness 178
■ Perspectives on consciousness 179
The psychodynamic unconscious 179
The cognitive unconscious 181
FROM BRAIN TO BEHAVIOUR Consciousness and neural pathways 182
■ Sleep and dreaming 184
The nature and evolution of sleep 185
Stages of sleep 188
ONE STEP FURTHER Thinking about sleep realistically 190
Three views of dreaming 191
■ Altered states of consciousness 194
Meditation 194
Hypnosis 194
COMMENTARY Hypnosis: four questions and answers 197
Drug-induced states of consciousness 198
Disorders of consciousness 204
Summary 206
Key terms 206
Review questions 206
Discussion questions 207
Application questions 207
Multimedia resources 207

6 Learning 209
■ Classical conditioning 213
Pavlov's model 213
COMMENTARY Pavlovian conditioning — why bother? 215
Conditioned responses 216
Stimulus generalisation and discrimination 218
Extinction 219
Factors affecting classical conditioning 219
What do organisms learn in classical conditioning? 221
FROM BRAIN TO BEHAVIOUR Classical conditioning and neurons 222
■ Operant conditioning 224
Reinforcement 224
Punishment 225
Extinction 227
ONE STEP FURTHER Gambling and positive reinforcement 228
Operant conditioning of complex behaviours 229
■ Cognitive–social theory 234
Learning and cognition 234
Social learning 238
Summary 241
Key terms 242

Review questions 242
Discussion questions 242
Application questions 242
Multimedia resources 244

7 Memory 245

Memory and information processing 249
Mental representations 249
Information processing: an evolving model 250

Working memory 254
Processing information in working memory: the central executive 255
Visual and verbal storage 255
The neuropsychology of working memory 256
The relationship between working memory and long-term memory 257

Varieties of long-term memory 259
Declarative and procedural memory 259
Explicit and implicit memory 260
FROM BRAIN TO BEHAVIOUR Long-term memory and neuropsychology 261
Everyday memory 263

Encoding and organisation of long-term memory 265
Encoding 265
Mnemonic devices 268
Networks of association 269
Schemas 272

Remembering, misremembering and forgetting 273
How long is long-term memory? 274
How accurate is long-term memory? 274
ONE STEP FURTHER Should we be worried when a senior complains about their memory? 277
Why do people forget? 278
False memories and repressed memories 279
COMMENTARY Memory 280
Disordered memories 281
Summary 283
Key terms 284
Review questions 284
Discussion questions 284
Application questions 284
Multimedia resources 285

8 Thought and language 287

Units of thought 290
Manipulating mental representations 291
Concepts and categories 292

Reasoning, problem solving and decision making 296
Reasoning 296
Problem solving 298
Overcoming barriers to problem solving 301
Decision making 302
How rational are we? 303

Explicit and implicit thinking 303
Emotion, motivation and decision making 305
Connectionism 307
FROM BRAIN TO BEHAVIOUR The mysteries of thought processes 310

Language 311
Language and thought 312
Transforming sounds and symbols into meaning 313
The use of language in everyday life 316

Language development 318
Nature and nurture in language development 318
A critical period for language development? 321
What infants know about language 322
From babbling to bantering 323
Is language distinctly human? 325
Summary 328
Key terms 329
Review questions 329
Discussion questions 329
Application questions 329
Multimedia resources 330

9 Intelligence 331

The nature of intelligence 335
Intelligence is multifaceted and functional 335

Intelligence testing 335
Binet's scale 336
Tests of intelligence 336
ONE STEP FURTHER Intelligence and occupational outcomes 339
The extremes of intelligence 340
FROM BRAIN TO BEHAVIOUR Brain size and intelligence: is bigger better? 343
Validity and reliability of IQ tests 344

Approaches to intelligence 346
The psychometric approach 346
The information-processing approach 348
Current multifactor theories of intelligence 350

Heredity and intelligence 354
Individual differences in IQ 354
Group differences: race and intelligence 357
The science and politics of intelligence 358
Summary 359
Key terms 360
Review questions 360
Discussion questions 360
Application questions 360
Multimedia resources 361

10 Motivation and emotion 363

Perspectives on motivation 367
Psychodynamic perspective 367
Behaviourist perspective 369
Cognitive perspective 370
Humanistic perspective 372
Evolutionary perspective 374
Applying the perspectives on motivation 376

Eating 377
Homoeostasis 378
What turns hunger on? 379
What turns hunger off? 380
Obesity 380

Sexual motivation 383
The sexual response cycle 384
Sexual orientation 386
FROM BRAIN TO BEHAVIOUR Homosexuality and biology 387

Psychosocial motives 388
Needs for relatedness 388
Achievement and other agency motives 389

Emotion 391
Theories of emotion: physiological components 391
Subjective experience 393
Emotional expression 394
A taxonomy of emotions 397
COMMENTARY On the relationship of motivational and affective valence 399
The neuropsychology of emotion 400
Emotion regulation 402
Perspectives on emotion 403
ONE STEP FURTHER Emotion in the courtroom 408
Summary 410
Key terms 411
Review questions 412
Discussion questions 412
Application questions 412
Multimedia resources 412

11 Personality 413

Psychodynamic theories 417
Freud's models 418
Drive model 419
Object relations theories 425
Assessing unconscious patterns 425
COMMENTARY Faking on personality tests: what can psychologists do? 427
Contributions and limitations of psychodynamic theories 428

Cognitive–social theories 429
Encoding and personal relevance 430
Expectancies and competences 431
Self-regulation 432
Contributions and limitations of cognitive–social theories 433
FROM BRAIN TO BEHAVIOUR Driving Mr Albert 434

Trait theories 434
Eysenck's theory 435
The five factor model 436
ONE STEP FURTHER Problem gambling and the impulsivity trait: beyond classical and operant conditioning 438
Is personality consistent? 439
The interaction between personality and situation 442
Contributions and limitations of trait theories 443

Humanistic theories 444
Rogers' person-centred approach 444
Existential approaches to personality 445
Contributions and limitations of humanistic theories 447

Genetics, personality and culture 447
Genetics and personality 447
Personality and culture 450
Summary 453
Key terms 454
Review questions 454
Discussion questions 454
Application questions 454
Multimedia resources 455

12 Physical and cognitive development 457

Issues in developmental psychology 460
Nature and nurture 460
The importance of early experience 461
FROM BRAIN TO BEHAVIOUR The gendered brain 463
Stages or continuous change? 464

Studying development 464
Cross-sectional studies 464
Longitudinal studies 465
Sequential studies 465

Physical development and its psychological consequences 466
Prenatal development 466
Infancy 469
Childhood and adolescence 469
COMMENTARY The consequences of independent locomotion 470
Adulthood and ageing 471

Cognitive development in infancy, childhood and adolescence 472
Perceptual and cognitive development in infancy 472
Piaget's theory of cognitive development 476
ONE STEP FURTHER Music, mind, magic and Mozart 483
Vygotsky's sociocultural theory of cognitive development 484
Information-processing approach to cognitive development 485

Integrative theories of cognitive development 486
The digital age and adolescent cognitive development 487

■ Cognitive development and change in adulthood 488

Cognitive changes associated with ageing 488
Ageing 491
Summary 494
Key terms 495
Review questions 495
Discussion questions 495
Application questions 495
Multimedia resources 495

13 Social development 497

■ Attachment 500

Attachment in infancy 501
Individual differences in attachment patterns 502
FROM BRAIN TO BEHAVIOUR Temperament, experience and their interaction in the development of attachment styles 504
Implications of attachment for later development 505

■ Socialisation 508

The role of parents 509
The role of culture 511
Socialisation of gender 511
Socialisation and learning 513

■ Peer relationships 513

Friendships 513
Sibling relationships 516

■ Development of social cognition 516

The evolving self-concept 517
Concepts of others 518
Perspective-taking and theory of mind 519
Children's understanding of gender 520

■ Moral development 523

The role of cognition 523
The role of emotion 527
Making sense of moral development 528

■ Social development across the life span 530

Erikson's theory of psychosocial development 531
Development from adolescence to old age 533
COMMENTARY Body dissatisfaction: why is this a problem for some but not others? 534
ONE STEP FURTHER Social and emotional development in older adulthood 538
Summary 540
Key terms 541
Review questions 541
Discussion questions 541
Application questions 541
Multimedia resources 542

14 Health, stress and coping 543

■ Health psychology 546

History of health psychology 547
Theories of health behaviour 550
Health-compromising behaviours 554
FROM BRAIN TO BEHAVIOUR The genetics of obesity 557
Barriers to health promotion 570
Self-presentation and health 575

■ Stress 577

Stress as a psychobiological process 578
Stress as a transactional process 578
Sources of stress 579
ONE STEP FURTHER Post-traumatic growth 582
Stress and health 583
COMMENTARY Can research explain how stress is linked with the onset of disease? 587

■ Coping 588

Coping mechanisms 588
Social support 589

■ The future of health psychology 591

Summary 594
Key terms 594
Review questions 595
Discussion questions 595
Application questions 595
Multimedia resources 596

15 Psychological disorders 597

■ The cultural context of psychopathology 600

Culture and psychopathology 601
Is mental illness nothing but a cultural construction? 601

■ Mental health and mental disorders 602

■ Contemporary approaches to psychopathology 603

Psychodynamic perspective 604
Cognitive–behavioural perspective 605
Biological approach 606
Systems approach 608
Evolutionary perspective 609

■ Descriptive diagnosis: DSM and psychopathological syndromes 610

DSM controversies 613
ONE STEP FURTHER Classifying mental disorders — a critical look at DSM-5 614
Neurodevelopmental disorders 615
Schizophrenia 616
FROM BRAIN TO BEHAVIOUR The biology of schizophrenia 618
Bipolar and depressive disorders 622
Anxiety disorders 628
COMMENTARY Are mental disorders social constructions? 629
Obsessive–compulsive and related disorders 631

Trauma- and stressor-related disorders 632
Dissociative disorders 633
Somatic symptom and related disorders 634
Feeding and eating disorders 635
Conduct disorder 637
Substance-related disorders 637
Personality disorders 641
Are mental disorders really distinct? 644
Summary 646
Key terms 647
Review questions 647
Discussion questions 647
Application questions 647
Multimedia resources 648

16 Treatment of psychological disorders 649

Mental health services 653
Clinical psychologists 653
Scientist–practitioner model 653
Multidisciplinary teams 654
Mental health and health care utilisation 654

Psychodynamic therapies 655
Therapeutic techniques 656
Varieties of psychodynamic therapy 657

Cognitive–behavioural therapies 659
Basic principles 659
Classical conditioning techniques 659
Operant conditioning techniques 663
Modelling and skills training 663
Mindfulness 664
Acceptance and commitment therapy 664
Cognitive therapy 664

Humanistic, group and family therapies 666
Humanistic therapies 666
Group therapies 667
Family therapies 668
COMMENTARY What works and for whom? 669

Biological treatments 671
FROM BRAIN TO BEHAVIOUR Psychotropic medications 671
Antipsychotic medications 673
Antidepressant and mood-stabilising medications 673
Antianxiety medications 675
Electroconvulsive therapy and psychosurgery 676

Evaluating psychological treatments 678
Culture and treatment 679
Pharmacotherapy 680
Psychotherapy 680
Summary 686
Key terms 687
Review questions 687
Discussion questions 687
Application questions 687
Multimedia resources 688

17 Attitudes and social cognition 689

Attitudes 693
The nature of attitudes 693
Attitudes and behaviour 696
Persuasion 697
Attitudes to the environment 700
COMMENTARY Protecting the Maui's dolphin by picking up litter 701
Cognitive dissonance 703

Social cognition 705
Perceiving other people 706
Stereotypes and prejudice 708
ONE STEP FURTHER Jury decision making 712
ONE STEP FURTHER Understanding the 'us-versus-them' divide through brain and outward behaviour 715
Attribution 717
Biases in social information processing 719
Applications 722
Social and nonsocial cognition 722

The self 723
Approaches to the self 723
Self-esteem 724
Self-consistency 725
Self-presentation 726
FROM BRAIN TO BEHAVIOUR Physical health and views of the self 727
Summary 730
Key terms 730
Review questions 731
Discussion questions 731
Application questions 731
Multimedia resources 731

18 Interpersonal processes 733

Relationships 736
Factors leading to interpersonal attraction 737
Love 739
ONE STEP FURTHER Reasons for cohabitation 744
The dark side of relationships 745

Altruism 746
Theories of altruism 747
Bystander intervention 749

Aggression 751
Violence and culture 751
Violence and gender 752
The roots of violence 752
FROM BRAIN TO BEHAVIOUR Biological foundations of aggression 754

Social influence 759
Obedience 760
Conformity 762
Group processes 764

Everyday social influence 770
Social media 771
Summary 773
Key terms 774
Review questions 774
Discussion questions 774
Application questions 774
Multimedia resources 775

19 Cross-cultural and indigenous psychology 777

■ Culture and psychology 781
Cultural and cross-cultural psychology 781
Research methods in cultural and cross-cultural psychology 782

■ Understanding culture and its context 785
The dimensions of culture 785

■ Cross-cultural relations 788
Multiculturalism 788
Impact of multiculturalism 795

■ Indigenous psychology 800
Australian Indigenous cultures: Aboriginal peoples and Torres Strait Islanders 801
FROM BRAIN TO BEHAVIOUR Depth perception in Torres Strait Islanders 812
Indigenous people in Aotearoa/New Zealand 813

■ Promoting cross-cultural interactions 816
Education and culture 816
Indigenous cultures and the psychology discipline 818
COMMENTARY Aboriginal and Torres Strait Islander mental health and social and emotional wellbeing 819
Culturally competent psychologists 823
ONE STEP FURTHER Intercultural competence development for professional preparation 827
Summary 829
Key terms 830
Review questions 831
Discussion questions 831
Application questions 831
Multimedia resources 831

Solutions to application questions 833
Acknowledgements 837
Glossary 840
References 862
Name index 944
Subject index 962

Preface

My teaching philosophy is all about challenging students to become critical thinkers and self-directed learners. My aim is to arouse their passion and interest in the material they are studying. I believe this is the key to success. I feel that I am successful when students become totally engaged in the learning process and take on more responsibility for motivating and directing their own search for knowledge.

As the author of *Psychology: 4th Australian and New Zealand Edition*, my philosophy of writing an introductory psychology book reflects this same teaching philosophy. I have drawn on my expertise in the teaching of foundation psychology and individual differences courses. Additionally, my primary research interests focus on how teachers may best respond to issues of student diversity in their teaching.

A major objective is to consider the various individual and sociocultural factors that students bring with them to the learning environment and to explore methods for enhancing learning for all students, regardless of their location, cultural background or experience. Given my areas of expertise and research interests, it will not surprise you to learn that this edition includes more extensive coverage of research related to cross-cultural issues and continues to draw on research emerging from Australia, New Zealand and other parts of the Asia–Pacific region. The changes to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) have been included comprehensively, including controversies surrounding the latest edition (chapter 15). Additionally, the positive and negative psychological implications of social media, including adolescent cognitive development, are comprehensively covered throughout this current edition.

The principal aim of *Psychology: 4th Australian and New Zealand Edition* is to enhance the quality of the learning experience for all Australian and New Zealand students, by including material that is both relevant and interesting to them. First, the text provides a local cultural context that will help students to better relate to the subject matter and engage in the learning process. For example, the inclusion of local examples and research that reflect students' personal experiences will help them to understand the psychological concepts they are studying. Second, the text is compatible with the way undergraduate psychology is taught in Australian and New Zealand universities today.

My goal has also been to try to give students a sense of the 'big picture' of how we think, feel and behave, and how our evolving science continually addresses and readdresses the central questions that brought most of us into the field — questions about the relationship between psychological events and their neural underpinnings, between cognition and emotion, between cultural processes and human evolution, between nature and nurture and so forth. Introductory psychology is probably the last time most students — and psychologists — get a broad view of our field. In fact, I suspect one of the greatest personal benefits for those of us who teach introductory psychology is that we are continually exposed to new information, often in domains far from our own areas of expertise, which stretches and challenges our imaginations.

Writing a textbook is always a balancing act, with each edition adjusting scales that were tipped a bit too far in one direction with the previous one. Probably the most difficult balance to achieve in writing an introductory text is how to cover what we know (at least for now) and what is on the cutting edge, without making an encyclopaedia, particularly in a field that is moving forward so rapidly. Another challenge is to help those who might desire more structure to learn the material, without placing roadblocks in the path of students who would find most pedagogical devices contrived and distracting. A final balancing act involves presenting solid research in a manner that is accessible, lively and thought-provoking. I believe that this fourth edition of *Psychology* successfully achieves equilibrium across these different issues. The revisions have served to complement the original text, while maintaining its integrity and pedagogy. The text still speaks with one voice — albeit a voice with a trace of an Australian accent. I am very grateful for the strong support the textbook has received from students and my academic colleagues across Australasia. I am sure you will find the fourth edition even more useful and enjoyable than the third.

I am especially grateful to the many academics from Australia and New Zealand who provided the insightful **Commentary** and **One step further** features contained in the text. These contributions greatly enhance each chapter's content.

Commentary contributors (in order of chapter) — Dr Andrea Chester, RMIT; Dr John Reece, RMIT; Professor Simon Crowe, La Trobe University; Professor Doug Mahar, University of the Sunshine Coast; Dr Kevin McConkey, University of New South Wales; Professor Ottmar Lipp, University of Queensland; Professor Rick Richardson, University of New South Wales; Professor Eddie Harmon-Jones, University of New South Wales; Dr Richard Roberts, Center for New Constructs, Educational Testing Service (USA); Dr Carolyn MacCann, University of Sydney; Dr Jenny Richmond, University of New South Wales; Professor Susan Paxton, La Trobe University; Dr Vikki Knott, University of Canberra; Professor David Kavanagh, Queensland University of Technology; Professor Douglas Boer, University of Canberra; Dr Niki Harré, Auckland University; and Professor Pat Dudgeon, University of Western Australia.

One step further contributors (in order of chapter) — David Mutton, University of Western Sydney; Dr Kenneth Mavor, University of St Andrews; Professor Ulrich Schall, University of Newcastle; Professor Catherine Stevens, University of Western Sydney; Professor Dorothy Bruck, Victoria University; Associate Professor Matthew Rockloff, Central Queensland University; Professor Craig Speelman, Edith Cowan University; Associate Professor Nick Burns, University of Adelaide; Dr Guy Curtis, Murdoch University; Dr Dave Clarke, Massey University; Dr Ben Williams, Swinburne University of Technology; Dr Tim Windsor, Flinders University; Associate Professor Jane Shakespeare-Finch, Queensland University of Technology; Professor Gordon Parker, University of New South Wales; Dr Stefania Paolini, University of Newcastle; Associate Professor Blake McKimmie, University of Queensland; Dr Bruce Findlay, Swinburne University of Technology; and Professor Anita Mak, University of Canberra.

My sincere thanks also to my colleagues who have produced some fantastic additional resources for both lecturers and students: Dr Natalie Gasson, Curtin University; Dr Mara Blosfelds, Curtin University; Dr Vivienne Lewis, University of Canberra; Dr Greg Tooley, Deakin University; Dr Helen Correia, University of Western Sydney; Dr Liam Hendry, University of Southern Queensland; Dr Majella Albion, University of Southern Queensland; Dr Tania Signal, Central Queensland University; Dr Kate Mulgrew, University of the Sunshine Coast; and Dr Kimberley Norris, University of Tasmania.

Finally, I'd like to thank the team at John Wiley & Sons, including John Coomer (Publishing Director), Kylie Challenor (Managing Content Editor), Emma Knight (Senior Publishing Assistant), Beth Klan (Editorial Assistant), Rebecca Cam (Digital Content Editor), Belinda Rose (Copyright and Image Researcher) and Jo Hawthorne (Senior Production Controller) for all their hard work on the project.

Features of this edition

Additional local research and examples in each chapter

Adapting the text to the Australian and Asia–Pacific landscape involved drawing on the considerable body of research emerging from

Australia and New Zealand, as well as including statistics relevant to local experience. I believe that presenting research and literature relevant to students' own countries considerably enhances the quality of the learning experience. The adaptation was an exciting opportunity to optimise the benefits of the original text, by placing it in a cultural context familiar to local students. In this fourth edition I have continued to focus on citing recent work that provides up-to-date information and examples for each chapter. The **Australian and New Zealand content at a glance** section on pages xx–xxiv briefly outlines the extensive local content contained in this edition.

Enhanced cross-cultural and indigenous psychology coverage

Cross-cultural and indigenous psychology issues are covered both where relevant throughout the entire text, and also in a stand-alone chapter (chapter 19). Such coverage allows for maximum flexibility in teaching cross-cultural and indigenous psychology in an Introductory Psychology course.

Chapter 19 embeds a contextual analysis of indigenous issues in psychology. In this chapter, I explain the issues, psychological concepts, history and research of this broad and complex field. The chapter has been written to be relevant to readers in both Australia and New Zealand, yet maintains substantial contact with the broader, international literature. Some of the key issues addressed in this edition include:

- examining the National Indigenous Reform Agreement and efforts to close the gap between Indigenous and non-Indigenous Australians
- exploring the mental health and wellbeing needs of refugees and asylum seekers
- the Northern Territory intervention
- the National Aboriginal Health Strategy
- recognising the need for cultural awareness training and developing culturally competent psychologists.

A proven pedagogical framework: an integrated study package

Several key conceptual features remain from earlier editions that give *Psychology: 4th Australian and New Zealand Edition* its distinctive 'signature'. They arose from five objectives in creating this book:

- to focus on both the biological basis of psychology and the role of culture in shaping basic psychological processes
- to provide a conceptual orientation that would capture the excitement and tensions in the field
- to help students understand the logic of scientific discovery and hypothesis testing as applied to psychological questions
- to suggest ways of integrating psychological theories and knowledge across subfields
- to employ language that would be sophisticated but engaging.

Balanced coverage of multiple perspectives

Earlier editions have endeavoured to acquaint students not just with seminal research but with the conceptual frameworks that guide that research across subdisciplines. With this edition, I have once again tried to describe the strengths and limitations of the major perspectives, with increased emphasis on humanistic, cognitive and evolutionary perspectives and on potential integrations across perspectives.

From the start, students are challenged to think about psychological phenomena from multiple perspectives. Chapter 1 is not perfunctory; it introduces five perspectives — cognitive, evolutionary, behaviourist, humanistic and psychodynamic — in enough depth to allow students to begin conceptualising psychological data rather than simply memorising a list of facts, names or studies. At the same time, I have avoided slavishly introducing paragraphs on each perspective in every chapter, since some perspectives obviously apply better to certain phenomena than to others.

Biology and culture: a micro to macro approach

A consistent theme of the book, introduced in the first chapter, is that biology and culture form the boundaries of psychology. Understanding people means attending simultaneously to biological processes, psychological experience, and cultural and historical context. The focus on biological and neural underpinnings echoes one of the major trends in contemporary psychological science, as technological developments allow progressively more sophisticated understanding of the neural substrates of psychological experience. The focus on culture has been a central feature of *Psychology* since the publication of the first edition.

One of the key features of this text is the integration of both neuroscientific and cross-cultural research into the fabric of the narrative. Each chapter of this book contains an extended discussion that shows the way psychological experience is situated between the nervous system and cultural experience, called **From brain to behaviour**. These special features flow integrally from the text and are not presented as isolated 'boxes'. Thus, students will get the message that biological and cultural material is integral to understanding psychology, not somehow superfluous or added on. In addition, **A global vista** features, which explore psychological phenomena in other cultures, can be found in the online resources.

Conceptual orientation

The book is conceptually oriented. It attempts, within the limits of my objectivity and expertise (considerable limits, no doubt), to give a fair and compelling account of the different perspectives psychologists take in understanding psychological phenomena. I have a healthy respect for each approach and assume that if thousands of my colleagues find an approach compelling, it probably contains something that students should know.

Research focus

This book is about psychological science. A student should come out of an Introductory Psychology class not only with a sense of the questions and frameworks for answering them, but also with an appreciation for how to obtain psychological knowledge. Thus, chapter 2 is devoted to research methods, and the style reflects an effort to engage, not intimidate, so that students can see how methods actually make a difference. A supplementary chapter on statistical principles, which even the most seriously maths phobic can understand, is provided in the online resources. From start to finish, students read about specific studies so that they can learn about the logic of scientific investigation.

Language

Above all, I wanted to avoid writing in 'textese', a language that presents dry summaries of data for students to memorise instead of engaging them in thinking about psychology. *Psychology: 4th Australian and New Zealand Edition* offers a solid and comprehensive account of the principles of psychology in what I hope is an accessible, lively and thought-provoking style. Throughout the book, I aim for clarity and introduce terminology only when it enlightens, not obscures. I am not shy about using metaphor or weaving a narrative, but not a single term in this book is defined by context alone. If students need to understand a concept, they will see the definition in the same sentence in which the word is boldfaced. I have also tried to keep the language at a level appropriate to first-year university students, but if they have to look up an occasional word, I will not lose sleep over it. (I had to look up a few in writing it!)

As a teacher and writer, I try to make use of one of the most robust findings in psychology: that memory and understanding are enhanced when target information is associated with vivid and personally relevant material. Each chapter begins with a case or an event that lets students know why the topic is important and why anyone might be excited about it. None of the cases are invented; this is real Australian and New Zealand material, and the questions raised in the opening vignette re-emerge throughout each chapter.

Learning aids

I have tried to avoid pedagogy that is condescending or unnecessary. In my experience, students never follow up on annotated recommendations for future reading, so I have not cluttered the ends of chapters with them. On the other hand, most students need guidance in studying the material. Therefore, I have retained the learning aids from the last edition that have proven effective in helping students learn: **Central questions**, **Making connections**, **Apply & discuss**, boldfaced **key terms**, **interim summaries** and **chapter summaries**. The inclusion of the interim summaries reflects both feedback from lecturers and the results of research suggesting that distributing conceptual summaries throughout a chapter and presenting them shortly after students have read the material is likely to optimise learning. Additionally, the review, discussion and application questions at the end of each chapter enable students to actively engage with the material and self-test their understanding of the key concepts.

Organisation

I tried to organise *Psychology: 4th Australian and New Zealand Edition* in a way that would be convenient for most instructors and yet follow a coherent design. Of course, different instructors organise things differently, but I do not think many will find the organisation idiosyncratic.

Illustration and design

Consistent with earlier editions, I took tremendous care to select and design only figures and tables that actually add something and that do not just make the pages look less ominous. Consistent with the goal of providing students with a more integrative perspective on psychology, and with the goal of creating 'the thinking student's introduction to psychology', this edition again includes an integrated study package built into the structure of the text, without cluttering the margins and distracting from the narrative.

In this edition, I continue to integrate photos with the text in a way that fosters critical thinking and helps students see the connections between concepts presented in different chapters. Instead of using photos primarily to brighten the book or provide interesting diversions (both lofty aims, of course), I have used them to link concepts and visual images, through the two pedagogical features called **Making connections** and **Apply & discuss**.

Dr Lorelle Burton
May 2014

About the authors

Lorelle Burton is Professor of Psychology in the Faculty of Health, Engineering and Sciences at the University of Southern Queensland (USQ). Lorelle is a fully registered psychologist and a full member of the Australian Psychological Society (APS). She commenced full-time teaching in 1996, with her primary areas of interest including foundation psychology and individual differences. Lorelle's passion for teaching psychology has been recognised with a number of teaching excellence awards, both locally and nationally. She received the USQ Award for Teaching Excellence in 2001, and the Dean's Award for Outstanding Contribution to the Faculty of Sciences in 2005 and 2006. She was awarded the 2004 Pearson Education and APS Psychology Early Career Teaching Award, and in 2006 she received a Carrick Australian Award for Teaching Excellence (Social Sciences) and a Carrick Australian Citation for Outstanding Contributions to Student Learning. One of the keys to Lorelle's success as a teacher is her commitment to developing innovative approaches to course design and delivery. She is deeply committed to the quality of learning experiences and the success of her students, and has passionately embraced new technologies as a means of creating exciting, interesting and meaningful learning environments. Via online discussion forums, interactive online exercises and multimedia delivery, she engages her students and enables them to become active and satisfied participants in their learning experiences. For example, she authored the widely used text entitled *An Interactive Approach to Writing Essays and Research Reports in Psychology*, currently in its third edition, which includes interactive practice exercises to help students quickly master the core referencing requirements in psychology and better manage their own learning needs. She also adapted the iStudy to accompany this latest edition of the text. Lorelle's current research focus is on better understanding the factors that impact on student learning. She has presented and published multiple papers at national and international conferences in her specialised areas of teaching and research. Lorelle has been an invited assessor for national teaching excellence awards and grants and has led numerous national collaborative research projects on student transition. She has published and presented multiple papers at national and international conferences in her specialised areas of teaching and research. Lorelle's current research focus involves leading cross-community collaborations to promote community capacity building and wellbeing. Psychology is second to her main love in life — her family. Lorelle is married to Andrew Fox and they have two children, Emily and Benjamin.

Drew Westen is Professor in the Department of Psychology and Department of Psychiatry and Behavioral Sciences at Emory University. He received his BA at Harvard University, an MA in Social and Political Thought at the University of Sussex (England) and his PhD in Clinical Psychology at the University of Michigan, where he subsequently taught for six years. While at the University of Michigan, he was honoured two years in a row by the *Michigan Daily* as the best teaching professor at the university, and was the recipient of the first Golden Apple Award for outstanding undergraduate teaching. More recently, he was selected as a G. Stanley Hall Lecturer by the American Psychological Association. Drew is an active researcher who is on the editorial boards of multiple journals, including *Clinical Psychology: Science and Practice*, *Psychological Assessment* and the *Journal of Personality Disorders*. His major areas of research are personality disorders, eating disorders, emotion regulation, implicit processes, psychotherapy effectiveness and adolescent psychopathology. His series of videotaped lectures on abnormal psychology, called *Is Anyone Really Normal*?, was published by the Teaching Company, in collaboration with the Smithsonian Institution. Drew also provides psychological commentaries on political issues for *All Things Considered* on National Public Radio. His main loves outside of psychology are his wife, Laura, and his daughter, Mackenzie. He also writes comedy music, has performed as a stand-up comic in Boston, and has performed and directed improvisational comedy for the President of the United States.

Robin Kowalski is Professor of Psychology in the Department of Psychology at Clemson University. She received her BA at Furman University, an MA in General Psychology at Wake Forest University and her PhD in Social Psychology at the University of North Carolina at Greensboro. Robin spent the first 13 years of her career at Western Carolina University in Cullowhee, North Carolina. While there, she received the Botner Superior Teaching Award and the University Teaching-Research Award. She came to Clemson in 2003, where she has received the College of Business and Behavioral Science Undergraduate Teaching Excellence Award, the Board of Trustee's Award for Faculty Excellence and the National Scholar's Mentoring Award. She is also an active researcher who served on the editorial board for the *Journal of Social and Clinical Psychology*. She has written or edited nine books and has been published in many professional journals, including *Psychological Bulletin* and the *Journal of Experimental Social Psychology*. Robin has two primary research interests. The first focuses on aversive interpersonal behaviours, specifically cyber bullying and complaining. Her research on complaining has received international attention, including an appearance on NBC's *Today Show*. Her book, *Complaining, Teasing, and Other Annoying Behaviors*, was featured on National Public Radio's *All Things Considered*, and in an article in *USA Weekend*. Her book on cyber bullying entitled *Cyber Bullying: Bullying in the Digital Age* has an accompanying website: www.cyberbullyhelp.com. Her second research focus is health psychology, with a particular focus on organ donation and transplantation. Robin has twin boys, Noah and Jordan.

Accompanying resources

Psychology: 4th Australian and New Zealand Edition is accompanied by a comprehensive range of teaching and learning resources. These resources — including print-, software- and web-based materials — are integrated with the text and take an active learning approach to help build students' ability to think clearly and critically. They have been specifically designed to facilitate a dynamic and innovative learning environment for both lecturers and students.

For students

iStudy featuring Cyberpsych multimedia

The *iStudy featuring Cyberpsych* multimedia resource accompanies the text. *Cyberpsych* contains extensive rich media content, authored by Dr Natalie Gasson (Curtin University), Dr Mara Blosfelds (Curtin University), Dr Vivienne Lewis (University of Canberra), Dr Greg Tooley (Deakin University), Dr Liam Hendry (University of Southern Queensland) and Dr Helen Correia (University of Western Sydney). The multimedia resources include:

- interactive modules
- concept animations
- Australian video cases
- international video clips provided by ScienCentral and selected for relevance by Dr Majella Albion (University of Southern Queensland).

iStudy (interactive study guide)

Written by the adapting text author Lorelle Burton and Alistair Younger (University of Ottawa), the *iStudy* is the perfect companion to the text. It allows students to efficiently review materials, and to test and apply their knowledge. Each chapter in the *iStudy* corresponds to a chapter in the text, and contains short-answer and multiple-choice self-test questions, fill-in exercises, crossword puzzles and applied activities. The *iStudy* may be purchased as a stand-alone item, or packaged with the text.

An Interactive Approach to Writing Essays and Research Reports in Psychology

Also written by adapting text author Lorelle Burton, this is a practical and thorough overview of writing in the psychology discipline, based on the latest edition of the *APA Publication Manual*.

AssignMentor

Wiley AssignMentor is available as an *option* to accompany the text. AssignMentor includes interactive online templates that will guide you in writing essays, research reports and literature reviews, using correct referencing techniques.

A Student's Guide to DSM-5

A Student's Guide to DSM-5 is an invaluable summary resource for university psychology students to help them understand the major implications of DSM-5 within an Australian context.

For instructors

Instructor's Resource Guide

Prepared by Dr Stephanie Quinton (Charles Sturt University) and Dr Kate Mulgrew (University of the Sunshine Coast), this comprehensive resource includes, for each text chapter:

- student learning objectives
- a brief chapter overview
- chapter outline (indicating the major headings in the chapter)
- extensive chapter notes, featuring enhancements such as lecture/tutorial activities to help extend students and stimulate their interest in the topic
- chapter summary
- key terms
- suggested responses for end-of-chapter questions, including review, discussion and application questions
- materials for additional class activity, including supplementary topics, practical class exercises or written projects, suggested web links and so on.

PowerPoint presentation slides

Prepared by Dr Kimberley Norris (University of Tasmania), these PowerPoint presentations contain an average of 30 slides per chapter and feature a combination of key concepts, images and problems from the textbook for use during lectures. The presentations are designed according to the organisation of the material in the textbook and can easily be customised to suit particular lectures.

Computerised test bank

Prepared by Dr Kimberley Norris (University of Tasmania), Dr Kate Mulgrew (University of the Sunshine Coast) and Dr Tania Signal (Central Queensland University), this test bank is made up of approximately 3500 questions including multiple-choice, fill-in and essay questions. All questions include answers, page references and brief answer descriptions. They have been grouped as 'factual' (facts found directly in text), 'conceptual' (students utilise conceptual knowledge gained to work out an appropriate answer) or 'applied' (students apply their knowledge to a real-life situation). This allows for testing of students, in areas from fundamental knowledge and understanding through to higher order thinking skills, such as the application and analysis of key concepts.

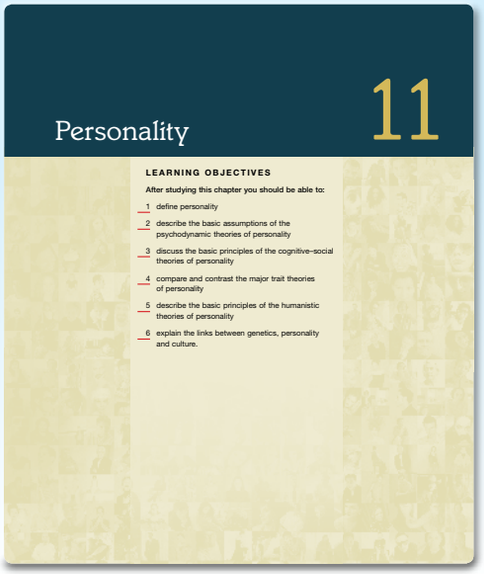
Art files

All images from the text are provided online for easy integration into lecturers' own resources.

Online resources for Course Management Systems

The resources for *Psychology: 4th Australian and New Zealand Edition* are all available to be loaded into any contemporary online teaching and learning platform, such as BlackBoard and Moodle. John Wiley & Sons Australia provides rich content based on the extensive range of text and accompanying resource material. Instructors have the option of uploading additional material and customising existing content to meet their needs.

How to use this book


Personality 11

LEARNING OBJECTIVES

After studying this chapter you should be able to:

1 define personality
2 describe the basic assumptions of the psychodynamic theories of personality
3 discuss the basic principles of the cognitive-social theories of personality
4 compare and contrast the major trait theories of personality
5 describe the basic principles of the humanistic theories of personality
6 explain the links between genetics, personality and culture.

LEARNING OBJECTIVES

At the start of each chapter, numbered learning objectives are provided to guide you through the material to be learned. Each learning objective corresponds with the illustrative concept maps and major headings throughout the chapter. These numbered objectives are revisited in the end-of-chapter summary.

LEARNING OBJECTIVES

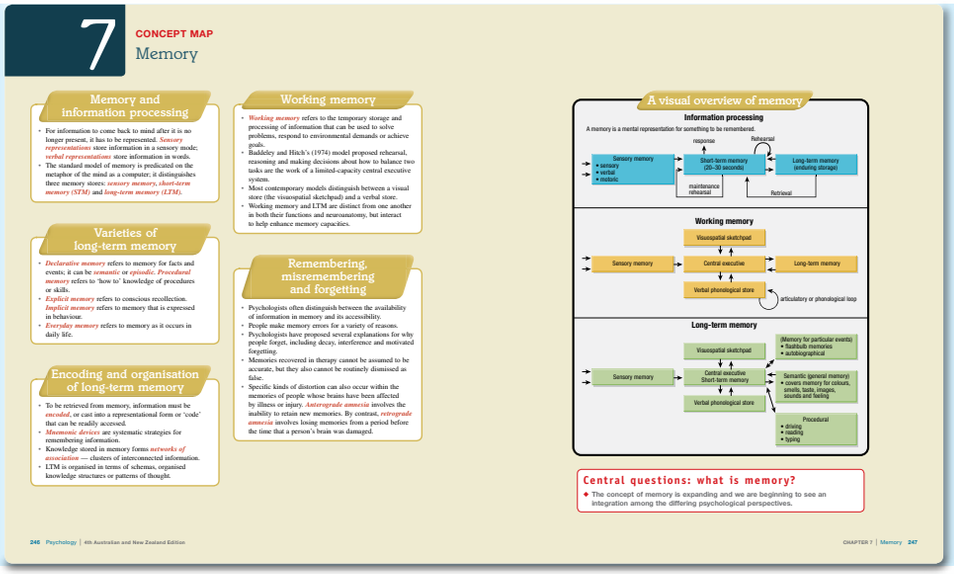
After studying this chapter you should be able to:

1 define personality

2 describe the basic assumptions of the psychodynamic theories of personality

CONCEPT MAPS

Each chapter opens with a concept map that corresponds with the numbered learning objectives, outlining the key psychological topics and concepts to be explored. This provides a visual overview of the chapter as a whole.


7 CONCEPT MAP
Memory

Memory and information processing

- For information to come back to mind after it is no longer present, it has to be represented. *Sensory representations* store information in a sensory mode; *verbal representations* store information in words.
- The standard model of memory is predicated on the metaphor of the mind as a computer; it distinguishes three memory stores: *sensory memory*, *short-term memory (STM)* and *long-term memory (LTM)*.

Varieties of long-term memory

- *Declarative memory* refers to memory for facts and events; it can be *semantic* or *episodic*. *Procedural memory* refers to 'how to' knowledge of procedures or skills.
- *Explicit memory* refers to conscious recollection. *Implicit memory* refers to memory that is expressed in behaviour.
- *Everyday memory* refers to memory as it occurs in daily life.

Encoding and organisation of long-term memory

- To be retrieved from memory, information must be *encoded*, or cast into a representational form or 'code' that can be readily accessed.
- *Mnemonic devices* are systematic strategies for remembering information.
- Knowledge stored in memory forms *networks of association* — clusters of interconnected information.
- LTM is organised in terms of schemas, organised knowledge structures or patterns of thought.

Working memory

- *Working memory* refers to the temporary storage and processing of information that can be used to solve problems, respond to environmental demands or achieve goals.
- Baddeley and Hitch's (1974) model proposed rehearsal, reasoning and making decisions about how to balance two tasks are the work of a limited-capacity central executive system.
- Most contemporary models distinguish between a visual store (the visuospatial sketchpad) and a verbal store.
- Working memory and LTM are distinct from one another in both their functions and neuroanatomy, but interact to help enhance memory capacities.

Remembering, misremembering and forgetting

- Psychologists often distinguish between the availability of information in memory and its accessibility.
- People make memory errors for a variety of reasons.
- Psychologists have proposed several explanations for why people forget, including decay, interference and motivated forgetting.
- Memories recovered in therapy cannot be assumed to be accurate, but they also cannot be routinely dismissed as false.
- Specific kinds of distortion can also occur within the memories of people whose brains have been affected by illness or injury. *Anterograde amnesia* involves the inability to retain new memories. By contrast, *retrograde amnesia* involves losing memories from a period before the time that a person's brain was damaged.

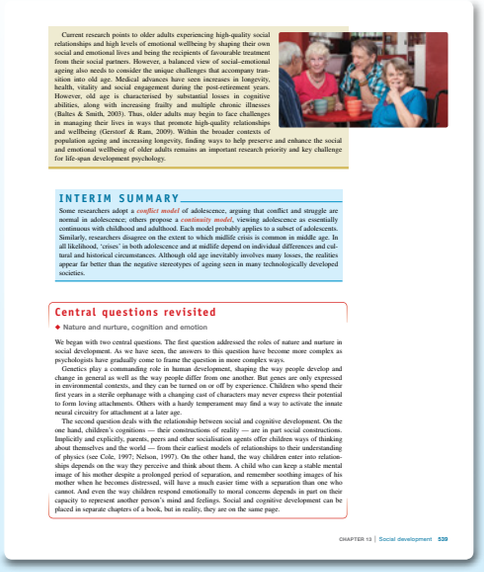
A visual overview of memory

Central questions: what is memory?

- The concept of memory is expanding and we are beginning to see an integration among the differing psychological perspectives.

246 Psychology | 4th Australian and New Zealand Edition

CHAPTER 7 | Memory 247


Current research points to older adults experiencing high-quality social relationships and high levels of emotional wellbeing by shaping their own social and emotional lives and being the recipients of favourable treatment from their social partners. However, a balanced view of social–emotional ageing also needs to consider the unique challenges that accompany transition into old age. Medical advances have seen increases in longevity, health, vitality and social engagement during the post-retirement years. However, old age is characterised by substantial losses in cognitive abilities, along with increasing frailty and multiple chronic illnesses (Baltes & Smith, 2003). Thus, older adults may begin to face challenges in managing their lives in ways that promote high-quality relationships and wellbeing (Gerstorf & Ram, 2009). Within the broader contexts of population ageing and increasing longevity, finding ways to help preserve and enhance the social and emotional wellbeing of older adults remains an important research priority and key challenge for life-span development psychology.

INTERIM SUMMARY

Some researchers adopt a *conflict model* of adolescence, arguing that conflict and struggle are normal in adolescence; others propose a *continuity model*, viewing adolescence as essentially continuous with childhood and adulthood. Each model probably applies to a subset of adolescents. Similarly, researchers disagree on the extent to which midlife crisis is common in middle age. In all likelihood, 'crises' in both adolescence and at midlife depend on individual differences and cultural and historical circumstances. Although old age inevitably involves many losses, the realities appear far better than the negative stereotypes of ageing seen in many technologically developed societies.

Central questions revisited

- Nature and nurture, cognition and emotion

We began with two central questions. The first question addressed the roles of nature and nurture in social development. As we have seen, the answers to this question have become more complex as psychologists have gradually come to frame the question in more complex ways.

Genetics play a commanding role in human development, shaping the way people develop and change in general as well as the way people differ from one another. But genes are only expressed in environmental contexts, and they can be turned on or off by experience. Children who spend their first years in a sterile orphanage with a changing cast of characters may never express their potential to form loving attachments. Others with a hardy temperament may find a way to activate the innate neural circuitry for attachment at a later age.

The second question deals with the relationship between social and cognitive development. On the one hand, children's cognitions — their constructions of reality — are in part social constructions. Implicitly and explicitly, parents, peers and other socialisation agents offer children ways of thinking about themselves and the world — from their earliest models of relationships to their understanding of physics (see Cole, 1997; Nelson, 1997). On the other hand, the way children enter into relationships depends on the way they perceive and think about them. A child who can keep a stable mental image of his mother despite a prolonged period of separation, and remember soothing images of his mother when he becomes distressed, will have a much easier time with a separation than one who cannot. And even the way children respond emotionally to moral concerns depends in part on their capacity to represent another person's mind and feelings. Social and cognitive development can be placed in separate chapters of a book, but in reality, they are on the same page.

CHAPTER 13 | Social development 539

Central questions

- What are the basic elements of personality?
- To what extent is personality stable over time and across situations?

CENTRAL QUESTIONS

A number of questions central to the chapter topic are posed at the beginning of each chapter. These questions are revisited at the end of each chapter.

COMMENTARY

Australian and New Zealand academics have provided expert commentary on one or two key issues covered in each chapter; often presenting both sides of the debate, or letting the reader know their personal opinions on an issue. They will often challenge you to extend your thinking as you consider the relevance of the topic to the Australian and Asia–Pacific region.

of it: stressful homes tend to trigger the physiological mechanisms that initiate puberty; so, too, does the presence of a male living in the home other than the girl's biological father, such as a stepfather (Ellis & Garber, 2000).

COMMENTARY

The consequences of independent locomotion

By Dr Jenny Richmond, The University of New South Wales

Motor milestones are perhaps the most salient aspects of development during the first year of life. The onset of independent locomotion represents a whole new world for parents, who all of a sudden become concerned with baby-proofing their house. But crawling also opens up a whole new world for the infant and has important implications for a number of other developmental domains. For example, crawling infants are better at mental rotation than non-crawling infants (Schwarzer, Freitag, Buckel, & Lofruthe, 2013). They are better able to retrieve memories when the cues from the learning situation have changed (Herbert, Gross, & Hayne, 2007), and crawling infants are also more likely to be wary of heights than non-crawling infants (Campos, Bertenthal, & Kermonian, 1992).

Joseph Campos from the University of California, Berkeley, suggests that 'travel broadens the mind', and that it is not locomotor action itself but rather the experiences that result from it that promote development in other domains (Campos et al., 1992). Using the 'visual cliff' task (see chapter 4), Campos et al. (1992) measured 7-month-old infants' heart rates (an index of anxiety) while they were lowered onto the deep side of the cliff or onto the shallow side of the cliff. Half of the infants were not yet crawling and the other half had been crawling for a few weeks. Both groups of infants put their hands and feet down to meet the glass on the shallow side but not on the deep side, showing that they perceived the depth. However, only those who had been crawling for some weeks exhibited an increase in heart rate when lowered towards the deep side. Campos et al. (1992) also showed that the infants' willingness to cross over into the deep side of the apparatus to meet their mother depended on how much crawling experience they had accumulated. Infants who had been crawling for only 11 days were much less reluctant than infants who had been crawling for 41 days.

What is it about crawling that promotes the development of height wariness? New work from the Campos lab simulates the locomotor experience that crawling conveys by training infants to use a joystick-operated cart, providing infants with the opportunity to engage in independent locomotion prior to the onset of crawling (Dhal et al., 2013). In this study, 7-month-old pre-crawling infants came into the lab and learned to propel themselves forwards in the cart by pulling a joystick towards them. After 15 days of training (10 minutes per day), their heart rate was measured while they were lowered onto the deep versus shallow of the visual cliff apparatus. The results showed that infants in the training group exhibited heart rate accelerations in response to the deep side; but infants in the control group, who had no experience with self-propelled locomotion, did not. These results suggest that it is not crawling per se that promotes the development of height wariness. Rather, via experience with visual proprioception, or the perception of the self moving through space, infants gradually learn about the dangers of heights in their environment and become wary of them (Dhal et al., 2013).

INTERIM SUMMARY

At birth, infants possess many adaptive reflexes, such as *rooting* and *sucking*, which help ensure that the infant will get nourishment. Individuals vary in the age at which they enter puberty, the stage during which they become capable of reproduction. Early pubertal development tends to be associated with positive outcomes for boys but negative outcomes for girls.

ONE STEP FURTHER

Another feature provided by Australian and New Zealand academics, One step further is an advanced discussion of an aspect of the topic being covered. It is intended for students who find the topic especially intriguing and want to learn more about it.

ONE STEP FURTHER

(posterior) of the temporal lobes respond to concrete visual features of objects such as colour and shape, whereas regions towards the front respond to more abstract knowledge (such as memory for objects, or the meaning of the concept 'democracy') (Graham, Patterson, & Hodges, 1999; Wong & Gallate, 2012). In general, information processed towards the back of the temporal lobes is more concrete and specific, whereas information processed towards the front is more abstract and integrated.

ONE STEP FURTHER

Auditory sensory memory: from basic psychophysiology to clinical applications

By Associate Professor Ulrich Schall, The University of Newcastle

The brain continuously processes sensory information. This process is largely automatic and does not require active attention, which, in turn, is required for further evaluation in response to any unexpected or sudden change in the sensory environment. In order to detect such change, the brain must establish a transient sensory memory trace of the current pattern of stimulation. This sensory memory trace also requires continuous updating in order to accommodate any changes in the pattern of stimulation over time so that it remains the best possible prediction of the current flow of stimulation. This mechanism allows the brain to monitor large amounts of data in an economic fashion by responding only to a violation of a predicted regularity.

While this process takes place in all sensory modalities, it is probably best researched for the auditory domain with an EEG-derived measure termed 'mismatch negativity' (MMN; Näätänen, 1992). MMN is recorded in response to a physical change in a regular pattern of auditory stimulation. The pattern is determined by repeatedly presenting identical tones (T), which are occasionally replaced by oddballs (O) differing — for instance, in pitch, loudness or duration, as in the sequence "T-T-T-O-T-T-T-T-T-T-O-T-T-T". In each instance when an oddball occurs and violates the predicted pattern of auditory stimulation, the EEG records an increased negativity around 150 milliseconds after oddball presentation. This increase in negativity in response to the oddball is measured by subtracting the EEG responses to the regular tones as the MMN event-related potential, thus becoming an objective measure of the transient auditory sensory memory trace.

Since no active cooperation is required, MMN can be recorded during sleep and even in coma patients, where a very small MMN usually points to a poor prognosis (Daltrozzo et al., 2007). Other applications include objective measures of auditory information processing with cochlear implants (Zhang et al., 2011). MMN can also be used to test receptive language ability in young children by presenting pseudo words, which occasionally differ in their sound characteristics (Partanen et al., 2013). MMN thereby allows for assessing the child's ability to discriminate sounds, which are crucial for speech comprehension.

Unlike other forms of receptive speech assessments, MMN recordings in response to pseudo words can be performed in very young children, since they do not rely on the child's behavioural or verbal responses. Hence, emerging receptive speech deficits may be detected much earlier and targeted intervention introduced. MMN is also reduced in autism, particularly in combination with speech disorders (Kuhl et al., 2005). Here, MMN can contribute to the clinical and neuropsychological assessments of children with a pervasive developmental disorder.

The most interesting application of MMN, however, is schizophrenia. A reduced MMN is probably the most robust psychophysiological finding in this disorder (Umbricht & Krljes, 2005). Pharmacological research has shown that agents acting on the N-methyl-D-aspartate (NMDA) receptor modulate MMN generation (such as the NMDA antagonist ketamine, which reduces MMN while also inducing psychotic and cognitive symptoms of schizophrenia) (Schmidt et al., 2012). Hence, MMN has become a promising research tool to investigate the neural basis of the disorder, which may also lead to better treatments.

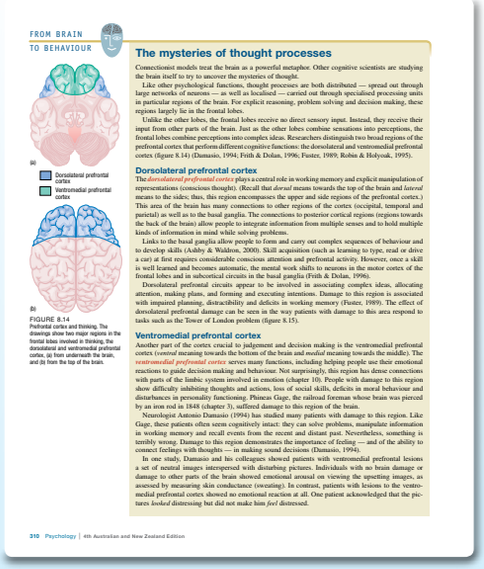
APPLY + DISCUSS

Neuroplasticity suggests that the brain is a dynamic organ that continues to develop and change over time. According to Dr Norman Doidge, a psychiatrist and psychoanalyst, our thoughts can change the structure and function of our brains. Dr Doidge has documented how patients suffering from neurological disorders can train their brains to learn new skills, in his popular book entitled, *The Brain That Changes Itself*. Essentially, the book outlines various neuroplastic interventions to show how healthy brain tissue can be trained to take over from damaged tissue.

- Can we train our brains to increase our IQs or change our personalities?
- How might the ever-expanding world of new technologies influence the way we train our brains?

FROM BRAIN TO BEHAVIOUR

From brain to behaviour focuses on concepts and findings from biopsychology and the neurosciences, providing a detailed discussion of a specific issue.


FROM BRAIN TO BEHAVIOUR

The mysteries of thought processes

Connectionist models treat the brain as a powerful metaphor. Other cognitive scientists are studying the brain itself to try to uncover the mysteries of thought.

Like other psychological functions, thought processes are both distributed — spread out through large networks of neurons — as well as localised — carried out through specialised processing units in particular regions of the brain. For explicit reasoning, problem solving and decision making, these regions largely lie in the frontal lobes.

Unlike the other lobes, the frontal lobes receive no direct sensory input. Instead, they receive their input from other parts of the brain. Just as the other lobes combine sensations into perceptions, the frontal lobes combine perceptions into complex ideas. Researchers distinguish two broad regions of the prefrontal cortex that perform different cognitive functions: the dorsolateral and ventromedial prefrontal cortex (figure 8.14) (Damasio, 1994; Frith & Dolan, 1996; Fuster, 1989; Robbs & Holyoak, 1995).

Dorsolateral prefrontal cortex

The *dorsolateral prefrontal cortex* plays a central role in working memory and explicit manipulation of representations (conscious thought). (Recall that *dorsal* means towards the top of the brain and *lateral* means to the sides; thus, this region encompasses the upper and side regions of the prefrontal cortex.) This area of the brain has many connections to other regions of the cortex (occipital, temporal and parietal) as well as to the basal ganglia. The connections to posterior cortical regions (regions towards the back of the brain) allow people to integrate information from multiple senses and to hold multiple kinds of information in mind while solving problems.

Links to the basal ganglia allow people to form and carry out complex sequences of behaviour and to develop skills (Ashby & Waldron, 2000). Skill acquisition (such as learning to type, read or drive a car) at first requires considerable conscious attention and prefrontal activity. However, once a skill is well learned and becomes automatic, the mental work shifts to neurons in the motor cortex of the frontal lobes and in subcortical circuits in the basal ganglia (Frith & Dolan, 1996).

Dorsolateral prefrontal circuits appear to be involved in associating complex ideas, allocating attention, making plans, and forming and executing intentions. Damage to this region is associated with impaired planning, distractibility and deficits in working memory (Fuster, 1989). The effect of dorsolateral prefrontal damage can be seen in the way patients with damage to this area respond to tasks such as the Tower of London problem (figure 8.15).

FIGURE 8.14
Prefrontal cortex and thinking. The drawings show two major regions in the frontal lobes involved in thinking, the dorsolateral and ventromedial prefrontal cortex, (a) from underneath the brain, and (b) from the top of the brain.

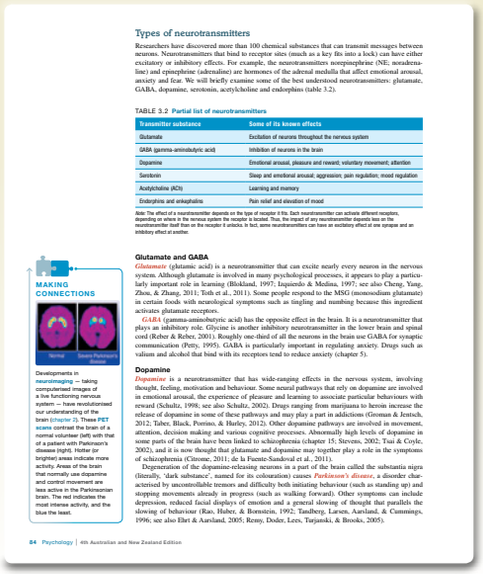
Ventromedial prefrontal cortex

Another part of the cortex crucial to judgement and decision making is the ventromedial prefrontal cortex (*ventral* meaning towards the bottom of the brain and *medial* meaning towards the middle). The *ventromedial prefrontal cortex* serves many functions, including helping people use their emotional reactions to guide decision making and behaviour. Not surprisingly, this region has dense connections with parts of the limbic system involved in emotion (chapter 10). People with damage to this region show difficulty inhibiting thoughts and actions, loss of social skills, deficits in moral behaviour and disturbances in personality functioning. Phineas Gage, the railroad foreman whose brain was pierced by an iron rod in 1848 (chapter 3), suffered damage to this region of the brain.

Neurologist Antonio Damasio (1994) has studied many patients with damage to this region. Like Gage, these patients often seem cognitively intact: they can solve problems, manipulate information in working memory and recall events from the recent and distant past. Nevertheless, something is terribly wrong. Damage to this region demonstrates the importance of feeling — and of the ability to connect feelings with thoughts — in making sound decisions (Damasio, 1994).

In one study, Damasio and his colleagues showed patients with ventromedial prefrontal lesions a set of neutral images interspersed with disturbing pictures. Individuals with no brain damage or damage to other parts of the brain showed emotional arousal on viewing the upsetting images, as assessed by measuring skin conductance (sweating). In contrast, patients with lesions to the ventromedial prefrontal cortex showed no emotional reaction at all. One patient acknowledged that the pictures *looked* distressing but did not make him *feel* distressed.

How to use this book (*continued*)



Types of neurotransmitters

Researchers have discovered more than 100 chemical substances that can transmit messages between neurons. Neurotransmitters that bind to receptor sites (much as a key fits into a lock) can have either excitatory or inhibitory effects. For example, the neurotransmitters norepinephrine (NE; noradrenaline) and epinephrine (adrenaline) are hormones of the adrenal medulla that affect emotional arousal, anxiety and fear. We will briefly examine some of the best understood neurotransmitters: glutamate, GABA, dopamine, serotonin, acetylcholine and endorphins (table 3.2).

TABLE 3.2 Partial list of neurotransmitters

Transmitter substance	Some of its known effects
Glutamate	Excitation of neurons throughout the nervous system
GABA (gamma-aminobutyric acid)	Inhibition of neurons in the brain
Dopamine	Emotional arousal, pleasure and reward; voluntary movement; attention
Serotonin	Sleep and emotional arousal; aggression; pain regulation; mood regulation
Acetylcholine (ACh)	Learning and memory
Endorphins and enkephalins	Pain relief and elevation of mood

Note: The effect of a neurotransmitter depends on the type of receptor it fits. Each neurotransmitter can activate different receptors, depending on where in the nervous system the receptor is located. Thus, the impact of any neurotransmitter depends less on the neurotransmitter itself than on the receptor it unlocks. In fact, some neurotransmitters can have an excitatory effect at one synapse and an inhibitory effect at another.

MAKING CONNECTIONS

Developments in neuroimaging — taking computerised images of a live functioning nervous system — have revolutionised our understanding of the brain (chapter 2). These PET scans contrast the brain of a normal volunteer (left) with that of a patient with Parkinson's disease (right). Hotter (or brighter) areas indicate more activity. Areas of the brain that normally use dopamine and control movement are less active in the Parkinsonian brain. The red indicates the most intense activity, and the blue the least.

Normal | Severe Parkinson's disease

Glutamate and GABA

Glutamate (glutamic acid) is a neurotransmitter that can excite nearly every neuron in the nervous system. Although glutamate is involved in many psychological processes, it appears to play a particularly important role in learning (Blokland, 1997; Izquierdo & Medina, 1997; see also Cheng, Yang, Zhou, & Zhang, 2011; Toth et al., 2011). Some people respond to the MSG (monosodium glutamate) in certain foods with neurological symptoms such as tingling and numbing because this ingredient activates glutamate receptors.

GABA (gamma-aminobutyric acid) has the opposite effect in the brain. It is a neurotransmitter that plays an inhibitory role. Glycine is another inhibitory neurotransmitter in the lower brain and spinal cord (Reber & Reber, 2001). Roughly one-third of all the neurons in the brain use GABA for synaptic communication (Petty, 1995). GABA is particularly important in regulating anxiety. Drugs such as valium and alcohol that bind with its receptors tend to reduce anxiety (chapter 5).

Dopamine

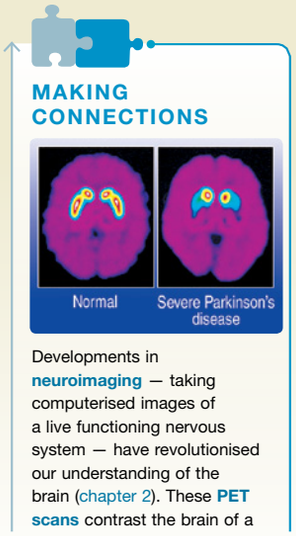
Dopamine is a neurotransmitter that has wide-ranging effects in the nervous system, involving thought, feeling, motivation and behaviour. Some neural pathways that rely on dopamine are involved in emotional arousal, the experience of pleasure and learning to associate particular behaviours with reward (Schultz, 1998; see also Schultz, 2002). Drugs ranging from marijuana to heroin increase the release of dopamine in some of these pathways and may play a part in addictions (Greenan & Jentsch, 2012; Taber, Black, Porrino, & Hurley, 2012). Other dopamine pathways are involved in movement, attention, decision making and various cognitive processes. Abnormally high levels of dopamine in some parts of the brain have been linked to schizophrenia (chapter 15; Stevens, 2002; Tsai & Coyle, 2002), and it is now thought that glutamate and dopamine may together play a role in the symptoms of schizophrenia (Citrome, 2011; de la Fuente-Sandoval et al., 2011).

Degeneration of the dopamine-releasing neurons in a part of the brain called the substantia nigra (literally, 'dark substance', named for its colouration) causes *Parkinson's disease*, a disorder characterised by uncontrollable tremors and difficulty both initiating behaviour (such as standing up) and stopping movements already in progress (such as walking forward). Other symptoms can include depression, reduced facial displays of emotion and a general slowing of thought that parallels the slowing of behaviour (Rao, Huber, & Bornstein, 1992; Tandberg, Larsen, Aarsland, & Cummings, 1996; see also Ehrt & Aarsland, 2005; Remy, Doder, Lees, Turjanski, & Brooks, 2005).

84 Psychology | 4th Australian and New Zealand Edition

MAKING CONNECTIONS

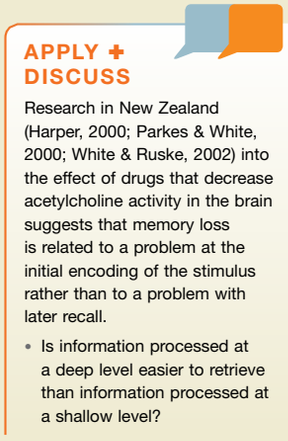
Making connections illustrates and links material from different chapters so that you can see the threads that tie the psychology discipline together. Key concepts are highlighted in a different colour to help you better establish these links.



MAKING CONNECTIONS

Normal | Severe Parkinson's disease

Developments in **neuroimaging** — taking computerised images of a live functioning nervous system — have revolutionised our understanding of the brain (chapter 2). These **PET scans** contrast the brain of a



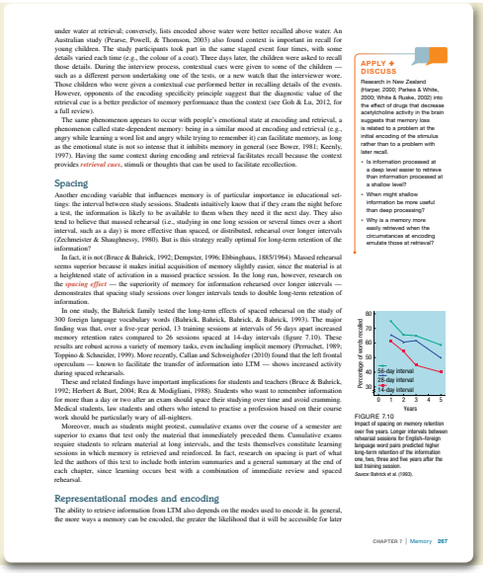
APPLY + DISCUSS

Research in New Zealand (Harper, 2000; Parkes & White, 2000; White & Ruske, 2002) into the effect of drugs that decrease acetylcholine activity in the brain suggests that memory loss is related to a problem at the initial encoding of the stimulus rather than to a problem with later recall.

- Is information processed at a deep level easier to retrieve than information processed at a shallow level?

APPLY AND DISCUSS

Apply and discuss combines visual imagery with questions to encourage higher order thinking, analysis and application of key concepts.



under water at retrieval; conversely, lists encoded above water were better recalled above water. An Australian study (Pearse, Powell, & Thomson, 2003) also found context is important in recall for young children. The study participants took part in the same staged event four times, with some details varied each time (e.g., the colour of a coat). Three days later, the children were asked to recall those details. During the interview process, contextual cues were given to some of the children — such as a different person undertaking one of the tests, or a new watch that the interviewer wore. Those children who were given a contextual cue performed better in recalling details of the events. However, opponents of the encoding specificity principle suggest that the diagnostic value of the retrieval cue is a better predictor of memory performance than the context (see Goh & Lu, 2012, for a full review).

The same phenomenon appears to occur with people's emotional state at encoding and retrieval, a phenomenon called state-dependent memory: being in a similar mood at encoding and retrieval (e.g., angry while learning a word list and angry while trying to remember it) can facilitate memory, as long as the emotional state is not so intense that it inhibits memory in general (see Bower, 1981; Keenly, 1997). Having the same context during encoding and retrieval facilitates recall because the context provides *retrieval cues*, stimuli or thoughts that can be used to facilitate recollection.

Spacing

Another encoding variable that influences memory is of particular importance in educational settings: the interval between study sessions. Students intuitively know that if they cram the night before a test, the information is likely to be available to them when they need it the next day. They also tend to believe that massed rehearsal (i.e., studying in one long session or several times over a short interval, such as a day) is more effective than spaced, or distributed, rehearsal over longer intervals (Zechmeister & Shaughnessy, 1980). But is this strategy really optimal for long-term retention of the information?

In fact, it is not (Bruce & Bahrick, 1992; Dempster, 1996; Ebbinghaus, 1885/1964). Massed rehearsal seems superior because it makes initial acquisition of memory slightly easier, since the material is at a heightened state of activation in a massed practice session. In the long run, however, research on the *spacing effect* — the superiority of memory for information rehearsed over longer intervals — demonstrates that spacing study sessions over longer intervals tends to double long-term retention of information.

In one study, the Bahrick family tested the long-term effects of spaced rehearsal on the study of 300 foreign language vocabulary words (Bahrick, Bahrick, Bahrick, & Bahrick, 1993). The major finding was that, over a five-year period, 13 training sessions at intervals of 56 days apart increased memory retention rates compared to 26 sessions spaced at 14-day intervals (figure 7.10). These results are robust across a variety of memory tasks, even including implicit memory (Pentucket, 1989; Toppino & Schneider, 1999). More recently, Callan and Schweighofer (2010) found that the left frontal operculum — known to facilitate the transfer of information into LTM — shows increased activity during spaced rehearsals.

These and related findings have important implications for students and teachers (Bruce & Bahrick, 1992; Herbert & Burt, 2004; Rea & Modigliani, 1988). Students who want to remember information for more than a day or two after an exam should space their studying over time and avoid cramming. Medical students, law students and others who intend to practise a profession based on their course work should be particularly wary of all-nighters.

Moreover, much as students might protest, cumulative exams over the course of a semester are superior to exams that test only the material that immediately preceded them. Cumulative exams require students to relearn material at long intervals, and the tests themselves constitute learning sessions in which memory is retrieved and reinforced. In fact, research on spacing is part of what led the authors of this text to include both interim summaries and a general summary at the end of each chapter, since learning occurs best with a combination of immediate review and spaced rehearsal.

Representational modes and encoding

The ability to retrieve information from LTM also depends on the modes used to encode it. In general, the more ways a memory can be encoded, the greater the likelihood that it will be accessible for later

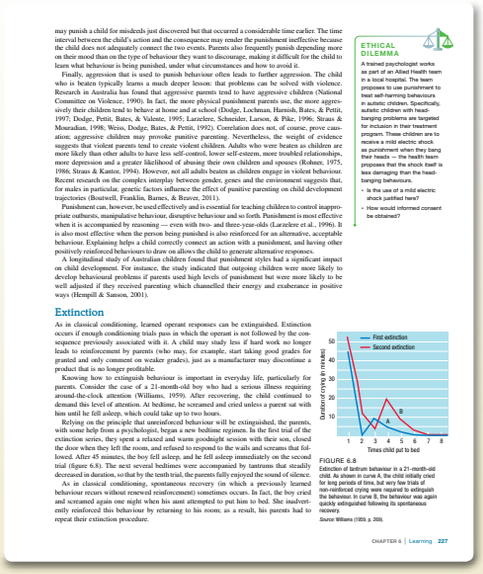
APPLY + DISCUSS

Research in New Zealand (Harper, 2000; Parkes & White, 2000; White & Ruske, 2002) into the effect of drugs that decrease acetylcholine activity in the brain suggests that memory loss is related to a problem at the initial encoding of the stimulus rather than to a problem with later recall.

- Is information processed at a deep level easier to retrieve than information processed at a shallow level?
- When might shallow information be more useful than deep processing?
- Why is a memory more easily retrieved when the circumstances at encoding emulate those at retrieval?

FIGURE 7.10
Impact of spacing on memory retention over five years. Longer intervals between rehearsal sessions for English–foreign language word pairs predicted higher long-term retention of the information one, two, three and five years after the last training session.
Source: Bahrick et al. (1993).

CHAPTER 7 | Memory 267



may punish a child for misdeeds just discovered but that occurred a considerable time earlier. The time interval between the child's action and the consequence may render the punishment ineffective because the child does not adequately connect the two events. Parents also frequently punish depending more on their mood than on the type of behaviour they want to discourage, making it difficult for the child to learn what behaviour is being punished, under what circumstances and how to avoid it.

Finally, aggression that is used to punish behaviour often leads to further aggression. The child who is beaten typically learns a much deeper lesson: that problems can be solved with violence. Research in Australia has found that aggressive parents tend to have aggressive children (National Committee on Violence, 1990). In fact, the more physical punishment parents use, the more aggressively their children tend to behave at home and at school (Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Dodge, Pettit, Bates, & Valente, 1995; Larzelere, Schneider, Larson, & Pike, 1996; Straus & Mouradian, 1998; Weiss, Dodge, Bates, & Pettit, 1992). Correlation does not, of course, prove causation; aggressive children may provoke punitive parenting. Nevertheless, the weight of evidence suggests that violent parents tend to create violent children. Adults who were beaten as children are more likely than other adults to have less self-control, lower self-esteem, more troubled relationships, more depression and a greater likelihood of abusing their own children and spouses (Rohner, 1975, 1986; Straus & Kantor, 1994). However, not all adults beaten as children engage in violent behaviour. Recent research on the complex interplay between gender, genes and the environment suggests that, for males in particular, genetic factors influence the effect of punitive parenting on child development trajectories (Boutwell, Franklin, Barnes, & Beaver, 2011).

Punishment can, however, be used effectively and is essential for teaching children to control inappropriate outbursts, manipulative behaviour, disruptive behaviour and so forth. Punishment is most effective when it is accompanied by reasoning — even with two- and three-year-olds (Larzelere et al., 1996). It is also most effective when the person being punished is also reinforced for an alternative, acceptable behaviour. Explaining helps a child correctly connect an action with a punishment, and having other positively reinforced behaviours to draw on allows the child to generate alternative responses.

A longitudinal study of Australian children found that punishment styles had a significant impact on child development. For instance, the study indicated that outgoing children were more likely to develop behavioural problems if parents used high levels of punishment but were more likely to be well adjusted if they exercised parenting which channelled their energy and exuberance in positive ways (Hemphill & Sanson, 2001).

ETHICAL DILEMMA

A trained psychologist works as part of an Allied Health team in a local hospital. The team proposes to use punishment to treat self-harming behaviours in autistic children. Specifically, autistic children with head-banging problems are targeted for inclusion in their treatment program. These children are to receive a mild electric shock as punishment when they bang their heads — the health team proposes that the shock itself is less damaging than the head-banging behaviours.

- Is the use of a mild electric shock justified here?
- How would informed consent be obtained?

Extinction

As in classical conditioning, learned operant responses can be extinguished. Extinction occurs if enough conditioning trials pass in which the operant is not followed by the consequence previously associated with it. A child may study less if hard work no longer leads to reinforcement by parents (who may, for example, start taking good grades for granted and only comment on weaker grades), just as a manufacturer may discontinue a product that is no longer profitable.

Knowing how to extinguish behaviour is important in everyday life, particularly for parents. Consider the case of a 21-month-old boy who had a serious illness requiring around-the-clock attention (Williams, 1959). After recovering, the child continued to demand this level of attention. At bedtime, he screamed and cried unless a parent sat with him until he fell asleep, which could take up to two hours.

Relying on the principle that unreinforced behaviour will be extinguished, the parents, with some help from a psychologist, began a new bedtime regimen. In the first trial of the extinction series, they spent a relaxed and warm goodnight session with their son, closed the door when they left the room, and refused to respond to the wails and screams that followed. After 45 minutes, the boy fell asleep, and he fell asleep immediately on the second trial (figure 6.8). The next several bedtimes were accompanied by tantrums that steadily decreased in duration, so that by the tenth trial, the parents fully enjoyed the sound of silence.

As in classical conditioning, spontaneous recovery (in which a previously learned behaviour recurs without renewed reinforcement) sometimes occurs. In fact, the boy cried and screamed again one night when his aunt attempted to put him to bed. She inadvertently reinforced this behaviour by returning to his room; as a result, his parents had to repeat their extinction procedure.

FIGURE 6.8
Extinction of tantrum behaviour in a 21-month-old child. As shown in curve A, the child initially cried for long periods of time, but very few trials of non-reinforced crying were required to extinguish the behaviour. In curve B, the behaviour was again quickly extinguished following its spontaneous recovery.
Source: Williams (1959, p. 269).

CHAPTER 6 | Learning 227

ETHICAL DILEMMA

In each chapter, an ethical dilemma is posed to help you better understand and apply the APS code of ethics.

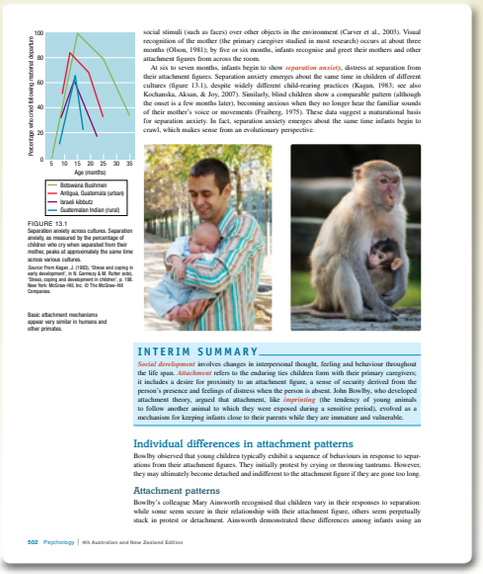
ETHICAL DILEMMA

A trained psychologist works as part of an Allied Health team in a local hospital. The team proposes to use punishment to treat self-harming behaviours in autistic children. Specifically, autistic children with head-banging problems are targeted for inclusion in their treatment program. These children are to receive a mild electric shock as punishment when they bang their heads — the health team proposes that the shock itself is less damaging than the head-banging behaviours.

- Is the use of a mild electric shock justified here?

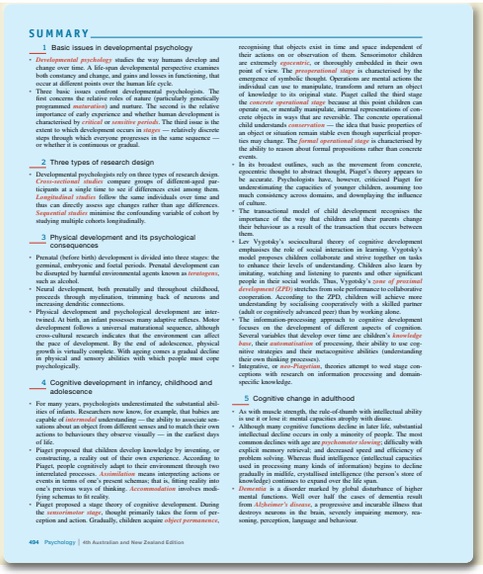
INTERIM SUMMARY

At the end of major sections, interim summaries recap the 'gist' of what has been presented. The inclusion of these summaries reflects both feedback from lecturers and the results of research suggesting that distributing conceptual summaries throughout a chapter and presenting them shortly after students have read the material is likely to optimise learning.



INTERIM SUMMARY

Social development involves changes in interpersonal thought, feeling and behaviour throughout the life span. ***Attachment*** refers to the enduring ties children form with their primary caregivers; it includes a desire for proximity to an attachment figure, a sense of security derived from the person's presence and feelings of distress when the person is absent. John Bowlby, who developed attachment theory, argued that attachment, like ***imprinting*** (the tendency of young animals to follow another animal to which they were exposed during a sensitive period), evolved as a mechanism for keeping infants close to their parents while they are immature and vulnerable.



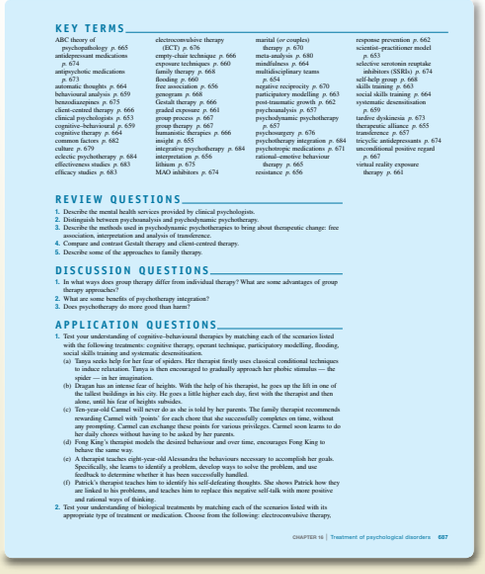
CHAPTER SUMMARIES

Each chapter concludes with a summary of the major points, which are organised under the learning objectives introduced at the start of the chapter.

SUMMARY

1 Basic issues in developmental psychology

- ***Developmental psychology*** studies the way humans develop and change over time. A life-span developmental perspective examines both constancy and change, and gains and losses in functioning, that occur at different points over the human life cycle.



KEY TERMS

ABC theory of psychopathology *p.* 665
antidepressant medications *p.* 674
antipsychotic medications *p.* 673
automatic thoughts *p.* 664
behavioural analysis *p.* 659
electroconvulsive therapy (ECT) *p.* 676
empty-chair technique *p.* 666
exposure techniques *p.* 660
family therapy *p.* 668
flooding *p.* 660
free association *p.* 656
genogram *p.* 668

END-OF-CHAPTER REVIEW, DISCUSSION AND APPLICATION QUESTIONS

Each chapter contains review, discussion and application questions to test not only knowledge and understanding, but also higher order thinking and analysis in relation to key concepts.

Australian and New Zealand content at a glance

1 Psychology: the study of mental processes and behaviour

- Psychology as a field of scientific research in Australasia
- The 365 Grateful Project
- Australasian focus on education, training and accreditation issues in Psychology
- The national registration and accreditation scheme for psychologists in Australia
- Careers and professional associations in Australasia
- Psychologist services covered by Medicare in Australia
- A review of the Port Arthur tragedy
- Australian research on having a home advantage in elite sport
- An Australian forensic psychology research group examined
- Australian research on successful learning approaches
- Visualisation and Australian cricketer Ashton Agar
- Investigative psychology in Australia

2 Research methods in psychology

- New Zealand road safety research
- Children's exposure to violence in electronic media — the Australian government's inquiry
- Australian Psychological Society (APS) Code of Ethics
- Australian internet research
- Australian social media use research
- Cognitive and IQ tests and Maori job applicants

3 Biological bases of mental life and behaviour

- Australian research into high levels of caffeine leading to hallucinations
- Research on reading difficulties of Australian children
- Australian Alicia 'Friday' Wright — a young person diagnosed with Parkinson's disease — coordinates a support group for young people
- An analysis of Sally Pearson's brain function at the height of competition
- The Veronicas — Australian twins' musical success

4 Sensation and perception

- Research on Australian cancer patients and their attitudes to pain management
- Sensory adaptation at Rotorua, New Zealand
- The Australian Bureau of Statistics' National Health Survey
- Australian research on higher rates of taste disorders in Indigenous Australian children compared to non-Indigenous Australian children
- Poker player Joe Hachem and the eye as a cue
- Use of monocular cues for depth perception in a painting of the Gallipoli landing
- Australian research on visual cliff experiments with toddlers and water
- Graeme Clark and the cochlear implant
- Triathlete Erin Densham and pain perception
- Australian theme park rides and the proprioceptive senses
- The moon perception over Surfers Paradise
- Linear perspective cues and the city of Melbourne
- Australian amputee Priscilla Sutton and phantom limb sensation

5 Consciousness

- Australian research on synaesthesia
- Findings of a study of Australian ecstasy users
- A New Zealand study about the effects of ecstasy on rats
- Australasian sleep studies on babies, children, students and adults
- Australian work patterns and statistics
- Australians' use of prescription drugs (sleeping tablets)
- The cost of insomnia to the Australian community
- Australian research on smoke alarm effectiveness
- Australian research on what constitutes a healthy sleep
- Hypnosis in Australasia and its effectiveness as a source of pain relief
- Four key questions about hypnosis and its application
- Research on alcohol use
- Australian research on alcohol-related homicides
- Statistics on illicit drug use
- Young Australians' views about the environment and drug and alcohol use compared
- Australian research on pregnancy and drug use
- Statistics on hallucinogens
- Cannabis use among teenagers in New Zealand

6 Learning

- Successful New Zealand initiatives to decrease unsafe driving behaviour and graffiti
- Child learning in Aboriginal communities
- Australian research on needle phobias among chemotherapy patients
- Australian research on locus of control and relationship quality at work
- New Zealand research on autistic behaviour
- Findings of an Australian study examining punishment styles
- Australian research on gambling and positive reinforcement
- Discriminative stimuli and aggression on the football field
- Research discussions about Aboriginal belief systems and individuality
- New Zealand research on long-term potentiation (LTP)
- Australian research on the association between maternal facial expressions and social learning among toddlers
- Taste aversion in Australian native animals

7 Memory

- Australian entertainer Patti Newton's memory loss
- Australian entertainer Kerry Domann's amazing memory
- Missing for four days — a Brisbane manager's amnesia experience
- Australian pop star Guy Sebastian
- Findings from a Queensland study of primary school students' memory and cognitive functioning
- New Zealand research on the effects of drugs on the brain
- Australian research on shallow and deep learning (and processing) and achievement
- Australian research on teaching methods and assessment processes and shallow learning
- Levels of processing in a film production: Australian actress Cate Blanchett
- Australian research into extinction of fear
- New Zealand research on false memories
- Flashbulb memories and the death of Crocodile Hunter Steve Irwin
- An Australian example of the hierarchical organisation of information
- A discussion about recall in young children
- Child memory limitations study
- Research into the accuracy of child witness testimony
- Australian research on schemas and eyewitness testimony
- Australian research on forgetfulness during pregnancy: a link or a myth?
- Australian research on the relationship between memory difficulties and age and IQ

8 Thought and language

- Phonic reading instruction in Australian schools
- Semantics on the Australian television show *Talkin' 'bout your Generation*
- Analogies — Iraq and Vietnam war involvement for Australians
- Australian research on intelligence, gender and positive thinking as predictors of academic performance in youth
- Australian research on self-perceived efficacy of problem solving and productive coping strategies
- Australian language statistics
- Australian research on strokes and relational processing
- An Australian mother's research into infant communication
- Australian research on tone perception and discrimination in infants
- Updated statistics for Indigenous language use in Australia

9 Intelligence

- Intelligence types — Aboriginal trackers possess a unique form of intelligence
- Music trivia intelligence — Sydney man Mark Boerebach
- Monitoring standards in education — Western Australia's approach
- Research into the learning styles of Indigenous Australians
- Australian research on intellectual impairment
- Australian research on intellectual and physical impairment and class attendance
- Studies on emotional intelligence
- Australian research on the importance of different neurotransmitters on different aspects of intelligence
- Royal commission into Aboriginal deaths in custody
- Intelligence tests (e.g. the Koori IQ Test)
- Australian research on emotional intelligence and leadership
- Terence Tao — a gifted Australian mathematician
- Australian research on giftedness in chess prodigies
- Singer–songwriter Kate Miller-Heidke and Suns AFL player Gary Ablett: differences in intelligence examined (Gardiner's theory of multiple intelligences)
- Australian research on early risk factors for adolescent antisocial behaviour
- Australian research on foetal alcohol syndrome

10 Motivation and emotion

- Solo sailor Jessica Watson — achieving a difficult goal
- Paralympian Kurt Fearnley — conquering the Kokoda Track and winning the London Marathon
- Goal setting and expectancies — NRL players as role models for Indigenous Australian children
- Australian research using the Thematic Apperception Test to measure how travellers' unconscious motives influence interpretations and preferences
- Australian study on health and relationships, including adolescent sexual activity statistics
- New Zealand sexual activity statistics
- Social values in culturally diverse university students
- Attitudes on body shape
- Cultural perceptions of body type (Miranda Kerr as a modern standard of beauty)
- Australasian research and statistics on weight, dieting, obesity and health issues
- Australasian research into cross-cultural differences in eating and body image issues
- Studies from the Australian Research Centre in sex, health and society
- Australian adventurers James Castrission and Justin Jones set themselves epic goals
- Sexual health statistics for Australian students
- Child rearing practices of Australians
- Australasian research findings on murders
- Australian research into anger being associated with approach motivation
- Australian research into emotions influencing jurors' judgements in a courtroom
- Australian medical entrepreneur Geoffrey Edelston and American fitness instructor Brynne Gordon: a likely or unlikely duo?
- Cross-cultural study on the relationship between emotion and behaviour
- The moral choices of West Australian auditors
- Australian satin bower birds collecting blue ornaments to attract a mate

11 Personality

- The 'Twinnies' — an analysis of the personalities of twins
- The Dunedin Multidisciplinary Health and Development Study findings on the correlation between behaviour traits in early childhood and adulthood

- Australian research on the association between self-efficacy and motivation to engage in physical activity
- Australian and New Zealand research on problem gambling and the impulsivity trait
- New Zealand research on the relationships between personality factors and innovation at the nation–state level
- Cricket Australia's decision to ban the Mexican wave and personality dynamics in a group setting
- Australian research into changes in 'big five' personality traits over a four-year period
- Australia Day riots and the situational causes of behaviour
- Australian research on twin pairs and MZ–DZ differences
- Australian research into faking on personality tests
- New Zealand research on addictive personality in first-year university students
- Discussions on Eckermann's analysis of the notion of creation stories known as 'The Dreaming' in traditional Aboriginal societies

12 Physical and cognitive development

- The Wiggles and preschool children's preoperational thought processes
- Australian research contributions on infant sensory and perceptual development
- Australian research on the consequences of emotional neglect and physical abuse in childhood
- Cultural diversity and the reliability of cross-cultural studies
- Challenges for the Australian government in ensuring Indigenous mental health needs are effectively met
- A maternal influence on theory of mind development
- Australian research on premature babies and links to poorer motor skill development
- Australian study on Foetal Alcohol Syndrome
- Research into motor development in Indigenous children
- Study of behaviour problems in Australian primary school children
- Research on memory impairment during pregnancy
- Dementia and the ageing population, including current rates within the Australian population
- New Zealand research on memory problems among people with Alzheimer's disease
- Dementia rates in some rural and remote Indigenous communities versus general population rates
- Dorothy De Low: the experience of ageing in an Australian centenarian
- Longitudinal study of ageing in Adelaide

13 Social development

- An ongoing inequity in life opportunities between Indigenous versus non-Indigenous populations in Australia and measures to close the gap
- An international comparison on life expectancies
- Research on attachment in Aboriginal children
- Western Australian research on children and their concept of community
- Australian research on maternal sensitivity in the caregiving role as a determinant of infant attachment security
- Parental employment and use of childcare as influences of attachment formation
- An Australian longitudinal study on maternal attitudes and the development of behavioural problems during childhood
- Australasian studies on temperament and later life
- Burns victim Jandamarra O'Shane: resiliency after a traumatic childhood experience
- Australian research on young children's concepts of community
- Australian research on social media use among children and teenagers
- Australian research on the media's influence on the body image of adolescent males
- Australian research on touchscreens, such as iPads, can enhance learning
- Research on age and the value placed on different relationships by Australians
- Australian research on the value of independence during adolescence
- Cultural variations in temperament
- Australian researchers' strategies to combat cyber bullying
- TOMNET and the Toowoomba Flexi School: an intergenerational mentoring problem
- Culture and social learning: reactions to Julia Gillard's rise to power as Australia's first female Prime Minister
- Australian research on body dissatisfaction: why does this affect some and not others?
- Moral values among fathers and sons in Australia's media dynasties
- Discussion and comparison of teaching strategies for boys and girls
- Research into socialisation and learning in Aboriginal cultures
- Australasian statistics on marriage and divorce
- Australian research on social and emotional development in older adulthood

14 Health, stress and coping

- Catastrophes in the Asia–Pacific region, including the 2011 and 2013 Queensland floods, Cyclone Yasi and Cyclone Larry, the Victorian bushfire crisis and the 2010 and 2011 Christchurch earthquakes — as well as the Japanese earthquake, tsunami and nuclear crisis
- New Zealand and Australian HIV/AIDS statistics
- Trends in major causes of deaths in Australia in recent history
- The top ten underlying specific causes of death for men and women in Australia
- Australian research on the rising prevalence of diabetes
- Australian and New Zealand overweight and obesity statistics, including a comparison of rates for at-risk groups
- Australian survey of psychology students' perceptions of obesity
- Australian research on stress in the workplace
- Fruit and vegetable consumption among Australian children
- New Zealand research on fruit and vegetable intake for Maori women
- New Zealand research on dietary knowledge for men
- Environmental contributors to obesity: a reflection on traditional and Western approaches adopted by Aboriginal groups in Australia
- The Walking School Bus program in Australian communities
- Australian government health initiatives
- Breast cancer: risk factors, screening statistics and publicity generated by Australian celebrities and charities

- Government screening programs for bowel and cervical cancer in Australia
- Australian smoking statistics
- Australian alcohol use statistics and associated health issues and costs
- Sexually transmitted diseases in Australia: statistics and treatment
- Associations between self-assessed health and other health indicators
- Indigenous and non-Indigenous health in Australia: a comparison and the specific targets set to close the gap
- Skin cancer in Australia
- The Condom Tree program in the Kimberley region, Western Australia
- Private health insurance statistics
- The impact of random breath testing programs on driver behaviour
- The Dunedin Multidisciplinary Health and Development Study findings on work-related stress and the correlation between children's television viewing habits and health issues
- The Australian National Children's Nutrition and Physical Activity Survey: findings on children's real versus recommended time spent engaging in screen-based activities
- Government health campaigns — recent Australian tobacco campaigns and the earlier 'Life. Be in it.' campaign
- Australian research into post-traumatic growth
- Swine flu cases in Australia
- Australasian study on performance at school — Maori, Aboriginal and migrant students

15 Psychological disorders

- A former Australian soldier's experience with post-traumatic stress disorder
- Seasonal affective disorder in tropical north Queensland
- The lifetime prevalence of mental disorders among Australians
- Lifetime prevalence for anxiety disorders — an Australian gender comparison
- Illicit drug use statistics and the cost of alcohol misuse to the Australian public
- Australian research on alcohol dependence in twins
- Australian research on genes associated with alcohol and tobacco dependence
- Australian research on environmental factors associated with alcohol, drug and tobacco use
- Australian research on the correlation between anxiety and mood disorders and the increased risk of alcohol dependence
- New Zealand research on the effects of marijuana use on IQ
- James Packer and evolutionary views about mate selection
- Toni Collette and playing a character with dissociative identity disorder in *The United States of Tara*
- The cost of weight loss initiatives for Australians and New Zealanders
- Medicare statistics on psychologist consultations in Australia
- Bulimia nervosa and other eating disorder statistics
- New Zealand research into the cognitive emotional experiences of women with eating disorders
- Personality and addiction: the connection for Australian actor Matthew Newton
- Andrew Johns (former NRL star) and his battle with bipolar disorder
- Indigenous spirituality
- Australian attention-deficit hyperactivity disorder (ADHD) statistics
- New Zealand research on post-traumatic stress disorder following motor vehicle accidents
- Schizophrenia in Australia
- Australian anxiety and depression statistics
- Depression among Australian ethnic minority groups and the relationship between culture and treatment for mental health issues
- New Zealand research on schizophrenia and child abuse
- Bipolar disorder in the Australian population
- Do Australians have unique psychological characteristics?
- High-risk groups for mental health issues
- Colonisation — the psychological legacy for Indigenous groups

16 Treatment of psychological disorders

- Australian diver Matthew Mitcham and mental health treatment
- Mental health statistics, including the 10 mental health issues most commonly managed by GPs
- Mental health issues among Indigenous groups in Australia and New Zealand
- Use of services by Indigenous groups in Australia and New Zealand
- Mental illness treatment statistics
- Use of antidepressants by age group in Australia
- Self-help groups in Australia and New Zealand
- The Medicare Benefits Scheme program and access to mental health services in Australia
- The use of electroconvulsive therapy in Australia
- Post-traumatic stress disorder and drug use problems
- The Royal Australian and New Zealand College of Psychiatrists' findings on treating depression with psychosis
- New Zealand research on the impact of trauma
- Australian research on post-traumatic growth in cancer survivors
- Australian research on trauma and post-traumatic growth in individuals working with refugees
- Australia's national depression initiative 'beyondblue'
- Study on drug treatment services for ethnic communities in Victoria
- Comparative study on the respective drug policies of Australia and the United States
- Guiding principles for the mental health treatment of Aboriginal and Torres Strait Islander peoples
- New Zealand study on the most effective patient–health care professional relationships
- Clinical psychologists — roles in the workplace
- Scientist–practitioner model in Australia

17 Attitudes and social cognition

- The politics of asylum seekers — 'boat people' — arriving in Australia
- New Zealand study of text messaging (SMS)
- Australian research on conservation psychology
- Attitudes towards recycled water and fuel emission control in Australia

- A New Zealand case study on encouraging students to stop littering
- Racial attitudes in Australia
- Ingroups and outgroups: racial tension at the Australian Open
- Why do some people become so parochial during sporting events in Australia, such as the soccer match between Melbourne Victory and Perth Glory?
- Australian research into the us-versus-them divide
- Bicultural (Maori–Pakeha) research in New Zealand
- New Zealand research on ostracism
- Stereotypes in Australasia
- Australian research into juror decision making and stereotypes
- Fatalism and emergency preparations: an earlier study of attitudes towards earthquakes in New Zealand
- Contemporary New Zealand research on preparation as a variable in the 2010 and 2011 Christchurch earthquakes
- The self-serving bias in play at the Melbourne Cup
- Research on self-serving bias with Australian and Japanese Olympic athletes

18 Interpersonal processes

- Situational variables in practice: two Australian police officers save a man who was swept off rocks near Phillip Island in Victoria
- The power of physical attractiveness: did looks help celebrity chef Curtis Stone achieve success?
- Australian online dating statistics and the role of social media as Cupid for many modern couples
- The top five criteria for finding a partner and gender differences in mate selection
- Australian research on the leading causes of relationship breakdowns
- Gift-giving as big business in Australia and theories of altruism
- Altruism during the 2011 and 2013 Queensland floods
- Altruism after the tragic Bali bombings
- Research on bystander interventions during drug overdoses
- The media habits of Australian youths
- The impact of violence in the media on children
- Low self-esteem and aggression: is there a link? A study including samples of New Zealand adolescents and university students
- Australian research into why couples choose to cohabit
- Discussion of the actions of Australian Boer War soldier Harry 'Breaker' Morant
- New Zealand study on the mating preferences of university students
- Australian study into deviants and quality of decision making
- Australian Institute of Family Studies research on creating and maintaining long and enduring marriages
- Relationship education programs in Australia
- Cross-cultural murder rate data for Canada, the United States, Australia and New Zealand
- Study of the attachment styles and conflict resolution patterns of long-term heterosexual couples
- New Zealand research into the societal aspects of physical and sexual abuse to better understand violence against women
- Life history theory and the 'dark triad': Australian research into the link between psychopathy and animal cruelty
- Antisocial group behaviour at the Star Hotel in NSW

19 Cross-cultural and Indigenous psychology

This entire chapter focuses on cross-cultural and Indigenous psychology in Australia and New Zealand, including:

- The National Indigenous Reform Agreement and closing the gap between Indigenous and non-Indigenous Australians
- A feature on the success of Geoffrey Gurrumul Yunupingu, gifted Aboriginal singer and performer
- The role of the Australian Indigenous Psychologists Association
- Australian and New Zealand birth statistics
- New Zealand ethnic group statistics
- Depth perception in Torres Strait Islanders
- Australian Department of Immigration and Citizenship statistics
- The survival of Indigenous languages in Australia
- The impact of multiculturalism on society
- Cross-cultural self-esteem studies
- Spirituality and functionality in traditional art: a defining feature of Aboriginal culture
- The haka in traditional Maori culture
- Features of Australian culture
- The *Building bridges: learning from experts* project
- Australian Indigenous cultures — Aboriginal peoples and Torres Strait Islanders
- Indigenous cultures in Aotearoa/New Zealand
- A discussion of the 2011 Department of Education and Training (Queensland) guidelines titled 'Embedding Aboriginal and Torres Strait Islander perspectives in schools'
- Findings of an Australian study comparing the performance on cognitive tests of people from both English-speaking backgrounds and non-English speaking backgrounds
- The launch of the APS Reconciliation Action Plan (RAP)
- Cultural bias and Indigenous and non-Indigenous Australian students' performances on IQ tests
- International student statistics for Australia and New Zealand
- Aboriginal and Torres Strait Islander mental health and social and emotional wellbeing
- New Zealand research into Maori psychology and a discussion of a *New Zealand Journal of Psychology* special feature edition on Maori psychological issues
- Culture clashes on the sporting field in an Indian cricket tour of Australia
- The 2005 Cronulla riots in Sydney
- Discursive psychology research in New Zealand on preventing racism by understanding the power of conversation
- The Australian government's apology to the Stolen Generation
- Discussion of the award-winning Australian film about the Stolen Generation, *Rabbit-Proof Fence*
- Indigenous health statistics
- *The Tracker* and *Once Were Warriors*: stories about minority cultures within mainstream Australia and New Zealand
- The Australian government's *Stronger Futures* initiative intervention into the running of Aboriginal communities in the Northern Territory
- Australian research into cultural training for graduates
- Comparison of Indigenous versus non-Indigenous Australian suicide statistics
- Indigenous psychology courses in Australia
- Culturally competent psychologists from Australia and their assistance with catastrophes and natural disasters

Psychology: the study of mental processes and behaviour

1

LEARNING OBJECTIVES

After studying this chapter you should be able to:

1. define psychology
2. discuss the contributions of biopsychology
3. outline the history of psychology
4. distinguish among the major theoretical perspectives in psychology
5. discuss the educational requirements for psychologists and outline their most common work settings
6. understand how to study effectively.

1

CONCEPT MAP

Psychology: the study of mental processes and behaviour

Psychology is the scientific investigation of mental processes (thinking, remembering and feeling) and behaviour. Understanding a person requires attention to the individual's biology, psychological experience and cultural context.

The boundaries and borders of psychology

- ***Biopsychology*** examines the physical basis of psychological phenomena such as motivation, emotion and stress.
- ***Cross-cultural psychology*** tries to distinguish universal psychological processes from those that are specific to particular cultures.

History of psychology

Philosophical roots of psychological questions

- ***Free will or determinism:*** do we freely choose our actions or is our behaviour caused — determined — by things outside our control?
- ***Mind–body problem:*** the question of how mental and physical events interact.

From philosophical speculation to scientific investigation

- Wilhelm Wundt founded the first psychological laboratory in 1879.
- Two prominent early schools of thought were ***structuralism*** (uncover the basic elements of consciousness through ***introspection***) and ***functionalism*** (explain psychological processes in terms of the role, or function, they serve).
- Edward Titchener initiated the school of thought known as structuralism; William James was one of the founders of functionalism.

Psychology in Australia and New Zealand

Education and training to become a psychologist

- Currently, a registered psychologist in Australia has completed a minimum of six years study in an APS-accredited psychology program. To practise as a psychologist in Australia, there is a legal requirement that you be registered with the Australian Health Practitioner Regulation Agency, which works in conjunction with the Psychology Board of Australia to provide a single registration scheme enabling registered psychologists to practise anywhere in Australia.
- In New Zealand, psychologists working in the public sector must be registered with the New Zealand Psychologists Board, which also involves a period of supervision on top of university training.

Major subdisciplines in psychology

- Within the broad discipline of psychology there are many fields of specialisation, including developmental, social, clinical, cognitive, health, forensic and sport psychology, among others.
- Different psychologists adopt different perspectives in their approach to the study of human behaviour.

How to study effectively

- Managing your time effectively is extremely important if you are to be successful in your studies. Set up a weekly schedule filled with specific study tasks (e.g., lectures, tutorials, assignments and exams) to help you stay on track with your studies.
- It is important that you learn how to get the most out of your study by becoming an active learner. Effectively preparing for the final exam involves setting up a revision timetable and applying a systematic approach to answering questions in an exam.

Professional associations for psychologists

- Both Australia and New Zealand also have peak bodies that represent the profession and its members — the Australian Psychological Society (APS), established in 1944, and the New Zealand Psychological Society (NZPsS) established in 1967.

Careers in psychology

- There are a wide range of career options available to psychologists. Psychologists may work in private practice. They may also gain employment in many other government and private sector organisations.
- There is a predicted strong employment growth within the next five years.