ROBERT V. KAIL ANNE M. C. BARNFIELD

Children and Their Development

FOURTH CANADIAN EDITION

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Pearson

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To Laura, Matt, and Ben
—Robert V. Kail

To my father and stepmother, Philip and Christine Barnfield—educators
—Anne M. C. Barnfield

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Preface

Like many professors-turned-textbook-authors, Robert Kail wrote this book because none of the texts available met the aims of the child-development classes that he taught. This, the fourth Canadian edition, does so from a Canadian perspective. In the next few paragraphs, we want to describe those aims and how this book is designed to achieve them.

Goal 1: Use effective pedagogy to promote students' learning. The focus on a student-friendly book begins with the structure of the chapters. Each chapter consists of three or four modules that provide a clear and well-defined organization to the chapter. Each module begins with a set of learning objectives and a vignette that introduces the topic to be covered. Special topics that are set off in other textbooks as feature boxes are fully integrated with the main text and identified by a distinctive icon. Every feature ends with at least one critical thinking question to encourage students' engagement with the material presented. Each module ends with several questions intended to help students check their understanding of the major ideas in the module.

The end of each chapter includes several additional study aids. Unifying Themes links the ideas in the chapter to a major developmental theme. See for Yourself suggests activities that allow students to observe firsthand topics in child development. Resources includes books and websites where students can learn more about child development. Key Terms is a list of all of the important boldfaced terms appearing in the chapter. The Summary is a concise, one-page review of the chapter. The Test Yourself questions further confirm and cement students' understanding of the chapter material.

These different pedagogical elements *do* work; students using previous editions frequently comment that the book is easy to read and presents complex topics in an understandable way.

Goal 2: Use fundamental developmental issues as a foundation for students' learning of research and theory in child development. Child-development courses sometimes overwhelm students because of the sheer number of topics and studies. In fact, today's child-development science is really propelled by a concern with a handful of fundamental developmental issues, such as the continuity of development and the roles of nature and nurture in development. In *Children and Their Development*, four of these foundational issues are introduced in Chapter 1, then reappear in subsequent chapters to scaffold students' understanding. As we mentioned already, the end of the chapter includes the Unifying Themes feature, in which the ideas from the chapter are used to illustrate one of the foundational themes. By reappearing throughout the text, the themes remind students of the core issues that drive child-development science.

Goal 3: Teach students that child-development science draws on many complementary research methods, each of which contributes uniquely to scientific progress. In Module 1.4, we portray child-development research as a dynamic process in which scientists make a series of decisions as they plan their work. In the process, they create a study that has both strengths and weaknesses. Each of the remaining chapters of the book contains a Focus on Research feature that illustrates this process by showing—in an easy-to-read, question-and-answer format—the different decisions that investigators made in designing a particular study. The results are shown, usually with an annotated figure, so that students can learn how to interpret graphs. The investigators' conclusions are described, and we end each Focus on Research feature by mentioning the kind of converging evidence that would strengthen the authors' conclusions. Thus, the research methods introduced in Chapter 1 reappear in every chapter, depicting research as a collaborative enterprise that depends on the contributions of many scientists using different methods.

Goal 4: Show students how findings from child-development research can improve children's lives. Child-development scientists and students alike want to know how the findings of research can be used to promote children's development. In Chapter 1 of *Children and Their Development*, we describe the different means by which researchers can use their work to improve children's lives. In the chapters that follow, these ideas come alive in the Children's Lives feature, which provides examples of research-based solutions to common problems in children's lives. From these features, students realize that child-development research really matters—that parents, teachers, and policymakers can use research to foster children's development.

New to the Fourth Canadian Edition

The fourth Canadian edition of *Children and Their Development* has improvements to the Canadian perspective, highlighting more work by Canadian researchers. More international research and information is also included. In updating this textbook, we have added many new citations and references to research published since 2014. Demographic information and statistics, such as birth rates have been revised, where new information exists. We have also added new content to every chapter. Of particular note:

Chapter 1 has some revision of descriptions of theories in child development; also, updated examples of different research methods with expanded information on, and examples of, field experiments.

Chapter 2 has updated information, including updates regarding access to IVF in Canada; a new Focus on Research feature on hereditary bases of peer relationships; extensively revised material on molecular genetics and its application; and new material about methylation as an epigenetic mechanism.

Chapter 3 has updated information on fetal behaviour and abilities; a revised and updated Spotlight on Theories feature, with Canadian information; new material on environmental pollutants, including some updates to the Focus on Research feature on links between environmental toxins and sex ratios; information on the Zika virus and its effects; additional information regarding prenatal development, especially sensory development; an updated section on the impact of cocaine, revised material on the impact of epidural analgesia; updated information on home versus hospital birth; additional information on prematurity and its long-term effects for the child; and updates on sudden infant death, now referred to as sudden unexpected infant death (SUID).

Chapter 4 includes revised material on sleep; revisions to the section on nutrition, including an updated section on ways to encourage young children to eat healthfully; additional information on Canadian Indigenous peoples in the Cultural Influences box; much-revised material on the impact of timing of maturation on boys' development; a new list of factors that lead to obesity, with additional information and updated statistics on obesity rates in Canada; updated Focus on Research feature on face processing, now utilizing Canadian research.

Chapter 5 has much revised coverage of face perception, noting Canadian research in this area; new coverage of attention, including information on recently described networks of attentional processes and their development and updates to the section on ADHD.

Chapter 6 includes information on Canadian research on Indigenous storytelling as a form of scaffolding; contains much-revised coverage of executive function and of naïve psychology (now called folk psychology); and a revised section on Theory of Mind in Autism, including important Canadian research in this area.

Chapter 7 includes updates on children's use of memory strategies; new material on the impact of children's misconceptions on their scientific thinking; and much-revised coverage of reading and of quantitative reasoning.

Chapter 8 has completely revised coverage of dynamic assessment (formerly, dynamic testing); updates to the Cultural Influences box, including information on Canadian Indigenous peoples; a new Focus on Research feature on making tests less threatening to counter stereotype threat; a new Spotlight on Theory feature on the nature of impaired reading comprehension; and much-reorganized material on gifted children.

Chapter 9 contains revised coverage of the role of sentence cues in word learning; updated information on cochlear implants; a new Focus on Research feature on why exposure to parents' speech increases children's vocabulary; and much-revised coverage on language acquisition in bilingual children.

Chapter 10 includes updates and new material on regulation of emotion; a much-revised Spotlight on Theories feature; much-revised information on temperament and its links to personality, including revisions to the Cultural Influences box; and a new Focus on Research feature on the long-term consequences of temperament.

Chapter 11 has reorganized coverage of self-recognition, self-awareness, and self-esteem—including new material on narcissism; revised information on identity formation and ethnic identity; and a revised section on prejudice that includes new material on the impact of discriminatory behaviour.

Chapter 12 contains new material on moral thinking as a core domain; a much-revised Cultural Influences feature; new material on the role of oxytocin in promoting social behaviour; an updated Spotlight on Theories feature; and much-revised coverage of

victims of aggression, including new information on victimization and an effective anti-bullying program.

Chapter 13 has extensively revised coverage of gender-related differences including new information on differences in memory and in effortful control as well as depression in adolescents; and revised coverage of cognitive theories of gender identity, including additional material on gender schemata and effects of gender essentialism.

Chapter 14 contains new material on cultural and socioeconomic influences on parenting styles; additional material on intervention programs that teach parenting skills; updates to the feature on Grandmothers in Indigenous families; much-revised coverage of adopted children, including new material on open adoption; new material on children's play and friendships; new information on links between poverty, stress, and children's health; additions on the impact of political violence and homelessness on children's development; and revisions and updates to the sections on contributions to school success of programs for mentoring and teacher training.

Support Materials

Children and Their Development, Fourth Canadian Edition, is accompanied by a superb set of ancillary materials. They include the following:

MEDIA SUPPLEMENTS

- **MyVirtualChild.** MyVirtualChild is an interactive simulation that allows students to play the role of parent and raise their own virtual child. By making decisions about specific scenarios, students can raise their child from birth to age 18 and learn firsthand how their own decisions and other parenting actions affect their children over time. MyVirtualChild helps students think critically as they apply their course work to the practical experiences of raising a virtual child. You can access MyVirtualChild at www.myvirtualchild.com.

INSTRUCTOR SUPPLEMENTS

MyTest: Pearson MyTest is a powerful assessment-generation program that helps instructors easily create and print quizzes, tests, exams, as well as homework or practice handouts. Questions and tests can all be authored online, allowing instructors ultimate flexibility and the ability to efficiently manage assessments at any time, from anywhere. MyTest for *Children and Their Development* contains over 2000 multiple-choice, true/false, and short-answer essay questions, which are also available in Microsoft Word format (see below).

The following supplements can be downloaded from a password-protected section of Pearson Education Canada's online catalogue (**www.pearsoncanada.ca/**). Navigate to your book's catalogue page to view a list of those supplements that are available. See your local sales representative for details and access.

Instructor's Resource Manual: Each chapter in the manual includes the following resources: Chapter Learning Objectives; Lecture Suggestions and Discussion Topics; Classroom Activities, Demonstrations, and Exercises; Out-of-Class Assignments and Projects; Lecture Notes; Multimedia Resources; Video Resources; and Handouts. Designed to make your lectures more effective and to save you preparation time, this extensive resource gathers together the most effective activities and strategies for teaching your developmental psychology course. The Instructor's Manual is in PDF format.

PowerPoint Presentations: Each chapter's PowerPoint presentation highlights the key points covered in the text.

Image Library: This set of images, illustrations, figures, and charts from the text is provided in electronic format for instructor use.

Test Item File: The test bank in Microsoft Word format contains over 2000 multiple-choice, true/false, and short-answer essay questions. The test bank is also available in MyTest format (see above).

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To the Student

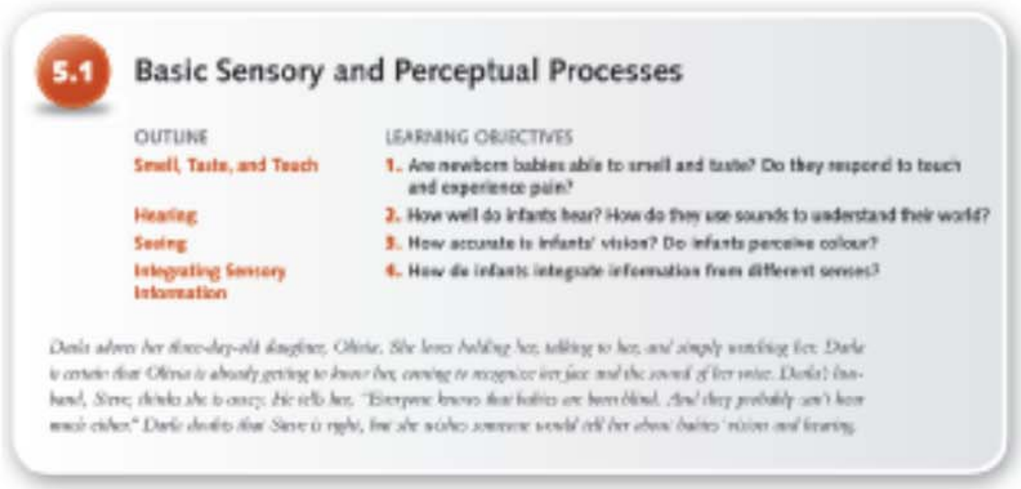
In this book, we'll trace children's development from conception through adolescence. Given this goal, you may expect to find chapters devoted to early childhood,

middle childhood, and the like. But this book is organized differently—around topics. Chapters 2 through 5 are devoted to the genetic and biological bases of human development, and the growth of perceptual and motor skills. Chapters 6 through 9 cover intellectual development—how children learn, think, reason, and solve problems. Chapters 10 through 14 concern social and emotional development—how children acquire the customs of their society and learn to play the social roles expected of them.

This organization reflects the fact that when scientists conduct research on children's development, they usually study how some specific aspect of how a child develops. For example, a researcher might study how memory changes as children grow or how friendship in childhood differs from that in adolescence. Thus, the organization of this book reflects the way researchers actually study child development.

ORGANIZATION OF CHAPTERS AND LEARNING AIDS

Each of the chapters (except Chapter 1) includes several modules that are listed at the beginning of each chapter. Each module begins with a set of learning objectives phrased as questions, a mini-outline listing the major subheadings of the module, and a brief vignette that introduces the topics to be covered in the module. The learning objectives, mini-outline, and vignette tell you what to expect in the module.


5.1 Basic Sensory and Perceptual Processes

OUTLINE
Smell, Taste, and Touch
Hearing
Seeing
Integrating Sensory Information

LEARNING OBJECTIVES
1. Are newborn babies able to smell and taste? Do they respond to touch and experience pain?
2. How well do infants hear? How do they use sounds to understand their world?
3. How accurate is infants' vision? Do infants perceive colour?
4. How do infants integrate information from different senses?

Dana adores her three-day-old daughter, Olivia. She loves holding her, talking to her, and simply watching her. Darla is certain that Olivia is already getting to know her, coming to recognize her face and the sound of her voice. Darla's husband, Steve, thinks she is crazy. He tells her, "Everyone knows that babies are born blind. And they probably can't hear much either." Darla doubts that Steve is right, but she wishes someone would tell her about babies' vision and hearing.

Each module in Chapters 2 through 14 includes at least one special feature that expands or highlights a topic. There are four different kinds of features; you can recognize each one by its distinctive icon:

Focus on Research provides details on the design and methods used in a particular research study. Closely examining specific studies demystifies research and shows that scientific work is a series of logical steps conducted by real people.

Cultural Influences shows how culture influences children and illustrates that developmental journeys are diverse. All children share the biological aspects of development, but their cultural contexts differ. This feature celebrates the developmental experiences of children from different backgrounds.

Children's Lives shows how research and theory can be applied to improve children's development. These practical solutions to everyday problems show the relevance of research and theory to real life, and show how results from research are used to create social policy that is designed to improve the lives of children and their families.

Spotlight on Theories examines an influential theory of development and shows how it has been tested in research.

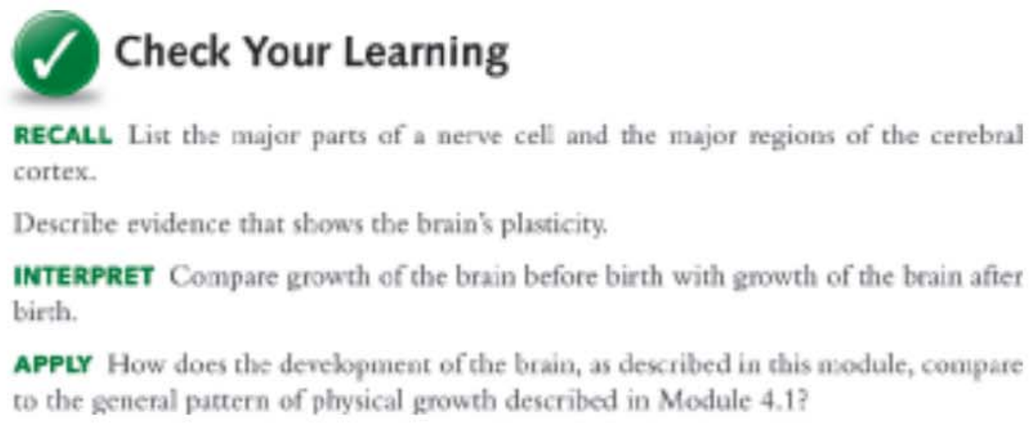
Two other elements are designed to help you focus on the main points of the text. First, whenever a key term is introduced in the text, it appears in ***Blue bold italic*** like this, and the definition appears in **black boldface type.** This format should make key terms easier for you to find and learn. Second, summary tables appear periodically throughout the book, reviewing key ideas and providing a capsule account of each. For example, the following Summary Table shows the many study aids that we've included in the book.

SUMMARY TABLE

STUDY AIDS USED IN CHILDREN AND THEIR DEVELOPMENT, THIRD CANADIAN EDITION

Study Aid	Key Features
Module-opening material	Learning objectives, vignette, mini-outline
Special features	Focus on Research, Children's Lives, Cultural Influences, Spotlight on Theories, each with Critical Thinking questions
Design elements that promote learning	Boldface key terms defined in text, summary tables (like this one)
Check Your Learning	Recall, interpret, and apply questions
End-of-chapter material	Unifying Themes, See for Yourself, Resources, Key Terms, Summary, Self-test

Each module concludes with Check Your Learning questions to help you review the major ideas in that module. As you can see in the inset, there are three kinds of questions: recall, interpret, and apply.



Check Your Learning

RECALL List the major parts of a nerve cell and the major regions of the cerebral cortex.

Describe evidence that shows the brain's plasticity.

INTERPRET Compare growth of the brain before birth with growth of the brain after birth.

APPLY How does the development of the brain, as described in this module, compare to the general pattern of physical growth described in Module 4.1?

If you can answer the questions in Check Your Learning correctly, you are on your way to mastering the material in the module. However, do not rely exclusively on Check Your Learning as you study for exams. The questions are designed to give you a quick check of your understanding, not a comprehensive assessment of your knowledge of the entire module.

At the very end of each chapter are several additional study aids. Unifying Themes links the contents of the chapter to the developmental themes introduced in Module 1.3. See for Yourself suggests some simple activities for exploring issues in child development on your own. Resources includes books and websites where you can learn more about children and their development. Key Terms is a list of all the important terms that appear in the chapter, along with the page where each term is defined. The Summary provides a concise review of the entire chapter, organized by module and the primary headings within the module. Finally, the Test Yourself questions further confirm and cement your understanding of the chapter material.

TERMINOLOGY

Every field has its own terminology, and child development is no exception. We use several terms to refer to different periods of infancy, childhood, and adolescence. Although these terms are familiar, we use each to refer to a specific range of ages:

Newborn	Birth to 1 month
Infant	1 month to 1 year
Toddler	1 to 2 years
Preschooler	2 to 6 years
School-age child	6 to 12 years
Adolescent	12 to 18 years
Adult	18 years and older

Sometimes for the sake of variety we use other terms that are less tied to specific ages, such as *babies, youngsters*, and *elementary-school children*. When we do, you will be able to tell from the context what groups are being described.

We also use very specific terminology in describing research findings from different cultural and ethnic groups. The appropriate terms to describe different cultural, racial, and ethnic groups change over time. For example, the terms *coloured people, Negroes, Black Canadians*, and *African Canadians* have all been used to describe Canadians who trace their ancestry to Africa. In this book, we use the term *African Canadian* because it emphasizes the unique cultural heritage of this group of people. Following this same line of reasoning, we use the terms *European Canadian* (instead of *Caucasian* or *white*), *Indigenous* (instead of *First Nations*, *Métis*, *Inuit*, *Indian* or *American Indian*), *Asian Canadian,* and *Latin American Canadian*.

These labels are not perfect. Sometimes they blur distinctions within ethnic groups. For example, the term *Hispanic Canadian* ignores differences between individuals who came to Canada from Puerto Rico, Mexico, and Guatemala; the term *Asian Canadian* blurs variations among people whose heritage is East Indian, Japanese, Chinese, or Korean. Whenever researchers identified the subgroups in their research sample, we use the more specific terms in describing results. When you see the more general terms, remember that conclusions may not apply to all subgroups within the group.

A Final Word

Robert Kail wrote the first American edition of this book to make child development come alive for his students at Purdue. Although we can't teach you directly, we hope this book sparks your interest in children and their development. Please let us know what you like and dislike about the book so that it can be improved in later editions. You can email me, Anne Barnfield, at abarnfie@uwo.ca—I'd love to hear from you.

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—*Anne M. C. Barnfield*

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1 The Science of Child Development

Marzanna Syncerz/Fotolia

1.1 **Setting the Stage**

1.2 **Foundational Theories of Child Development**

1.3 **Themes in Child-Development Research**

1.4 **Doing Child-Development Research**

Beginning as a microscopic cell, every person takes a fascinating journey designed to lead to adulthood. This trip is filled with remarkably interesting and challenging events. In this text, we'll trace this journey as we learn about the science of child development, a multidisciplinary study of all aspects of human growth from conception to young adulthood. As an adult, you've already lived the years that are at the heart of this text. We hope you enjoy reviewing your own developmental path from the perspective of child-development research and that this perspective leads you to new insights into the developmental forces that have made you the person you are today.

Chapter 1 sets the stage for our study of child development. We begin, in **Module 1.1**, by looking at philosophical foundations for child development and the events that led to the creation of child development as a new science. In **Module 1.2**, we examine theories that are central to the science of child development. In **Module 1.3**, we explore themes that guide much of the research in child development. Finally, in **Module 1.4**, we learn about the methods scientists use to study children and their development.

1.1 Setting the Stage

OUTLINE

Historical Views of Children and Childhood
Origins of a New Science

LEARNING OBJECTIVES

1. What ideas did philosophers have about children and childhood?
2. How did the modern science of child development emerge?
3. How do child-development scientists use research findings to improve children's lives?

Kendra loves her 12-month-old son, Joshua, but she is eager to return to her job as a loan officer at a local bank. Kendra knows a woman in her neighbourhood who has cared for some of her friends' children, and they all think she is wonderful. But deep down, Kendra wishes she knew more about whether this type of care is really best for Joshua. She also wishes that her neighbour's daycare centre had a "stamp of approval" from someone who knows how to evaluate such facilities.

Kendra's question about the best way to care for her infant son is just the most recent in a long line of questions that she has had about Joshua since he was born. When Joshua was a newborn, Kendra wondered if he could recognize her face and her voice. As her son grows, she'll continue to have questions: Why is he so shy at preschool? Should he take classes for gifted children or would he be better off in regular classes? What can she do to be sure that he won't use drugs?

These questions—and hundreds more like them—touch issues and concerns that parents such as Kendra confront regularly as they do their best to rear their children. And parents are not the only ones asking these questions. Many professionals who deal with children—teachers, healthcare providers, and social workers, for example—often wonder what is best for children's development. Does children's self-esteem affect their success in school? Should we believe young children when they claim they have been abused? As well, government officials must decide what programs and laws provide the greatest benefit for children and their families. How does welfare reform affect families? Are teenagers less likely to have sex when they participate in abstinence-only programs?

So many questions, and all of them important! Fortunately, the field of child development, which traces physical, mental, social, and emotional development from conception to maturity, provides answers to many of them. To begin, let's look at the origins of child development as a science.

Historical Views of Children and Childhood

For thousands of years, philosophers have speculated on the fundamental nature of childhood and the conditions that foster a child's well-being. The Greek philosophers Plato (428–347 BCE) and Aristotle (384–322 BCE) believed that schools and parents had responsibility for teaching children the self-control that would make them effective citizens. But both philosophers, particularly Aristotle, also worried that too much self-discipline would stifle children's initiative and individuality, making them unfit to be leaders.

Plato and Aristotle also had ideas about knowledge and how it is acquired. Plato believed that experience could not be the source of knowledge because human senses are too fallible. He argued instead that children are born with innate knowledge of many concrete objects (such as animals and people), as well as with knowledge of abstractions (such as courage, love, and goodness). In Plato's view, children's sensory experiences simply trigger knowledge that they've had since birth. The first time a child sees a dog, her innate knowledge allows her to recognize it as such; no learning is necessary. In contrast, Aristotle denied the existence of innate knowledge, believing instead that knowledge is rooted in perceptual experience. Children acquire knowledge piece by piece, based on the information provided by their senses.

These contrasting views resurfaced during the Age of Enlightenment. The English philosopher John Locke (1632–1704) asserted that the human infant is a *tabula rasa*, or "blank slate," and claimed that experience moulds the infant, child, adolescent, and adult into a unique individual. According to Locke, parents should instruct, reward, and discipline young children, gradually relaxing their authority as children grow. In our opening vignette, Locke would have advised Kendra that childcare experiences will undoubtedly affect Joshua's development (although Locke would not specify how).

During the following century, Locke's view was challenged by the French philosopher Jean-Jacques Rousseau (1712–1778), who believed that newborns are endowed with an innate sense of justice and morality that unfolds naturally as the child grows. During this unfolding, children move through the same developmental stages that we recognize today—infancy, childhood, and adolescence. Rather than emphasizing parental discipline, Rousseau argued that parents should be responsive, and he encouraged them to be receptive to their children's needs, as he explained in his book *Émile*, written in 1762. Rousseau would emphasize the value of caregivers who are responsive to Joshua's needs.

Rousseau shared Plato's view that children begin their developmental journey well prepared with a stockpile of knowledge. Locke, like Aristotle two thousand years before, believed that children begin their journey packed lightly, picking up necessary knowledge along the way, through experience. These debates might have continued to be solely philosophical for millennia except for a landmark event: the emergence of child development as a science.

Origins of a New Science

The push toward child development as a science came in part from the significant role played by children themselves during the momentous transformation of the working

environment in England known as the Industrial Revolution, which began in the mid-eighteenth century. For much of recorded history, as soon as children no longer needed constant care from adults—by about five to seven years of age—they were considered grown up and entered the world of work. Many children worked at home, in the fields, or were apprenticed to learn a trade. Beginning in the mid-1700s, England moved from a largely rural culture relying on agriculture to an urban-oriented society organized around factories, especially textile mills. Children moved with their families to cities and worked long hours in factories and in mines under horrendous conditions and for little pay (Postman, 1982). Accidents were common, and many children were maimed or killed. In textile mills, for example, the youngest children often had the hazardous job of picking up loose cotton from beneath huge power looms while the machines were in operation.

Reformers, appalled at these conditions, worked hard to enact legislation that would limit child labour and put more children in schools. These initiatives were the subject of political debates throughout much of the 1800s; after all, factory owners were among the most powerful people in Britain, and they adamantly opposed efforts to limit access to plentiful cheap labour. But the reformers ultimately carried the day and, in the process, made the well-being of children a national concern.

Another major event that set the stage for the new science of child development was the publication of Charles Darwin's theory of evolution. Darwin (1859) argued that individuals within a species differ; some individuals are better adapted to a particular environment, making them more likely to survive and to pass along their characteristics to future generations. Some scientists of the day noted similarities between Darwin's description of evolutionary change within species and the age-related changes in human behaviour. **This prompted many scientists, including Darwin himself, to write what became known as *baby biographies*—detailed, systematic observations of individual children.** The observations in the biographies were often subjective, and conclusions were sometimes reached on the basis of minimal evidence. Nevertheless, the systematic and extensive records in baby biographies paved the way for objective, analytic research.

Taking the lead in this new science at the dawn of the twentieth century was G. Stanley Hall (1844–1924), who generated theories of child development based on evolutionary theory and conducted studies to determine age trends in children's beliefs and feelings about a range of topics. Perhaps more importantly, Hall founded the first English-language scientific journal in which scientists could publish findings from child-development research. Hall also founded a child study institute at Clark University and was the first president of the American Psychological Association.

Meanwhile, in France, Alfred Binet (1857–1911) had begun to devise the first mental tests, which we'll examine in Module 8.2. In Austria, Sigmund Freud (1856–1939) startled the world by suggesting that the experiences of early childhood seemed to account for patterns of behaviour in adulthood. And American John B. Watson (1878–1958), the founder of behaviourism, began to write and lecture on the importance of reward and punishment for childrearing practices. (You'll learn more about Freud's and Watson's contributions in Module 1.2.)

Psychological research in Canada also dates from the late 1800s, when psychology was studied in departments of philosophy, a usual occurrence at that time. In 1920, the psychology department of the University of Toronto became the first to be independent of philosophy (Pols, 2002).

An important figure in the early study of psychology in Canada is James Mark Baldwin (1861–1934). Baldwin, an American and a graduate of Princeton, is known for

Q&A

QUESTION 1.1

Morgan is 18 months old. Her father believes she should have a very structured day, one that includes some physical activity, time spent reading and doing puzzles, and, finally, lots of reassuring hugs and kisses. Is Morgan's dad a believer in Rousseau's or Locke's view of childhood?
(Answer is on page 7.)

his research at the University of Toronto, where he was appointed to the department of philosophy in 1889. There he set up the first psychology laboratory in Canada, which began research in 1891 (Hoff, 1992). Baldwin felt that a theoretical basis for experimentation was important and seems to have felt that baby biographies stifled theory, being too focused on observation (Harris, 1985). He himself performed experimental research, for example, on infant handedness, and tested proposals derived from his theories.

The Canadian Psychological Association (CPA) was founded in the late 1930s. The idea was initially proposed in 1938, during the American Association for the Advancement of Science (AAAS) meeting held in June of that year at the Château Laurier hotel in Ottawa. At that meeting, a group of Canadian psychologists met to discuss founding a specifically Canadian organization (Dzinas, 2000). Following this first meeting, a draft constitution was drawn up, and the CPA was founded in 1939 (Dzinas, 2000; Ferguson, 1992).

It was in 1933, however, that the emerging scientific forces in developmental psychology came together in a new interdisciplinary organization called the Society for Research in Child Development (SRCD). Its members included psychologists, physicians, educators, anthropologists, and biologists, all of whom were linked by a common interest in discovering the conditions that could promote children's welfare and foster their development (Parke, 2004). In the ensuing years, SRCD membership has grown to more than 5000 and is now the main professional organization for child-development researchers. SRCD, along with similar organizations devoted to child-development science (e.g., International Society for the Study of Behavioural Development, International Society on Infant Studies, Society for Research on Adolescence) promotes multidisciplinary research and encourages the application of research findings to improve children's lives.

Progress in developmental psychology was halted by World War II, when most child-development scientists in North America abandoned their research to assist the war effort (Sears, 1975)—for example, Canadian psychologists advised the Royal Air Force in England on training methods (English, 1992; Ferguson, 1992). Many female psychologists also became well known during this time, taking on leading roles in both military and non-military activities (Wright, 1992).

After the war, women became more prominent in the CPA, with some becoming directors on the governing board of the association (Wright, 1992). Psychology as a discipline grew, and by the 1950s and 1960s developmental psychology was thriving, marking the beginning of the modern era of child-development research.

More recently, a new branch of child-development research has emerged. ***Applied developmental science*** **uses developmental research to promote healthy development, particularly for vulnerable children and families** (Lerner, Fisher, & Giannino, 2006). Scientists with this research interest contribute to sound family policy in a number variety of ways (Shonkoff & Bales, 2011). Some ensure that the consideration of policy issues and options is based on factual knowledge derived from child-development research. For example, when government officials need to address problems affecting children, child-development experts provide useful information about children and their development (Fasig, 2002; Shonkoff & Bales, 2011). Others contribute by serving as advocates for children. Working with child advocacy groups, child-development researchers alert policymakers to children's needs and argue for family policy that addresses those needs. Still other child-development experts evaluate the impact of government policies on children and families (e.g., the effectiveness

of provincial regulation of Children's Aid Societies). Finally, one of the best ways to sway policymakers is to create working programs. When researchers create a program that effectively combats problems affecting children or adolescents (e.g., sudden infant death syndrome or teenage pregnancy), this can become powerful ammunition for influencing policy (Huston, 2008).

Thus, from its origins more than 100 years ago, modern child-development science has become a mature discipline, generating a vast catalogue of knowledge from which exciting discoveries continue to emerge. Scientists actively use this knowledge to improve the lives of children, as we'll see in the Children's Lives features that appear throughout this text. The research that you'll encounter in this textbook is rooted in a set of developmental theories that provide the foundation of modern child-development research. These theories are the focus of the next module.

ANSWER 1.1
His emphasis on structure suggests that he believes in the importance of children's experiences, which is a basic concept in Locke's view of childhood.

Check Your Learning

RECALL What two events set the stage for the creation of child-development science?

Who were the leaders in the new field of child development before the formation of the Society for Research in Child Development?

INTERPRET Explain the similarities between Rousseau's and Plato's views of child development; how did their views differ from those shared by Locke and Aristotle?

APPLY Suppose a child-development researcher is an expert on the impact of nutrition on children's physical and emotional development. Describe several different ways in which the researcher might help inform public policy concerning children's nutrition.

1.2 Foundational Theories of Child Development

OUTLINE

The Biological Perspective
The Psychodynamic Perspective
The Learning Perspective
The Cognitive-Developmental Perspective
The Contextual Perspective

LEARNING OBJECTIVES

1. What are the major tenets of the biological perspective?
2. How do psychodynamic theories account for development?
3. What is the focus of learning theories?
4. How do cognitive-developmental theories explain changes in children's thinking?
5. What are the main points of the contextual approach?

Will has just graduated from high school, first in his class. For his mother, Betty, this is a time to reflect on Will's past and ponder his future. Will has always been a happy, easygoing child and he has always been interested in learning. Betty wonders why he is so perpetually good-natured and so curious. If she knew the secret, she laughs, she could write a best-selling book and be a guest on daytime TV shows like Dr. Phil!

Before you read on, stop for a moment and think about Betty's question. How would you explain Will's interest in learning, his good nature, and his curiosity? Perhaps Betty has been a fantastic mother, doing all the right things at just the right time. Perhaps, year after year, his teachers quickly recognized Will's curiosity and encouraged it. Or was it simply Will's destiny to be this way? Each of these explanations is a very simple theory; each tries to explain Will's curiosity and good nature. In child-development research, theories are much more complicated, but their purpose is the same: to explain behaviour and development. **In child development science, a *theory* is an organized set of ideas that is designed to explain and make predictions about development.**

Theories lead to hypotheses that we can test in research; in the process, each hypothesis is confirmed or rejected. Think about the different explanations for Will's behaviour. Each one leads to a unique hypothesis. If, for example, teacher encouragement has caused Will to be curious, we hypothesize that he would no longer be curious if his teachers stop encouraging that curiosity. When the outcomes of research are as hypothesized, a theory gains support. When results run counter to the hypothesis, the theory is deemed incorrect and revised. Revised theories then provide the basis for new hypotheses, which lead to new research, and the cycle continues. With each step along the way, a theory comes closer to becoming a complete account. In the Spotlight on Theories features throughout this text we'll look at specific theories, the hypotheses derived from them, and the outcomes of the research that tests those hypotheses.

Over the history of child development as a science, many theories have guided research and thinking about children's development. The earliest developmental theories were useful in generating research, and findings from that research led child-development scientists to newer, improved, or different theories. In this module, we describe the earlier theories that provided the scientific foundation for modern ones, because the newer theories described later in this text are best understood in terms of their historical roots.

Some theories share assumptions and ideas about children and development. Grouped together, they form five major theoretical perspectives in child-development research: the biological, psychodynamic, learning, cognitive-developmental, and contextual perspectives. As you read about each perspective in the next few pages, think about how each one differs from the others in its view of development.

The Biological Perspective

According to the biological perspective, intellectual and personality development, as well as physical and motor development, are rooted in biology. One of the first biological theories—maturational theory—was proposed by Arnold Gesell (1880–1961). **According to *maturational theory,* child development reflects a specific and prearranged scheme or plan within the body.** In Gesell's view, development is simply a natural unfolding of a biological plan; experience matters little. Like Jean-Jacques Rousseau 200 years before him, Gesell encouraged parents to let their children develop naturally. Without interference from adults, Gesell claimed, behaviours such as speech, play, and reasoning would emerge spontaneously according to a predetermined developmental timetable.

Maturational theory was eventually discarded because it had little to say about the impact of environment on children's development. However, other biological theories give greater weight to experience. ***Ethological theory*** **views development from an evolutionary perspective.** In this theory, many behaviours are adaptive—they have

survival value. For example, clinging, grasping, and crying are adaptive for infants because they elicit caregiving from adults. Ethological theorists assume that people inherit many of these adaptive behaviours.

So far, ethological theory seems like maturational theory, with a dash of evolution added. How does experience fit in? Ethologists believe that all animals are biologically programmed in such a way that some kinds of learning occur only at certain ages. **A *critical period* in development is the time when a specific type of learning can take place; before or after the critical period the same learning is difficult or even impossible.**

Sigurgeir Sigurjonsson/Nordicphotos/Alamy Stock Photo

Newly hatched goslings follow the first moving object that they see, treating it as "Mother," even when it's a human.

One of the best-known examples of a critical period comes from the work of Konrad Lorenz (1903–1989), an Austrian zoologist who noticed that newly hatched geese followed their mother about. He theorized that goslings are biologically programmed to follow the first moving object they see after hatching. **Usually this was the mother, so following her was the first step in *imprinting,* creating an emotional bond with the mother.** Lorenz tested his theory by showing that if he removed the mother immediately after the geese hatched and replaced it with another moving object, the goslings would follow that object and treat it as "Mother." As the photo shows, the replacement objects could even be humans and, in his early experiments, included Lorenz himself. The gosling had to see the moving object within about a day of hatching, however, or it would not imprint on the moving object. In other words, the critical period for imprinting lasts about a day; when goslings experience the moving object outside of the critical period, imprinting does not take place. Even though the underlying mechanism is biological, experience is essential for triggering the programmed, adaptive behaviour.

Ethological theory and maturational theory both highlight the biological bases of child development. Biological theorists remind us that children's behaviour is the product of a long evolutionary history. Consequently, a biological theorist would tell Betty that Will's good nature and his outstanding academic record are both largely products of his biological endowment—his heredity.

Q&A QUESTION 1.2

Keunho and Young-shin are sisters who moved to Toronto from Korea when they were 15 and 10 years old, respectively. Although both of them have spoken English almost exclusively since their arrival in Canada, Keunho still speaks with a bit of an accent and occasionally makes grammatical errors; Young-shin's English is flawless—she speaks like a native. How could you explain Young-shin's greater skill in terms of a critical period? *(Answer is on page 19.)*

The Psychodynamic Perspective

FREUD'S THEORIES. The psychodynamic perspective is the oldest scientific perspective on child development, originating in the work of Sigmund Freud (1856–1939) in the late nineteenth and early twentieth centuries. Freud was a physician who specialized in diseases of the nervous system. Many of his patients were adults whose disorders seemed to have no obvious biological causes. As Freud listened to his patients describe their problems and their lives, he became convinced that early experiences establish patterns that endure throughout a person's life. **Using his patients' case histories, Freud created the first *psychodynamic theory,* which holds that development is largely determined by how well people resolve certain conflicts at different ages.**

The role of conflict is evident in Freud's descriptions of the three primary components of personality. **The *id* is a reservoir of primitive instincts and drives.** Present at birth, the id presses for immediate gratification of bodily needs and wants. A hungry baby crying illustrates the id in action.

Sonya Etchison/Shutterstock

According to Freud's theory, the id would encourage the child on the right to grab the toy away from the other child, but the superego would remind her that doing so would be wrong.

The *ego,* is the practical, rational component of personality. The ego begins to emerge during the first year of life as infants learn that they cannot always have what they want. The ego tries to resolve conflicts that occur when the instinctive desires of the id encounter the obstacles of the real world. The ego often tries to channel the id's impulsive demands into more socially acceptable channels. For example, in the photo the child without the toy is obviously envious of the child who has the toy. According to Freud, the id would urge the child to grab the toy, but the ego would encourage the child to play with the peer and, in the process, get to play with the toy.

The third component of personality, the *superego,* is the "moral agent" in the child's personality. It emerges during the preschool years as children begin to internalize adult standards of right and wrong. If the peer in the previous example left the attractive toy unattended, the id might tell the other child to grab it and run, but the superego would remind the child that taking another's toy is wrong.

Freud also proposed stages of development. In his theory, Freud was really concentrating on personality development, but this is also an example of an early stage theory. Freud believed development was structured in psychosexual stages and that we all go through five stages of development, each named for a particular area of the body where attention is focused. In order, the stages are the oral, anal, phallic, latency (when drives are quiescent), and genital (the final, mature self). Freud believed that conflicts at any stage of development could lead to fixations, where mental energies are occupied in activities reminiscent of that stage.

Today scientists recognize many shortcomings in Freud's theory as a whole (e.g., some key ideas are too vague to be tested in research). Nevertheless, two of Freud's insights have had a lasting impact on child-development research and theory: first, his conclusion that early experiences can have enduring effects on children's development; second, his idea that children often experience conflict between what they want to do and what they know they should do.

ERIKSON'S PSYCHOSOCIAL THEORY. Erik Erikson (1902–1994), one of Freud's students, embraced Freud's idea of conflict but emphasized the psychological and social aspects of conflict rather than the biological and physical aspects. **In Erikson's *psychosocial theory,* development comprises a sequence of stages, each defined by a unique crisis or challenge.** Erikson also proposed that development could continue throughout life, including stages for during adulthood. The complete theory includes eight stages, as shown in Table 1-1. The name of each stage reflects the challenge that individuals face at a particular age. For example, the challenge for adolescents is to develop an identity. Adolescents who do not meet this challenge will not establish truly intimate relationships but will become overly dependent on their partners as a source of identity.

Whether we call them conflicts, challenges, or crises, the psychodynamic perspective emphasizes that the journey to adulthood is difficult because the path is strewn with obstacles. Outcomes of development reflect the manner and ease with which children surmount life's barriers. When children overcome early obstacles easily, they are better

TABLE 1-1

ERIKSON'S EIGHT STAGES OF PSYCHOSOCIAL DEVELOPMENT

Psychosocial Stage	Age	Challenges
Basic trust versus mistrust	Birth to 1 year	To develop a sense that the world is safe, "a good place"
Autonomy versus shame and doubt	1 to 3 years	To realize that one is an independent person who can make decisions
Initiative versus guilt	3 to 7 years	To develop a willingness to try new things and to handle failure
Industry versus inferiority	6 years to adolescence	To learn basic skills and to work with others
Identity versus identity confusion	Adolescence	To develop a lasting, integrated sense of self
Intimacy versus isolation	Young adulthood	To commit to another in a loving relationship
Generativity versus stagnation	Middle adulthood	To contribute to younger people through child-rearing, childcare, or other productive work
Integrity versus despair	Late life	To view one's life as satisfactory and worth living

able to handle the later ones. Returning to this module's opening vignette, a psychodynamic theorist would tell Betty that Will's cheerful disposition and his academic record suggest that he handled life's early obstacles well, which is a good sign for his future development.

The Learning Perspective

Learning theorists endorse John Locke's view that the infant's mind is a blank slate on which experience writes. John Watson (1878–1958) was the first theorist to apply this approach to child development, arguing that learning from experience determines what children will be.

EARLY LEARNING THEORIES. **Watson's research was based on the form of learning called *classical conditioning,* first described by Ivan Pavlov,** who showed that a previously neutral stimulus could become associated with a naturally occurring response and eventually come to elicit a similar response on its own. Watson applied classical conditioning procedures to humans, most famously in the conditioning of fear in children. Watson discovered that sudden, loud noise naturally elicited fear in infants. In experiments with an infant referred to as "Little Albert," Watson paired a white rat with a loud, unpleasant noise that startled Albert. After a few pairings of the rat with the noise, Albert began to show fear at the sight of the rat. Watson believed that this and other experiments showed the application of classical conditioning principles to human behaviour. Although later analyses of Watson's experiments with Little Albert have cast doubt on how clear-cut the findings were (e.g., Harris, 1979)—and his methods would certainly be viewed as unethical today—this experiment remains a classic example of early child-development research. Associating something with a natural response is only one way of learning, however, and other theorists expanded the field by developing different theories.

B.F. Skinner (1904–1990) furthered research on the learning perspective by proposing a different theory of learning. **Skinner studied *operant conditioning,* in which the consequences of a behaviour determine whether that behaviour is repeated.** Skinner showed that two kinds of consequences were especially influential. **A *reinforcement* is a consequence that increases the future likelihood of the behaviour that it follows.** Positive reinforcement consists of giving a reward—such as chocolate, gold stars, or paycheques—to increase the likelihood of a behaviour being repeated. If parents want to encourage their daughter to clean her room, they could use positive reinforcement by rewarding her with praise, food, or money whenever she completes the chore. Negative reinforcement consists of rewarding people by taking away unpleasant things. The same parents could use negative reinforcement by saying that whenever she cleans her room, the child wouldn't have to wash dishes or fold laundry.

A *punishment* is a consequence that decreases the future likelihood of the behaviour that it follows. Punishment suppresses a behaviour either by imposing something aversive or by withholding something pleasant. If the child fails to clean her room, the parents could punish her by making her do extra chores (adding something aversive) or by not allowing her to watch television (withholding a pleasant event). The use of punishment has drawbacks, however, the main one being that punishment does not identify the desired behaviour. Punishment only says "stop this," not "do that instead." Much research shows that reliance on punishment by parents, particularly physical punishment, produces poorer outcomes for child behaviour (e.g., MacKenzie, Nicklas, Waldfogel, & Brooks-Gunn, 2012; Straus, 2000).

People are often confused by the positive/negative and reinforcer/punisher distinctions when discussing operant conditioning outcomes. One simple way to remember them is to think of positive and negative as mathematical symbols—as in adding and subtracting. Adding something to a situation is positive, removing something from a situation is negative. A reinforcer is something to which people look forward; a punisher is to be avoided. With these distinctions in mind, think of the different possible combinations:

	Reinforcer	Punisher
POSITIVE	Parents reward child for cleaning up her room by giving her a cookie.	Parents punish child for not cleaning up her room by shouting at her.
NEGATIVE	Parental nagging to "go clean your room" stops when the child starts cleaning up.	Child is not allowed to watch television that evening because she did not clean her room.

Ty Milford/Radius Images/Getty Images

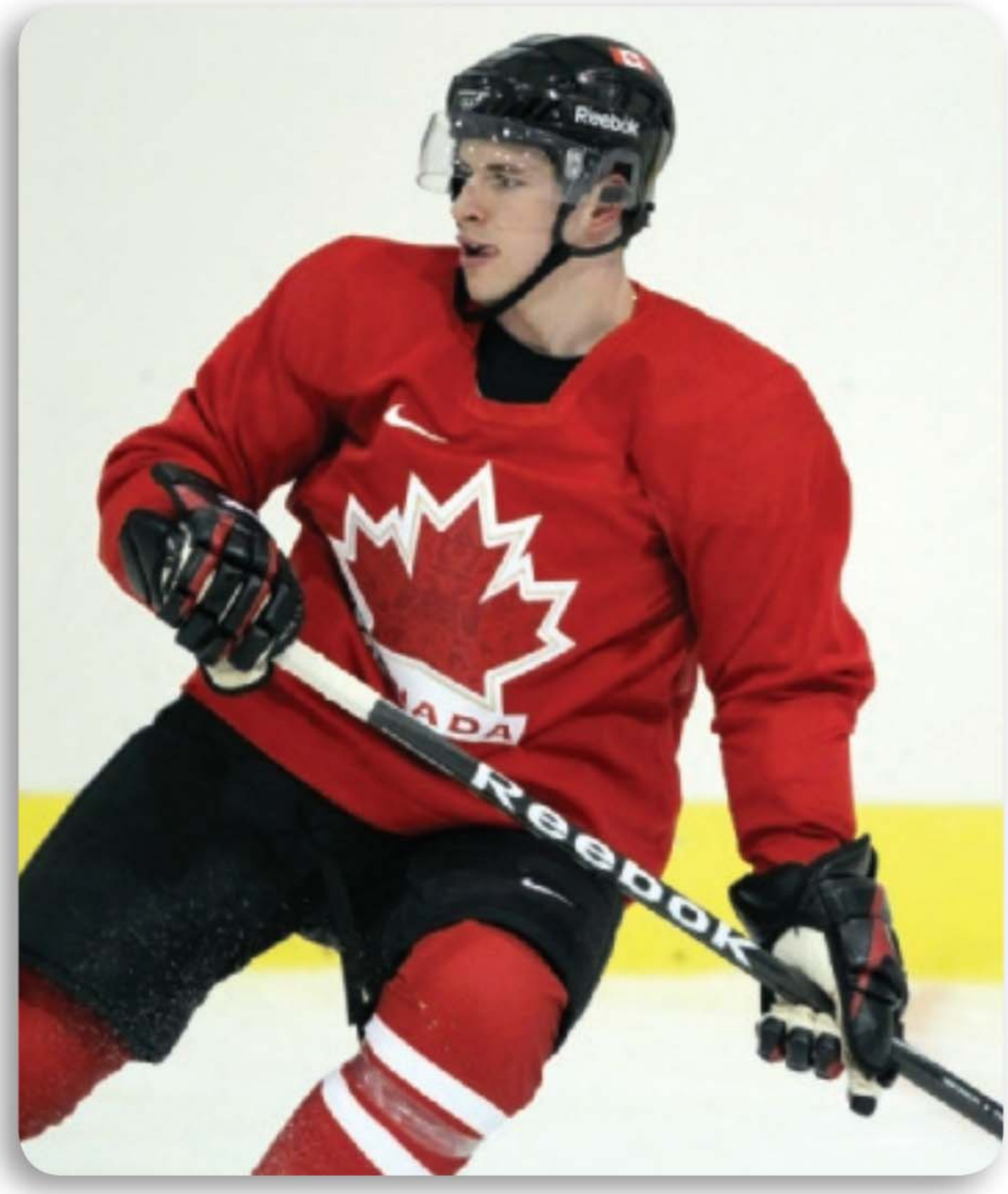
Throughout their development, children learn much from imitating the actions of others.

Applied properly, reinforcement and punishment are indeed powerful influences on children. However children often learn without reinforcement or punishment. **Children may learn simply by watching those around them, which is known as *imitation* or *observational learning.*** For example, imitation occurs when one toddler throws a toy after seeing a peer do so, or when a school-age child offers to help an older adult carry groceries because she has seen her parents do the same, or, as in the photo on the left, when a son tries to shave like his father.

SOCIAL COGNITIVE THEORY. Perhaps imitation makes you think of "monkey-see, monkey-do," of simple mimicking. Early investigators certainly had this view, but

later research showed they were wrong. **Albert Bandura (1925–), originally from Alberta and now at Stanford University in the United States, developed much of the basis of the *social cognitive theory* of learning.** The "Bobo doll" study (Bandura, Ross, & Ross, 1963) is a classic example of both direct observational learning and the fact that observation does not always lead to simple imitation. In this study children watched an adult physically abuse a large clown doll, performing very specific actions, such as hitting the doll with other toys. The children were then led to the same playroom containing all the toys to which the adult had had access, including the Bobo doll. Many of the children performed the exact same behaviours, showing that after seeing an action, children could repeat it. Some did not spontaneously imitate the action, but all the children could do so, if asked to repeat actions or if given incentive, showing that they had acquired the behaviours.

It has also been shown that children are more likely to imitate a person if the person is perceived as popular, smart, or talented. In addition, they are more likely to imitate when the behaviour they see is rewarded than when it is punished. Findings such as these imply that imitation is more complex than sheer mimicry; children look to others for information about appropriate behaviour. When the behaviour of popular, smart peers is reinforced, imitating them makes sense.



PostMedia News/ZUMAPRESS/Newscom

When someone is as talented as Sidney Crosby, it makes sense for others to try to imitate him—and young children often do just that.

Bandura bases his social cognitive theory on this more complex view of reward, punishment, and imitation. Bandura calls his theory *cognitive* because he believes that children are actively trying to understand what goes on in their world; the theory is *social* because, along with reinforcement and punishment, what other people do is an important source of information about the world (Bandura, 2006, 2012).

Bandura also argues that experience gives children a sense of *self-efficacy*—beliefs about their own abilities and talents. Self-efficacy beliefs help determine when children will imitate others. A child who believes he is not athletic is unlikely to try imitating Sidney Crosby's hockey skills, despite the fact that Crosby is obviously talented and popular. But another youngster who does believe he is good at hockey *is* likely to imitate Crosby because he believes Crosby is talented, and so it makes sense to imitate him. Thus, whether children imitate others depends on who the other person is, on whether that person's behaviour is rewarded, and on the children's beliefs about their own talents.

Bandura's social cognitive theory is a far cry from Skinner's operant conditioning. The social cognitive child who actively interprets events replaces the operant conditioning child who responds mechanically to reinforcement and punishment. Nevertheless, Skinner, Bandura, and all learning theorists share the view that experience propels children along their developmental journeys. Returning to this module's opening scenario, all these researchers would tell Betty that she can thank experience for making Will both happy and academically successful.

The Cognitive-Developmental Perspective

The *cognitive-developmental perspective* focuses on how children think and on how their thinking changes as they grow. Jean Piaget (1896–1980) proposed the best known of the cognitive-developmental theories. He believed that children naturally try to make sense of their world. Throughout infancy, childhood, and adolescence, youngsters want to understand the workings of both the physical and the social world. For example, infants want to know about objects: What happens when I push this toy off the table? And babies want to know about people: Who is this person who feeds and cares for me?

PIAGET'S THEORY OF COGNITIVE DEVELOPMENT. Piaget argued that as children try to comprehend their surroundings they act like scientists, creating theories about the physical and social worlds. These theories are tested daily by experience, because they lead children to expect certain things to happen. As with real scientific theories, when the predicted events occur, a child's belief in her theory grows stronger. When the predicted events do not occur, the child revises her theory. For example, think about the baby in the photo. Her theory of objects like the rattle she's holding might include the idea that "If I let go, the rattle will fall to the floor." If she drops some other object—a plate or an article of clothing—she will find that it too falls to the floor and she can make the theory more general: Objects that are dropped fall to the floor.

Vanessa Davies/Dorling Kindersley, Ltd

In Piaget's theory, even infants have rudimentary theories about objects and their properties.

Piaget also believed that at a few critical points in development, children realize their theories have basic flaws. When this happens, children revise their theories radically. These changes are so fundamental that the revised theory is, in many respects, a brand new theory. Piaget claimed that radical revisions occur three times in development: once at about age two, a second time at about age seven, and a third time just before adolescence. These radical changes mean children go through four distinct stages in cognitive development. Each stage represents a fundamental change in how children understand and organize their environment, and each stage is characterized by more sophisticated types of reasoning. For example, the sensorimotor stage begins at birth and lasts until about age two. As the name implies, sensorimotor thinking is closely linked to the infant's sensory and motor skills. This stage and the three later stages are shown in Table 1-2.

According to Piaget, children's thinking becomes more sophisticated as they develop, reflecting the more sophisticated theories that they create. Returning to our opening scenario, Piaget would have little to say about Will's good nature. As for will's academic success, Piaget would explain that all children naturally want to understand their worlds; Will is simply unusually skilled in this regard. In Module 6.1, we will further explore Piaget's contribution to our understanding of cognitive development and also examine more modern theories.

The Contextual Perspective

Most developmentalists agree that environment is an important force in development. Traditionally, however, most theories of child development have emphasized environmental forces that affect children directly. Examples of direct environmental influences

TABLE 1-2

PIAGET'S FOUR STAGES OF COGNITIVE DEVELOPMENT

Stage	Approximate Age	Characteristics
Sensorimotor	Birth to 2 years	Infant's knowledge of the world is based on senses and motor skills. By the end of the period, infant uses mental representations.
Preoperational	2 to 7 years	Child learns how to use symbols, such as words and numbers, to represent aspects of the world but relates to the world only through his or her own perspective.
Concrete operational	7 to 11 years	Child understands and applies logical operations to experiences, provided the experiences are focused on the here and now.
Formal operational	Adolescence and beyond	Adolescent or adult thinks abstractly, speculates on hypothetical situations, and reasons deductively about what may be possible.

are a parent praising a child, an older sibling teasing a younger one, and a nursery-school teacher discouraging girls from playing with trucks. These direct influences are important in children's lives, but in the contextual perspective they are simply one part of a much larger system in which each element of the system influences all other elements. This larger system includes parents and siblings, as well as important individuals outside of the family, such as extended family, friends, and teachers. The system also includes institutions such as schools, television, the workplace, and places of worship.

All these people and institutions fit together to form a *culture*—the knowledge, attitudes, and behaviour associated with a group of people. Culture can refer to a particular country or people (e.g., French culture), to a specific point in time (e.g., popular culture of the 1990s), or to a group of individuals who maintain specific, identifiable cultural traditions, such as an Indigenous family who participate in a sweet grass smudging ceremony. A culture provides the context in which a child develops, and it is thus an important source of influence on development throughout childhood and adolescence.

VYGOTSKY'S THEORY OF CONTEXTUAL DEVELOPMENT. One of the first theorists to emphasize cultural context in child development was Lev Vygotsky (1896–1934). Vygotsky, a Russian psychologist, focused on ways that adults convey the beliefs, customs, and skills of their culture to children. Vygotsky believed that because a fundamental aim of all societies is to enable children to acquire essential cultural values and skills, every aspect of a child's development must be considered against this backdrop. For example, most parents in Canada want their children to work hard in school and to be admitted to college or university. In the same way, Efe parents living in central Africa want their children to learn to gather food, build houses, and, as you can see in the photo on the next page, hunt; these skills are fundamental to the Efe because they are critical for survival in their environment. Vygotsky viewed development as an apprenticeship in which children develop while they work with skilled adults, including teachers and parents. In Module 6.2, we'll learn more about Vygotsky's distinctive contributions to our understanding of cognitive development.

Returning to our opening vignette, Vygotsky would agree with learning theorists in telling Betty that the environment has been pivotal in her son's amiable disposition

Nicole Duplaix/Photolibrary/Getty Images

According to the contextual view, parents help children master the essential values and skills of their culture, such as learning how to hunt.

and his academic achievements. However, the contextual theorist would insist that "environment" means much more than the reinforcements, punishments, and observations that are central to learning theory. The contextual theorist would emphasize the manner in which Betty had conveyed the values of curiosity and of academic success to her son; Betty's membership in a cultural group that values doing well in school also contributed to Will's development.

As we think about families it is tempting to believe that parents' actions are what really matter—that through their behaviour, parents directly and indirectly determine their children's development. This view of parents as "all-powerful" was part of early psychological theories (e.g., Watson, 1925), but most theorists now view families from a contextual perspective. That is, families form a system of interacting elements, with parents and children influencing one another (Cox & Paley, 2003; Schermerhorn & Cummings, 2008), and families are part of a much larger system that includes extended family, friends, and teachers as well as institutions that influence development (e.g., schools).

BRONFENBRENNER'S THEORY OF ECOLOGICAL SYSTEMS. This system's view of children and families is exemplified in a theory proposed by Urie Bronfenbrenner (1995; Bronfenbrenner & Morris, 2006) that holds that the developing child is embedded in a series of complex and interactive systems. As Figure 1-1 shows, in *Ecological Systems Theory* **the environment is divided into five components: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem**.

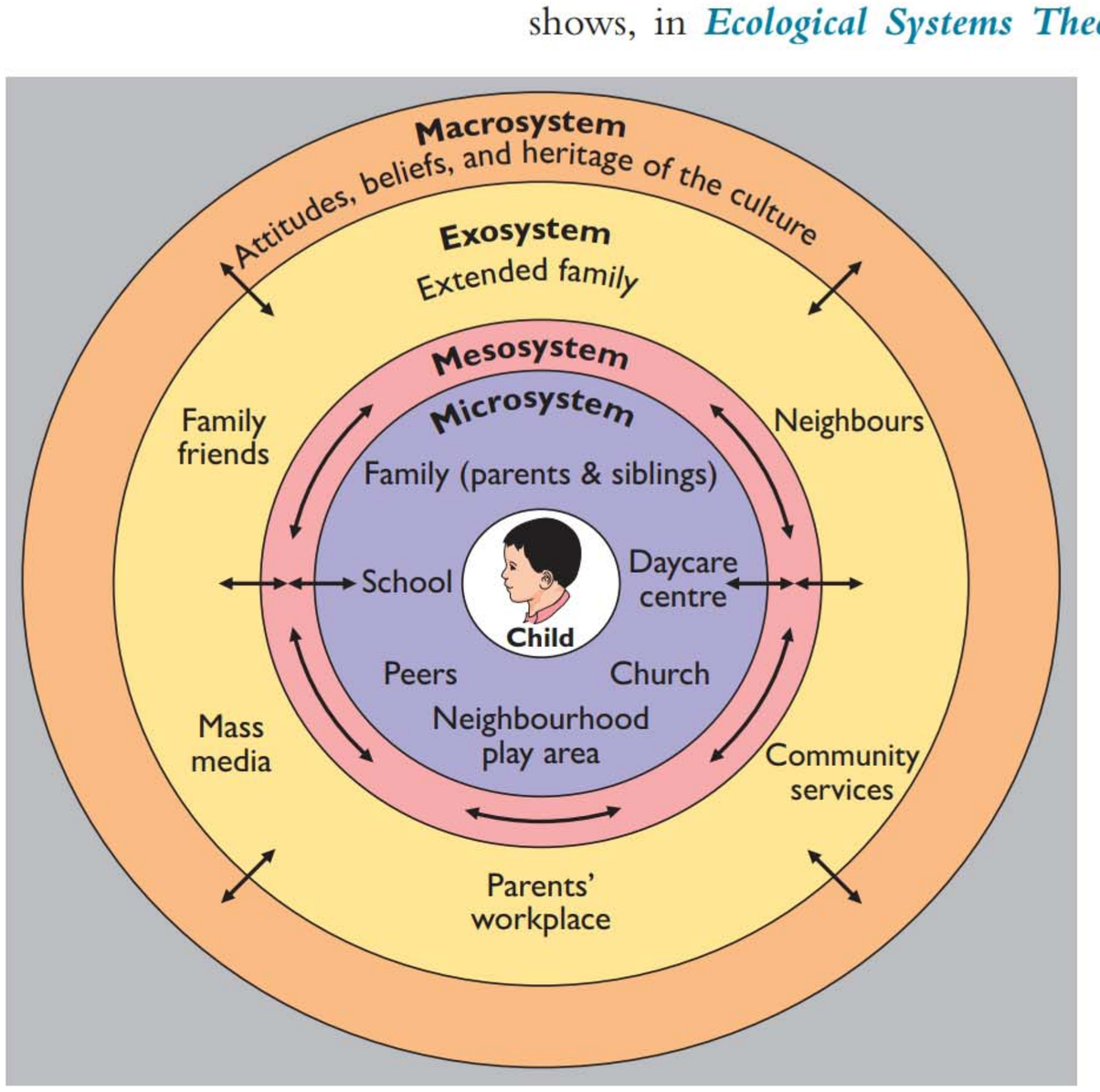


Figure 1-1 Bronfenbrenner's Ecological Systems Theory views the child as being embedded in a series of interacting systems.

At any point in life, the *microsystem* consists of the people and objects in an individual's immediate environment. These are the people closest to a child, such as parents, siblings and other close family members. Some children have more than one microsystem; for example, a young child might have the microsystems of the family and of the daycare setting. As you can imagine, microsystems strongly influence development.

Microsystems themselves are connected to create the *mesosystem*. The mesosystem represents the fact that what happens in one microsystem is likely to influence what happens in others. Perhaps you have found that a stressful day at work or school can make you grouchy at home. This indicates that your mesosystem is alive and well; your microsystems of home and work are connected emotionally for you.

The *exosystem* refers to social settings that a person may not experience first-hand but that still influence development. For example, a mother's work environment is part of her child's exosystem, because she may pay more attention to her child when her work is going well and less attention when she is under a great deal of

work-related stress. Although the influence of the exosystem is at least second-hand, its effects on the developing child can be quite strong. Think about the woman in the photo below. She doesn't look as if she is having a good day at work; do you think she will do her best mothering when she gets home? Probably not, which means that her workplace has affected her child's development.

The broadest environmental context is the *macrosystem,* the subcultures and cultures in which the microsystem, mesosystem, and exosystem are embedded. A mother, her workplace, her child, and the child's school are part of a larger cultural setting, such as Chinese Canadians living in British Columbia or Italian Canadians living in large cities like Toronto and Montreal. Members of specific cultural sub-groups share a common identity, a common heritage, and common values.

Finally, these systems all change over time, in a dimension known as the *chronosystem.* This dimension reminds us that microsystem, mesosystem, exosystem, and macrosystem are not static but are always in flux. For example, the child's microsystem changes when an older sister leaves home to attend college, and the child's exosystem changes when a mother leaves an easy but low-paying job for a more challenging but higher paying job. And, of course, children themselves change over time, which often influences the way in which they are affected by the other elements in the system. For example, a family's move to a distant city may affect a school-age child more than a toddler because the older child must change schools and replace long-time friends (Adam, 2004).

Wavebreakmedia/Shutterstock

According to a systems approach to parenting, a parent who has a frustrating day at work may be a less effective parent when she gets home.

When viewed as part of an interactive system like the one shown in Figure 1-1, parents still influence their children, both directly (for example, by encouraging them to study hard) and indirectly (for example, by being generous and kind to others). However, the influence is not exclusively from parent to children but is mutual: Children influence their parents, too. By their behaviours, attitudes, and interests, children affect how their parents behave toward them. When children resist discipline, for example, parents may become less willing to reason with them and more inclined to use force.

Even more subtle influences become apparent when families are viewed as systems of interacting elements. For example, fathers' behaviours can affect mother–child relationships. A demanding husband may leave his wife with little time, energy, or interest in helping her son with his homework. Or when siblings argue constantly, parents may become preoccupied with avoiding problems rather than encouraging their children's development.

These examples show that narrowly focusing on parents' impact on children misses the complexities of family life. But there is even more to the systems view. The family itself is embedded in other social systems, such as neighbourhoods, schools, and religious institutions (Johnson, 2012; Parke & Buriel, 1998); these other institutions can affect family dynamics. Sometimes they simplify child-rearing, as when neighbours are trusted friends and can help care for each other's children. Other times, however, they complicate child-rearing. Grandparents who live nearby can create friction within the family. Having a supportive relationship with a member of the community can aid a child, however, making up for deficiencies in family relationships caused by difficulties such as job loss or divorce.

Martin Guhn and Hillel Goelman of the University of British Columbia used systems theory to develop recommendations for research and practice in evaluating children's development, well-being, and school readiness. The proposed approach would take into account both individual variables, such as the child's health, and influences at the community level, such as socioeconomic variables (Guhn & Goelman, 2011). For example, social institutions in the community, such as recreation centres or organizations such as Big Brothers Big Sisters, are important because they can have a beneficial effect, ameliorating problems in other areas of a child's life (De Wit et al., 2006; Duerden & Witt, 2010).

Research by David De Wit (Centre for Addiction and Mental Health in London, Ontario) and colleagues from across Canada has shown that the Big Brothers Big Sisters programs alleviate emotional problems and anxieties and improve the social skills of children assigned to such programs. In fact, De Wit et al. (2006) found that the only problem with the program was the ethical one of keeping children in the control group waiting for assignment to a big brother or big sister.

At times, the impact of the larger systems is indirect, as when work schedules cause a parent to be away from home or when schools are forced to eliminate programs that benefit children. The various systems thus interact, and the situation is complex. Later in this book, in Chapter 14, we'll look at some of these issues in more detail.

THE BIG PICTURE. Comparing the basics of five major perspectives in just a few pages is like trying to see all the major sights of a large city in one day: It can be done, but it's demanding, and after a while everything blurs together. Relax. The Summary Table gives a capsule account of all five perspectives and their important theories.

SUMMARY TABLE

CHARACTERISTICS OF DEVELOPMENTAL PERSPECTIVES

Perspective	Key Assumptions	Illustrative Theories
Biological	Development is determined primarily by biological forces.	***Maturational theory***: emphasizes development as a natural unfolding of a biological plan ***Ethological theory***: emphasizes that children's and parents' behaviour has adapted to meet specific environmental challenges
Psychodynamic	Development is determined primarily by how a child resolves conflicts at different ages.	***Freud's theory***: emphasizes the conflict between primitive biological forces and societal standards for right and wrong ***Erikson's theory***: emphasizes the challenges posed by the formation of trust, autonomy, initiative, industry, and identity.
Learning	Development is determined primarily by a child's environment.	***Skinner's operant conditioning***: emphasizes the role of reinforcement and punishment. ***Bandura's social cognitive theory***: emphasizes children's efforts to understand their world using reinforcement, punishment, and others' behaviour.
Cognitive-Developmental	Development reflects children's efforts to understand the world.	***Piaget's theory***: emphasizes the different stages of thinking that result from children's changing theories of the world.
Contextual	Development is influenced by both immediate and more distant environments, which typically influence each other.	***Vygotsky's theory***: emphasizes the role of parents (and other adults) in conveying culture to the next generation. ***Bronfenbrenner's theory***: emphasizes the interaction of different aspects of the environment and their influence—direct or indirect—upon the child.

These perspectives are the basis for the contemporary theories that we introduce throughout this book. For example, Piaget's theory is the forerunner of modern explanations for infants' understanding of objects and for preschoolers' theory of mind (both described in Module 6.3). Similarly, Erikson's theory has contributed to work on mother-infant attachment (see Module 10.3) and formation of identity during adolescence (see Module 11.1).

The modern theories described throughout the text are derived from all five perspectives listed in the Summary Table. Why? Because no single perspective provides a truly complete explanation of all aspects of children's development. Theories from the cognitive-developmental perspective are useful for understanding how children's thinking changes as they grow older. In contrast, theories from the contextual and learning perspectives are particularly valuable in explaining how environmental forces such as parents, peers, schools, and culture influence children's development. By drawing on all the perspectives, we can better understand the different forces that contribute to children's development. Just as you can better appreciate a beautiful painting by examining it from different vantage points, child-development researchers often rely on multiple perspectives to understand why children develop as they do.

Another way to understand the forces that shape development is to consider several themes of development—themes that cut across different theoretical perspectives and specific research topics. We'll look at these themes in Module 1.3.

ANSWER 1.2

Perhaps there is a critical period for language learning that ends when adolescence begins—that is, children learn to speak a language like a native if exposed to that language extensively in childhood but not if most of their exposure takes place later, in adolescence and young adulthood. (We'll learn more about such a critical period in Chapter 9.)

Check Your Learning

RECALL Describe the different theories that typify the biological perspective on child development.

What are the main features of the contextual perspective on child development?

INTERPRET Explain the similarities and the differences between Erikson's and Piaget's stage theories of children's development.

APPLY Imagine that a friend complains that his one-year-old seems to cry a lot compared to other one-year-olds. How would theorists from each of the five perspectives listed in the table on page 18 explain his son's frequent crying?

1.3 Themes in Child-Development Research

OUTLINE

Continuity of Development
Impact of Nature and Nurture
The Active Child
Links Between Different Domains of Development

LEARNING OBJECTIVES

1. How well can developmental outcomes be predicted from early life?
2. How do heredity and environment influence development?
3. What role do children have in their own development?
4. Is development in different domains connected?