



SECOND EDITION

DEVELOPMENTAL PSYCHOLOGY

RACHEL GILLIBRAND
VIRGINIA LAM
VICTORIA L. O'DONNELL

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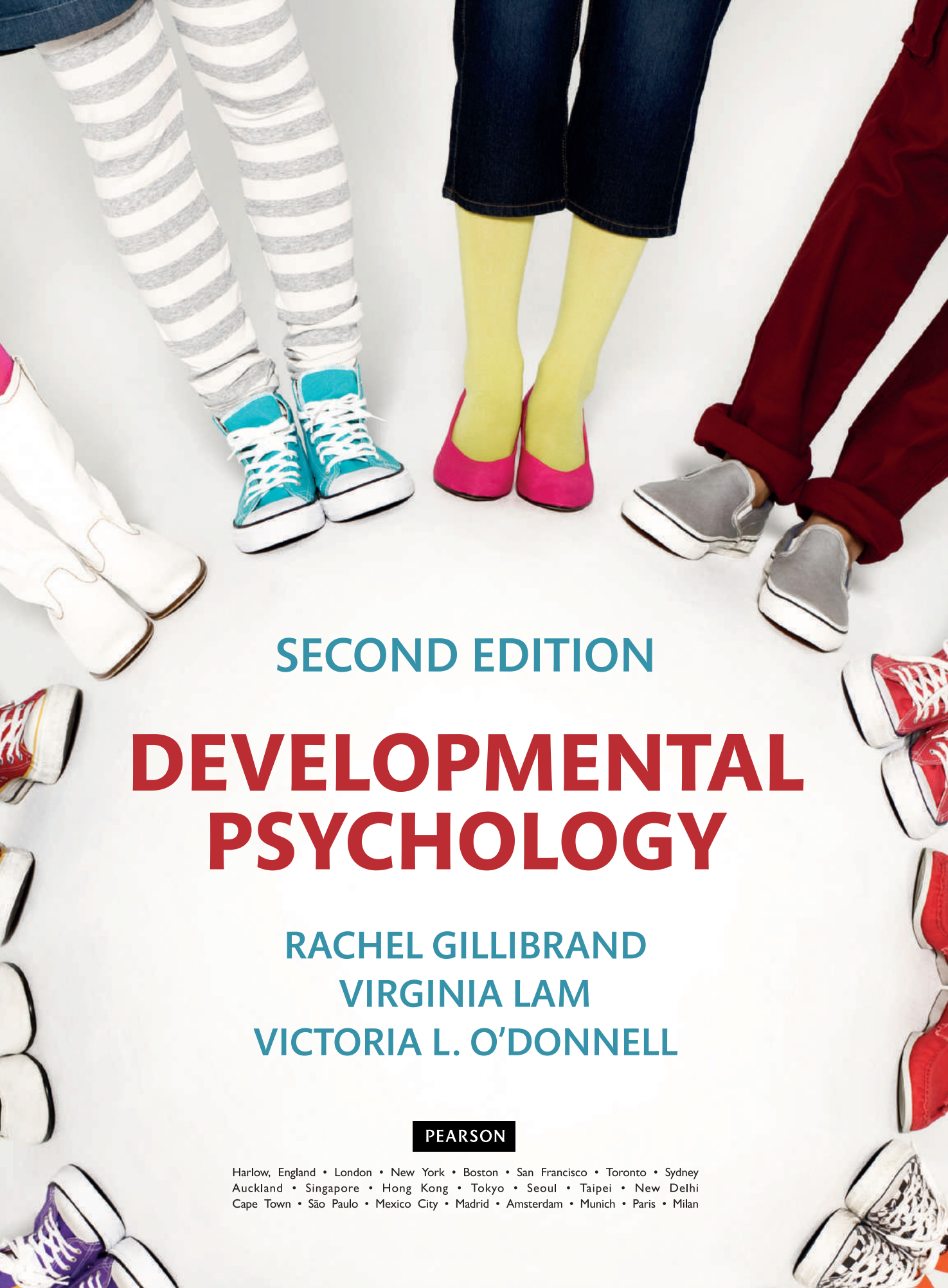
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Preface

Developmental psychology is a core component of psychology degrees. In the UK, for a degree programme to carry the graduate basis for recognition with the British Psychological Society, students must study developmental psychology as part of their degree, at least at introductory level. However, this doesn't mean that studying developmental psychology should be a chore! In fact, we believe that developmental psychology is one of the most interesting, exciting and broad-ranging subjects within the whole academic discipline of psychology.

Developmental psychology covers all aspects of psychological development across the lifespan, from birth through childhood and adolescence, and into adulthood. Whether you are more interested in cognition or emotion; in relationships or intelligence; in language or identity – developmental psychology has something for you! Furthermore, development is something which affects all of us and so is relevant to everyone. We all began life as children and so we all have a journey that we can look back on, and experiences that we can draw upon to understand developmental psychology. We have all been shaped by the relationships and experiences that we have had across our life journey so far. We all have parents (whether biological or not) and many of us have siblings or relatives whom we can look at as we consider the roles of nature and nurture in shaping the people we have become. Some of us have children and many more of us will go on to have children in the future, and so we can use developmental psychology to explain, to understand and to guide our behaviour as parents and as children. So, developmental psychology is not just an abstract, theoretical subject – it affects us all and is directly relevant to our lives and to the lives of everyone around us.

The purpose of this book is to provide an introduction to developmental psychology for students who are studying it for the first time, usually in either the first or the second year of their university studies. We want to do this in a reader-friendly way which will engage your attention, stimulate your interest in the subject and enhance your learning. We have tried to write the book using accessible

language instead of dense, jargon-laden academic text, whilst retaining the depth and scope necessary to study the subject appropriately. The book encourages you to think critically about the subject matter and also asks you to reflect on your own knowledge and experience. It pushes you to engage with empirical research as well as theory, to make links between different areas of development, and to recognise common themes which underpin the study of development overall.

Structure of the book

The book is structured into four sections. *Section 1* provides you with an introduction to developmental psychology, exploring what it is, what some of the key perspectives on development are, what developmental psychologists do, why they do it, and how. This section includes a chapter about some of the key theoretical models and perspectives which have had the greatest influences on developmental psychology. Some of these are classic ideas which are important to understand because they laid the foundations for the subsequent study of developmental psychology. Some have been ground-breaking and controversial. Some have become the backbone of the study of development. These are the kinds of theories and models which you will encounter time and time again throughout the rest of the book. This section of the book also contains a chapter on research methods. Research methods are absolutely central to your studies as a psychology student. Whilst research methods are often taught within psychology degree programmes as self-contained courses or modules, they cannot be fully understood outside of the context of the different areas of psychology that you study. Within this book, we explicitly discuss research methods as part of the study of developmental psychology, through an introductory chapter and then as a boxed feature in subsequent chapters throughout the rest of the book.

Section II addresses cognitive and linguistic development, exploring the earliest stages of prenatal development and infancy, the development of language, memory and intelligence, mathematical thinking and theory of mind. This section will therefore enable you to learn about children as thinking beings across a range of areas of development.

Section III explores social and emotional development, covering attachment, temperament, the concept of self and gender identity, social interactions and adolescence. This section will therefore enable you to learn about children as social and emotional beings across a range of areas of development.

Within *Section IV* we have invited a number of guest authors to contribute chapters on applied areas of development which we hope you will find really interesting. These chapters cover education, bullying, atypical development and ADHD. They focus on very specific topics that are of contemporary relevance, and will let you see how theory and research in developmental psychology can be applied to particular contexts.

How should I use this book?

The book is not written so that it has to be read from cover to cover. You can do so if you wish, but each chapter is a self-contained unit that can be read by itself. Nevertheless, as you will see, there are many ways in which recurrent themes and key ideas are highlighted throughout the book. This means that as you read each chapter (whether in chronological order or by dipping in and out), you should begin to make connections between different topics, to see how certain aspects of development interact and overlap, and to recognise issues, ideas, theories and questions which underpin developmental psychology as a whole.

The book also has an accompanying website. The website is structured in line with the chapters within the book, and it contains various additional resources for you as a student, and also for your lecturer, should they decide to use them. Resources for students include test-yourself questions with suggested answers, web links and video clips. Use these resources on the website to complement your reading of the book, to assess your own learning and to bring children and development to life. If your lecturer makes use of the additional web-based resources available to them then the content of your lectures, tutorials and practicals can be linked directly to the book. The book should also serve as a helpful tool when it comes to essays and exams. There are many features within the book that you can use to structure your revision, to test yourself, to identify gaps in your knowledge

and to practise writing answers to questions. We have used a questioning technique throughout the book, so that you are often asked to consider your own experiences or opinions, or to consider the implications of what has been said. We hope that the book itself is written and structured in such a way that it aids your understanding and learning as you go along, and some of the specific ways in which this has been achieved are discussed next.

What features of each chapter will enhance my learning?

Pedagogy is the science of learning and teaching. In addition to all of the above, we have used pedagogical principles in the writing of the book so that it contains a number of specific features specially designed and included with your learning in mind.

Opening examples

Each chapter begins with some kind of illustration of the topic under discussion. This might be a recent case from the news or the media, a description of a particular scenario, an extract from a piece of research or something else. Before going into the detail of the chapter, these opening examples should allow you to immediately grasp something of the topic, its significance, its relevance or its interest.

Learning outcomes

Each chapter also has a number of learning outcomes at the start. These are statements about what you should be able to do by the end of the chapter, having read its content and engaged in its reflective exercises. You can use these to focus your reading of each chapter, actively looking for information relevant to each learning outcome as a way to read with a purpose rather than passively trying to take in information. You can also use the learning outcomes to guide your revision of the subject matter later on, using them as a check on your own knowledge, and helping you to identify gaps in your understanding.

Stop and think questions

Throughout the book, every chapter includes a number of Stop and Think questions. Sometimes these questions will ask you to reflect upon your own knowledge or experience, or to relate things to your own life. Sometimes they will push you to go further than the information which has been provided, perhaps by considering the implications

of an idea, by engaging with a complex piece of research, by evaluating an argument or an approach, or by thinking about applications of theory.

Please do 'stop and think' when you come to these questions! They will help you to engage actively with the material within the chapter by thinking about it in a slightly different way. This should enable you to take a more critical and evaluative approach to the subject.

Glossary

Throughout the book you will see key words and phrases highlighted the first time they are used. Whilst these will be discussed within the main body of the text, you will also see definitions of them outside of the main text. These definitions should provide a quick and easy way for you to remind yourself of the meanings of key terms. All of the terms which are highlighted and defined are then pulled together in one glossary at the end of the book for ease of reference. So if you come across a term that you are not familiar with, or whose meaning you can't quite remember, use the glossary to help.

Illustrations

We know that students often find it off-putting when books are full of dense unbroken text, and so we have tried to make this book colourful and interesting visually. As with any psychology text, this one contains graphs, tables and figures throughout, which illustrate things like research findings or classifications of behaviour. But, in addition, we have included pictures and photographs of children in different situations, engaged in the kinds of behaviour being discussed, and other images, which all help to bring each chapter to life.

Case studies

Concrete, real-life examples are often easier to understand than abstract ones, and so we have tried to bring the content of each chapter to life by including a case study in each one. These case studies are real descriptions of behaviour – sometimes true and sometimes hypothetical – which bring difficult, abstract descriptions to life and make them easier for you to engage with and understand.

Cutting-edge feature

Reading recently published articles is very important for studying psychology, in order to keep up to date with new ideas and developments in the field. But the implications and significance of recent research may not be fully

understood until they have been more widely read and considered, and until the findings have been replicated by other researchers to ensure that they are reliable. As with any textbook, this one provides you with an overview of each topic area, summarising the main knowledge and understanding that has been built up over many years of research in that particular field. But we have also included a cutting-edge feature in each chapter which presents some of the latest research or contemporary thinking within the topic under discussion. These should allow you some insight into things like the directions that research in the field is taking, the advances which are being made due to new technologies, or new applications of knowledge in that field. These contemporary and relevant discussions should therefore be particularly interesting.

Themes

We have selected themes that are important within developmental psychology as a whole. Throughout the book you will find text boxes which explore each of these themes within the context of the topic of that particular chapter. These themes are research methods, nature–nurture and the lifespan.

Research methods

Research methods are a core part of psychology and underpin the ways in which we investigate human behaviour. We cannot fully understand, evaluate or critique theory or research in developmental psychology unless we consider the methods that are used to study it. Research methods are the topic of Chapter 3, but you can then further develop and build on your understanding of these through the Research Methods boxes throughout the rest of the book. These boxes may, for example, explore a particular research methodology that is commonly used within research into the topic under discussion. They may show you how an established methodology has been applied to the study of a specific area of development, or present a very new methodology and explore its contribution to our understanding of a particular aspect of development. In all of these ways, the boxes should help you to grasp the significance of research methods for the study of development.

Nature–nurture

One of the key debates in developmental psychology is about the relative influences of nature and nurture: that is, the extent to which genes and biology affect our development, and the extent to which the environment (in the form of our upbringing, culture or experiences) affects

our development. The relative influences of these factors, and the ways in which they interact, is a source of great interest to developmental psychologists, and is the topic of lots of research. You may also have your own intuitive ideas about this debate. The Nature–Nurture boxes throughout the book focus on this debate within the context of the topic of each chapter. They do this by discussing how the debate has manifested itself within that topic, by exploring what different views there are about it, or by discussing what a particular piece of research has contributed to the debate. In this way, the interaction of nature and nurture is a debate which you will encounter throughout the book, enhancing your understanding of its subtleties and complexity, and helping you to recognise its significance as an issue in developmental psychology as a whole.

Lifespan

Historically, developmental psychology has focused on the study of children, on the assumption that once we reach adulthood we are pretty much fully formed human beings and that the majority of significant and important developments have already occurred. The more contemporary study of developmental psychology, however, acknowledges that in fact development continues right across the lifespan; through later childhood, adolescence, early adulthood and right up into old age. The Lifespan boxes throughout the book focus on the ways in which development continues later in life, within the context of the topic of each chapter. Whilst the vast majority of research and theory in developmental psychology is still focused on children, these boxes should enhance your understanding of the ways in which development continues after childhood, and the different issues which are pertinent in studying adult development rather than child development.

Chapter summaries

Each chapter ends with a summary which is linked to the learning outcomes that were listed at the beginning of each chapter. The learning outcomes tell you what you should be able to do by the end of the chapter, and the summary provides an overview of the main topics covered, ideas explored and research discussed relating to each learning outcome. After reading the chapter, you can use the learning outcomes to test yourself and evaluate where there might be gaps in your knowledge and understanding. The chapter summary should help to show you where to look and which topics to revisit in order to address any of the outcomes that you don't feel you have yet achieved.

Review questions

Towards the end of each chapter, you will also find a list of review questions. These are designed to read like the kinds of question you might encounter in your exams or coursework. You can use these questions to test yourself by planning how you might answer them. Try working with a fellow student and then evaluate one another's planned responses. You can also use the questions to give you practice at writing essays. Try writing an answer to one of the questions under timed conditions. Or try writing an answer which keeps within the word limit that you are going to have for your coursework. All of this should give you some sense of your strengths and weaknesses in essay writing as well as in your knowledge of the subject area. Use that information to focus your study strategies accordingly.

Web links

At the end of each chapter, you will find a list of relevant and interesting websites that you can have a look at to develop, expand and enhance your knowledge and understanding of the subject matter. Some of these are directly related to the content of the chapter. Some might let you explore the topic from a different perspective, or consider a new application of the topic. As is always the case with the World Wide Web, one website usually provides a springboard to several others. Why not see where each one takes you, and what else you can find out about the subject by yourself? Use some of the other features, like review questions and learning outcomes, to guide your web surfing, though, and ensure that you remain focused on finding information about the topic you are researching. The web links are also available from the accompanying website at: www.pearsoned.co.uk/gillibrand.

Recommended reading

At the end of each chapter is a list of suggestions for additional readings on certain topics related to the subject of the chapter. Some of these readings relate to topics which have been discussed within the main body of the chapter, and which you may be interested in learning more about. Some topics may have been outside of the scope of the chapter itself, or may not have been fully discussed due to constraints of space. The further readings allow you to take control of your own learning, and will guide you about where to look to find out more about the subjects you are most interested in.

We hope that you enjoy the book and its accompanying website, that you find the book interesting and engaging, and that it helps you to recognise developmental psychology as one of the most diverse, dynamic, relevant and fascinating areas of psychology that you will come across!

Authors and contributors

Main authors

Dr Rachel Gillibrand

Rachel Gillibrand was awarded a PhD in Developmental Psychology from the University of Southampton where her early research explored decision making in teens with a chronic condition. Since then her research has evolved to explore a range of aspects in understanding the health, relationships and risky behaviour decisions made by young people entering early adulthood. She is a Chartered Psychologist, a registered practitioner Health Psychologist and a Fellow of the Higher Education Academy. Her current post is Senior Lecturer in Psychology at the University of the West of England, where she lectures predominantly on the psychological development of a person during adolescence and adulthood.

Dr Virginia Lam

Virginia Lam was awarded a PhD in Developmental Psychology from the University of London, Goldsmiths College, where she researched children's gender and ethnic identities across primary school ages. Since then she has extended her research to involve a broader age range and areas of social cognition and development, particularly pre-schoolers, adolescents and adults' national and supranational identities, ingroup/outgroup stereotyping and attitudes, intergroup relations and peer interactions. She is a Senior Lecturer in Psychology at the University of East London and, apart from teaching developmental psychology, she runs Research Methods for the Conversion Course and leads the Equality and Diversity Committee. She is a Chartered Psychologist and Fellow of the Higher Education Academy.

Dr Victoria O'Donnell

Victoria L. O'Donnell was awarded a PhD in Psychology from the University of Stirling, and her early research explored children's developing spatial cognition. Through her interests in teaching and learning, her research has become increasingly focused on psychological aspects of learning, teaching and education, and on how these affect development and identity across the lifespan. These combined interests mean that she has held posts in several UK universities in both Psychology and Education. She is a Chartered Psychologist, Fellow of the Higher Education Academy and Fellow of the Leadership Foundation for Higher Education. She is currently the Director of Learning Innovation at the University of the West of Scotland.

Contributors

Chapter 4, Prenatal development and infancy

Professor Di Catherwood, University of Gloucestershire

Di Catherwood is Professor in Psychology and Co-manager of the Centre for Research in Applied Cognition, Knowledge, Learning and Emotion at the University of Gloucestershire. She began her research-teaching career at the University of Queensland (Brisbane), then was Director of the Centre for Applied Studies in Early Childhood (research and consultancy) at Queensland University of Technology and foundation Vice-President of the Australasian Human Development Association, before moving to the UK in 1996. Her teaching and research interests are in the areas of cognitive science and developmental cognitive science. She has conducted many studies into how the infant brain deals with visual information and more recently has been studying adult response during decision making in both natural contexts and laboratory conditions using dense-array EEG technology.

Chapter 7, The development of mathematical thinking

Professor Peter Bryant and Professor Terezinha Nunes, both at Oxford University

We are very grateful to the Nuffield Foundation, whose generous support allowed us to take the time to review the research reported in this chapter. We are also very grateful to the ESRC-TLRP research programme; our grant (# L139251015) enabled the research on rational numbers described in the chapter.

Terezinha Nunes is Professor of Education in the University of Oxford and a Fellow of Harris Manchester College. She started her career as a clinical psychologist in Brazil and moved on to research after obtaining a PhD in Psychology at City University of New York. Her research analyses how hearing and deaf children learn literacy and numeracy and considers cognitive and cultural issues. Her work on 'street mathematics' in Brazil uncovered many features of children's and adults' informal mathematical knowledge and is regarded as a classic in mathematics education. Her books include *Street Mathematics*, *School Mathematics*; *Teaching Mathematics to Deaf Children*; *Improving Literacy by Teaching Morphemes*; and *Children's Reading and Spelling: Beyond the First Steps*. For more information, you can visit <http://www.education.ox.ac.uk/research/child-learning/>.

Peter Bryant is a developmental psychologist, whose research is about children's perception and their logical understanding. He is currently a Senior Research Fellow at the Department of Education in Oxford University and was previously the Watts Professor of Psychology in the Department of Experimental Psychology at the same university. He is a Fellow of the Royal Society. He was the founding editor of the *British Journal of Developmental Psychology* and later the editor of *Cognitive Development*. His books include *Perception and Understanding in Young Children*, *Children's Reading Problems* (with Lynette Bradley), *Rhyme and Reason in Reading and Spelling* (with Lynette Bradley), *Phonological Skills and Learning to Read* (with Usha Goswami), *Improving Literacy by Teaching Morphemes* (with Terezinha Nunes), *Children Doing Mathematics* (with Terezinha Nunes) and *Children's Reading and Spelling: Beyond the First Steps* (with Terezinha Nunes).

Chapter 14, Developmental psychology and education

Malcolm Hughes, University of West of England

Malcolm Hughes is Associate Director of the International Office at the University of the West of England, Bristol, UK. After 22 years of teaching in primary and secondary schools with 11 years as a deputy headteacher and headteacher, he became a teacher-trainer. At Bristol UWE, he has been responsible for the academic leadership of the continuing professional development provision for serving teachers and for a postgraduate programme of initial teacher training. His publications to date include three higher education core texts in psychology in education, and child and adolescent development.

Chapter 15, Understanding bullying

Dr Elizabeth Nixon, Trinity College Dublin and
Dr Suzanne Guerin, University College Dublin

Elizabeth Nixon was awarded her PhD at Trinity College Dublin and is currently a lecturer in Developmental Psychology in the School of Psychology and Senior Research Fellow at the Children's Research Centre at Trinity College Dublin. Elizabeth's core research interests are in parenting, children's agency in their family contexts, and international adoption, and she is currently involved in the first National Longitudinal Study of Children in Ireland.

Suzanne Guerin completed her PhD, on the topic of bullying among children, at University College Dublin. She is currently Senior Lecturer in Research Design and

Analysis with the School of Psychology, and Deputy Director of the UCD Centre for Disability Studies, both at University College Dublin. Her research interests include applied research methods, child and family wellbeing and intellectual disability.

Chapter 16, Atypical development

Dr Shabnam Khan and Dr Emma Rowley

Shabnam Khan studied for her PhD at the University of Southampton, researching the roles of racial stereotypes in perceptions of children's behaviour problems. After a spell at the Economic and Social Research Council, Shabnam gained her Doctorate in Clinical Psychology at the University of Bristol. She has worked since then as a clinical psychologist in NHS Child and Adolescent Mental Health Services (CAMHS) in some of London's more deprived boroughs. Being compelled by the typically hidden mental health problems amongst children with social communication problems, a particular interest of Shabnam's has been working with cognitively able children who exhibit difficulties that might fall on the autism spectrum disorder spectrum. Shabnam is a keen advocate of working with children and the family and school systems around them using a range of interventions from individual support through to whole-class approaches and parenting groups. She strives to help improve the understanding and management of the children's behaviours, as well as encouraging the use of a therapeutic space for parents (and professionals) to explore their meaning. Shabnam also works in the medico-legal field as a case manager, and as an independent treating psychologist with PsychWorks Associates.

Emma Rowley read Psychology at the University of Warwick before completing her clinical doctorate in Clinical Psychology at University College, London. Having worked extensively with young children with autism and developmental disorders, her research interest is the

investigation of early social cognitive development in children with autism, and the clinical application of this work via screening and early intervention. She has contributed to several large-scale research projects funded by the Medical Research Council, the Wellcome Trust and the Department of Health.

Emma now works as a Clinical Psychologist within the private sector, supporting children with developmental disability, acquired brain injury and associated cognitive and emotional difficulties and their families. Her clinical interest lies in the development of a family-centred multidisciplinary model of support and intervention, focused on identifying the child and family's unique strengths and resources, and utilising these to support development and bring about meaningful change.

Chapter 17, Attention deficit hyperactivity disorder (ADHD)

Professor David Daley, Nottingham University

David Daley graduated from the National University of Ireland, University College Cork in 1993 with a BA in Applied Psychology. He completed his PhD in Child Psychopathology in 1999 at the University of Southampton and became a Chartered Health Psychologist in 2001. He was a lecturer in Psychology at Southampton University from 1999 until 2003 where he also taught within the Medical School. From 2003 until 2010 he was Lecturer, and later Senior Lecturer, on the North Wales Clinical Psychology Programme, School of Psychology, Bangor University, Wales. He is currently Professor of Psychological Intervention and Behaviour Change in the Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, a member of the Institute of Mental Health, University of Nottingham, and Co-director of the International Centre for Mental Health in China, based at Shanghai Jiao Tong University, Shanghai.

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M.H., & Kroonenberg, P.M., 1988); Table 10.3 from *Temperament: Early Developing Personality Traits*, Lawrence Erlbaum (Buss, A. H., & Plomin, R., 1984) p. 123, 9781138816640; Table 10.5 from Investigations of temperament at three to seven years: The children's behavior questionnaire, *Child Development*, 72, pp. 13941408 (Rothbart, M. K., Ahadi, S. A., Hershey, L. L., & Fisher, P., 2001); Table 11.3 adapted from *Handbook of socialization theory and research*, Rand McNally (Goslin, D.A (ed.) 1969) pp. 347–80; Table 15.5 from *'Peer Harassment in School. The Plight of the Vulnerable and Victimized'* Guilford Press (Juvonen, J. & Graham, S. (eds.) 2001) pp. 398–419; Table 16.2 from *Compulsory age of starting school in European countries*, National Foundation for Educational Research (Eurydice at NFER 2013) <http://www.nfer.ac.uk/nfer/index.cfm?9B1C0068-C29E-AD4D-0AEC-8B4F43F54A28>; Table 16.7 from Autism, *Lancet*, 374, pp. 1627–38 (Levy, S. E., Mandell, D. S., & Schultz, R. T., 2009).

Text

Newspaper headline on p. 443 from Merseyside schoolchildren as young as nine bullying each other on an unprecedented scale, *Liverpool Echo*, 02/03/2014; newspaper headline on p. 443 from Campaign aims to combat bullying, *Marlborough Express*, 04/03/2014, Fairfax Media NZ/Marlborough Press; Newspaper Headline on p. 443 from Cyberbullying poses greater risk of suicide among young people, study suggests, *Globe and Mail*, 11/03/2014, Copyright 2014 The Globe and Mail Inc. All Rights Reserved; newspaper headline on p. 443 from District struggles to develop policy for handling bullying *Palo Alto Online*, 13/06/2014; Case study on p. 521 adapted from Case study: ADHD medication can be tough, but it works, *The Times*, 24/09/2008.

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Section I

Introduction to developmental psychology

Chapter 1

What is developmental psychology?

Learning outcomes

After reading this chapter, and with further recommended reading, you should be able to:

1. Understand the history of developmental psychology.
2. Critically evaluate both the early and modern theories of developmental psychology.
3. Critically evaluate the role of developmental psychology in understanding and describing the nature of development in the child.



Introduction

When parents look proudly down at their new-born infant, many thoughts will cross their minds. What do we do now? How do we look after our baby? How will we know if we are doing this right? But once the parents settle into caring for their baby, it is likely that they will start to wonder what this child will be like and even who this child will be when he or she grows up. Developmental psychology is the branch of psychology that tries to understand how a child grows and develops, and how the role of the family and schooling can impact on this. It looks at how our behaviour, our thinking patterns, our emotions and our personalities begin and change from birth to adulthood.

Developmental psychologists are interested in all aspects of our behavioural and psychological development. We are interested in the *social* development of a child: from trying to understand the complexity of the relationship between a new-born infant and parent to the role of play in developing long-lasting friendships. We are interested in the *cognitive* development of the child: the development of language; understanding numbers; and developing an appreciation for art and poetry. We are interested too in *emotional* development and the way we make decisions and the role of parents

and friends in developing our sense of morality and teenage decision making: careers, friendships, sexuality and risk taking. Developmental psychology ties together social, emotional and cognitive development through the study of the growing child. It is a wide-reaching branch of psychology and for that reason is, in our point of view, one of the most rewarding to study.

This chapter will introduce you to both the traditional theorists and modern developmental psychologists. To help you understand the theories that are presented in this book, we will first discuss the key philosophical debates of developmental psychology and see how they have influenced the thinking of modern psychologists.



Parent holding a new-born

Source: Lam

The debates of developmental psychology

Nature versus nurture

Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – doctor, lawyer, artist – regardless of his talents, penchants, tendencies, abilities, vocations and race of his ancestors.

J. B. Watson (1930), p. 104

One of the key debates in developmental psychology is that of **nature** versus **nurture**. The basic tenet of this debate is centred on whether the child is born with capacities and abilities that develop naturally over time regardless of up-bringing, or whether the child needs social interaction and society in order to shape them. Nature and nurture boxes appear in every chapter of this book, illustrating how important this debate is in developmental psychology. Look in Chapter 11, for instance, where the Baby X experiments are discussed, showing us how the adults react towards a baby wearing pink clothes and how these compare with the reactions of adults to a baby wearing blue clothes. Or for a different type of study, in Chapter 6 there is discussion of the results of twin studies in the study of intelligence. Is our intelligence affected more by our biology or by our upbringing? The question of whether we are born as social, functioning beings or whether our mind and behaviour are shaped by our interactions has long been a question for philosophers and psychologists alike.

In early literary history, little evidence remains of any research conducted into the experience of childhood as a specific period of human development. Historian Aries (1960) researched the view of childhood through the limited texts and paintings surviving from the medieval period and, based on the evidence presented there,

supposed that early scientists, artists and thinkers represented children as mini-adults. Medieval portraiture of children often gives them an adult face on a small, not particularly childish, body and shows the child dressed in a miniature version of adult clothes. Texts and stories of the time reveal that children were present in all the adult places, including working in the fields and accompanying adults in bars and taverns. Although the evidence is limited from this period, it does appear to show that some children were taking a place in the adult world from the age of 6 or 7 years and all children by the age of 12 years (Shahar, 1990).

The period of Enlightenment (the late 1600s to early 1800s) brought forward great thinkers and scientists who challenged this way of thinking, and key figures such as Locke and Rousseau were enormously influential in changing our understanding of the process of learning and acquiring knowledge. Locke's writings in particular helped lay the foundations of our modern education system and set the tone of our judicial system. In order to begin to understand the complexities of the nature versus nurture debate, let us first take a look at the key principles of these philosophers and see how they have shaped our way of thinking in the new millennium.

John Locke (1632–1704)

The writings of the British philosopher John Locke described the influence of society on a person and were instrumental in the development of law and government in European society. His essay *Concerning Human Understanding* (1690) is key to the nature vs nurture debate and to understanding the principles of developmental psychology. Locke was an empiricist (someone who relies on observation and experimentation to determine the truth about something). He believed in the scientific methods of observation and systematic experimentation in finding truth and knowledge. He wrote of the *tabula rasa* – the soft or blank tablet of the mind – and applied this concept to the child. He viewed children as being born essentially as a 'blank canvas', and only through social interaction does the child learn to speak, learn emotions and morals, and learn to exist within a society that ultimately has been created for the safe keeping of its inhabitants. Is this concept, however, rather simplistic when considering the development of a child? Compare Locke's philosophy with that of Rousseau.

Definitions

Nature: the role of genetics in forming our behaviour, our personality or any other part of ourselves.

Nurture: the role of family, society, education and other social factors in forming our behaviour, our personality or any other part of ourselves.

Jean-Jacques Rousseau (1712–78)

The philosopher Rousseau was keenly influenced by John Locke and closely studied his texts on the humanisation and understanding of society. Rousseau agreed with Locke that social norms and values were a strong factor in creating a person through experiences and contact with others. However, where Rousseau and Locke differed was in their vision of the new-born infant and the nature of the society he or she was born into. Locke believed the infant to be a ‘clean slate’ to be manipulated into a form acceptable to society. He saw value and integrity in the spirit of society. Rousseau, however, saw the role of society from a different perspective and coined the term the ‘noble savage’ to describe the innocent, good child who becomes corrupted by society and all that is wrong within it. For Rousseau, society was an insincere and crooked place that was harmful to children, who by sheer luck of birth he considered were almost angelic in nature.

STOP AND THINK

What do these early philosophers and theorists have to contribute to our understanding of the child in modern society?



Rousseau's ‘noble savage’?

Source: Alamy Images/AfriPics.com

To understand the application of early philosophers to our perception of early childhood, we need to evaluate the contribution each had to the changing role of children in society. Locke believed that society tames, creates and nurtures the infant whereas Rousseau declared that the infant is corrupted by the sins and deviances of a ruthless society. Consequently, we have in place the seeds of the nature versus nurture debate. Are we born with our capabilities, knowledge, morals and values or does society shape, cultivate and support our infant into a full member of humanity? To attempt to answer this question we will look at one of the findings of the *Minnesota twin study* – a large-scale study of over 8000 twins that was begun in the early 1980s.

In 1981, Thomas Bouchard as a researcher connected with the Minnesota twin study began a study comparing the experiences of genetically identical twins raised by different parents. Theoretically, if Locke or Rousseau is correct, then twins should show considerable differences throughout their lifespan if they have been raised in different environments. The outcome of the Minnesota twin study provided evidence of slightly different outcomes for the twins, but mostly of considerable similarities in the temperaments, educational and career choices and even relationship patterns in the separated twins. Bouchard argued that this study provided evidence for the importance of genetics in determining behaviour, and his paper published later (Bouchard et al., 1990) confirmed his initial findings. This report of long-term findings on the 100 sets of twins who had been raised by different parents showed a consistent effect. Essentially, there was no significant difference in twins raised apart and twins raised together on measures of personality and temperament, occupational and leisure-time interests and social attitudes. If you look at the findings of the twin studies reported by Plomin and DeFries (1980) (see Chapter 6), you will see that Bouchard's findings are mirrored in the results on intelligence mapping across twins and other siblings.

Bouchard's conclusion was criticised for relying too heavily on the assumption that genetics were responsible for the twins' similarities in temperament, career paths and relationship choices (Joseph, 2001). Joseph argued that the twins who took part in the study were motivated by a sense of sameness and similarity, and that this bias influenced the reporting by the twins of their childhood experiences and life outcomes. Bouchard did not, however, disagree on this point and argued in the

1990 paper that the very nature of the twins' temperament could influence the environment they were raised in. For instance, Bouchard noted that twins who were considered fairly calm and easy-going as children would be more likely to report experiencing a calm and easy-going childhood, regardless of whether they were raised together or apart (Bouchard et al., 1990).

What, therefore, does this tell us about the argument of nature versus nurture? Bouchard's work appears to demonstrate that the two cannot be meaningfully separated and distinguished in research of this kind. Perhaps the nature versus nurture debate is an academic one that has little application in real-life settings. How can we truly distinguish our very own nature if it is defined by genetics, by our social environment, our upbringing and our responsiveness to events happening around us?

The twenty-first-century debate: nature versus nurture – is there another way?

In the twenty-first century, most psychologists have decided that neither nature nor nurture on its own is likely to be fully accountable for the physical, emotional and cognitive development of the child. Although some theorists may cling more tightly to one side or the other of the nature versus nurture debate, most will concede that it is likely that there is an interaction between the two that can be identified as a point on a *continuum*. Figure 1.1 represents the connection between the influence of *nature* and the influence of *nurture* on an aspect of behaviour.



Figure 1.1 The nature–nurture continuum.

If the behaviour is 'walking', then we might represent the prominence of *nature* over *nurture* by marking the connecting line with an 'X' nearer the *nature* end of the continuum (Figure 1.2). Learning to walk requires a certain amount of physical development, but the propensity to walk present at birth combined with parental encouragement to walk is more significant in encouraging a child to walk than parental encouragement alone. Thus at the point of learning to walk, the influence of the



Figure 1.2 The nature–nurture continuum: *nature* is the dominant force.

natural skills a child is born with and develops is more influential than the simple *nurturing* of the parents.

Compare this to a more complex example of a young boy learning to socialise with other children and engage in play with them on his first day at pre-school. In Chapter 12, the tendency to form peer groups is discussed from the perspective of the nature versus nurture debate. The author Steven Pinker in his book *The Blank Slate* (2002) proposes that our genetic make-up influences most the social groups that we form, whilst Judith Harris in her book *The Nurture Assumption* (1998) proposes that it is the peer group that is key in shaping the child's behaviour. Both authors write convincingly of their beliefs and the complexity of the behaviour. So, in this instance, Pinker might place a mark on the nature–nurture continuum towards the nature end (Figure 1.2), whilst Harris might place the mark on the continuum at the nurture end (see Figure 1.3).



Figure 1.3 The nature–nurture continuum: *nurture* is the dominant force.

The use of the arrow continuum is a simplistic way of looking at the current nature versus nurture debate, but using it to try and unpick the debate between Pinker and Harris does reveal some of the complexity of the issues at hand. When considering the role of nature and nurture in developmental psychology, we need to consider many factors: the age of the child; the biological stage or physical development; the behaviour under investigation; the social situation; and the cognitive powers present or needed in order to achieve the phenomenon under investigation. If we think again about our young boy who is standing apart from the game on his first day at pre-school, can we understand his behaviour using the arrow continuum or do we need to ask further questions? Is he

old enough to play with the other children, for example? Is he strong enough or tall enough to take part in the game? What is the game and could he take part? Does he know the children playing the game? Can he understand the rules of the game? In answering these questions, you may be able to come to a conclusion on the reason why the little boy is not taking part. Is it more to do with nature (not old enough, strong enough or tall enough) or is it more to do with nurture (does not know the rules of the game, is unsure how to take part, is lacking in confidence)?

The importance of early experiences

How important are your early childhood experiences in shaping the person you are in adulthood? Much of developmental psychology deals with what we can and cannot do at different times in our lives. Look at Chapter 9 on attachment and early social experiences. Some of the most discussed topics raised in the field of developmental psychology investigate questions about the importance of early experiences (Ainsworth et al., 1978). What will our adult love relationships be like if we had a close relationship to our mothers as children? How would our adult relationships be different if we had been raised without a mother; perhaps if we had been raised in institutional care? How important is that early relationship between a mother and her child in shaping who we are as adults? Equally as important, can the effects of that early relationship be changed once we reach adulthood?

One of the key factors in the argument about the importance of early experiences is whether we continue to develop socially, emotionally and cognitively into adulthood or whether we are essentially fully formed during early childhood. Although the study of developmental psychology focuses on childhood as the most important time of development, there is also a growing recognition of the nature of adulthood as a period of continuing change and development. When you read the next chapter on theoretical perspectives you will see that Jean Piaget (1952b), for instance, created a theory of cognitive development that covered the period from birth to around the late teenage years; yet Erikson, who was highly influenced by Piaget's work, argued that our psychosocial development extends from birth right through to late adulthood. Although their theories extend through different periods of our lives, both Piaget and Erikson believed that in early infancy the child learns

key skills that provide the building blocks for later life. Throughout this book you will see that we begin our chapters with a discussion of what these foundation skills are, such as forming an **attachment** to a carer (Chapter 9), learning to make sounds (Chapter 5) or grasping wooden blocks (Chapter 4), and then we move on to show how these skills evolve. Each chapter demonstrates that skills learned in childhood are steadily built into, for example, complex attachments to friends and lovers, learning one or more languages and building play or even real houses.

Thus, early experiences in developmental psychology are considered important in moulding who we are as children and in helping us to understand who we are as adults, but it is also important for developmental psychologists to know how critical the experiences of the early years are. Watson's proposition quoted earlier that he could train any infant into any man is perhaps one of the core drivers of developmental psychology: is the child who is shaped by his early experiences a child who will continue to grow emotionally and psychologically through the teenage years and into adulthood, or are we fully formed and our personalities unchangeable by the time we go to school?

STOP AND THINK

- Are you a product of your early experiences or are you continuing to change and grow as an adult?
- What are the implications of your answer when trying to understand what type of parent you are/will be?
- Can you change who you are?

Stage theories of development

You may have noticed that parents often talk about their child as in the 'babbling' stage or the 'crawling' stage. Much of what you will also read in developmental

Definition

Attachment: a strong, enduring, affectionate bond an infant shares with a significant individual, usually the mother, who knows and responds well to the infant's needs.

psychology books talk about stages, so what does that mean? Throughout this book we describe a number of **stage theories** in detail, but whether we are talking about language, play or identity development, most stage theories are the same in that they break down the acquisition of a skill into age-related blocks of activity. Each of these blocks follows the same pattern. First, at a defined age, the child enters into the ‘developmental stage’: for example, in Chapter 5 we describe a staged process for how infants start to form sounds. At the beginning of the stage, the child cannot do the task that is described – she is perhaps making crying or cooing noises but not yet making clear letter or word sounds. When a child is in the middle of the stage, the child is picking up skills, learning to say ‘ma’, for instance, and developing her ability to make distinct sounds. After a period of time, the child leaves that developmental stage when she is fully competent and is ready to move on to the next stage, forming full word sounds and learning to put two or more words together.

Another behaviour that has been described as following a staged development is play (see Chapter 9). Developmental psychologist Mildred Parten (1932) described a theory of play that suggested that at the age of 2, children engage in something called *parallel play*. This is when children play beside each other but not with each other. They might use the same toys, but the children do not interact with each other and are not working together to achieve a goal. Compare this to the *cooperative play* that she saw in children aged 3 years and over, when children engage in formal games. Here children play together rather than side by side and the games have rules and boundaries. They may involve role-playing social roles (such as playing ‘mummies and daddies’ or ‘doctor and patient’) and can develop into quite complex games. This type of play is more complex than parallel play, as it involves effective communication and cooperation rarely seen before the child is 3 years of age. In this example of a stage theory, other aspects

of their psychological development also determine the type of play shown by a child: the degree of language skill (so that they can convey the meaning of the game to each other), memory (so that they can remember who is who in the game and what the purpose of the game is) and an understanding of what other people do (so that ‘mummies’ and ‘daddies’ are doing the ‘right things’ and everyone knows who is who in the game).

Throughout this book you will see plenty of evidence supporting stage theories explaining child development. You will also see how different the rate of development can be between children. With our example of play, you have a case where certain play styles are more prominent at certain ages because of the needs for other cognitive skills to be sufficiently developed. Without the ability to communicate and remember complex game patterns, the child will be unable to engage in that game. However, if you were to observe children at play, you would see that in fact more than one style of play is taking place in a school playground. Some younger children will be playing complex games more suited to their older counterparts and some older children will be playing very simple games, better suited to the younger children.

Does this mean, then, that the different play styles do *not* follow a stage theory? Take the experience of the only child in the family and compare his play style to that of a child with many siblings. Children with older siblings often display play styles more advanced than their peers because the older siblings have taught

Definition

Stage theories: theories based on the idea that we progress through a pattern of distinct stages over time. These stages are defined by the acquisition or presence of abilities and we generally pass through them in a specified order and during a specified age range.



Role play is an important part of a child's development.

Source: Lam

them these more complex games. Stage theories generally do not account for the impact older siblings may have, for instance, on a child's play style or even their language development. Stage theories too are often seen as inflexible and uni-directional. Piaget's theory of cognitive development (Piaget, 1932) (see Chapter 2), for instance, suggests that children progress in a linear fashion through increasingly complex stages of cognitive skills. But if you look at Chapter 16, describing culture and developmental 'norms' in child development, you will see a very different story of development being told. Piaget's theory describes child development as a series of stages in which there are many phases. Each phase is characterised by the acquisition of ability – physical or mental – and only through successful completion of this phase can there be progression to the next. Piaget does not appear to make allowance for the developing child to return to a stage, or even to miss a stage out and jump to the next. Thus there is a certain rigidity to Piaget's theory that does not always reflect the individual experience of a child. However, for many psychologists, stage theories have endured as useful and often remarkably robust tools for understanding the child's social, psychological and behavioural development.

Continuous versus discontinuous development

Some developmental psychologists see children's development as a **continuous** process of change where the child becomes steadily more skilled at what they are doing, whilst others see children's development as a **discontinuous** process of change, where the child becomes skilled in a series of leaps and bounds separated by periods of calm and little change.

The stage theorists tend to hold the view that development is a discontinuous process of change. Piaget and other

Definitions

Continuous development: change that occurs at a steady pace, perhaps showing a constant, consistent improvement or growth.

Discontinuous development: change that occurs in what appear to be great bursts of achievement following a period of steady consolidation of perhaps knowledge or skill.

theorists saw children of different ages as being qualitatively different: that is, that there is a significant, remarkable difference in how the older children think and appear to make sense of the world. For example, Piaget noted that younger children were not able to complete certain tasks that an older child could, and would, with ease. Piaget demonstrated this with the *conservation of liquid* task (see Chapter 7). An experimenter has two identically shaped flasks of coloured water. She pours one into a tall, thin flask and asks the child: which has the most water in it? The 4-year-old will probably reply that the taller, thinner flask contains more water. The 6-year-old, on the other hand, will probably reply (correctly) that both flasks contain the same amount of water. Although both children see the water being poured from identical short flasks, only the 6-year-old knows that, even though the one flask looks taller, it still contains the same amount of water.

STOP AND THINK

What other tasks might you design to demonstrate discontinuous development in a child?

Piaget's work has been extremely influential and, in particular, the conservation of liquid task is still carried out to test children's level of thinking. However, recent research has shown that most of child development



Which flask has more liquid in it?

Source: Bartlett