

CHAPTER 2

*what is now proved was once
only imagined.*

WILLIAM BLAKE (1757–1827)

THE SCIENCE OF LIFESPAN DEVELOPMENT: Goals, theories and methodology

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CHAPTER OVERVIEW

The fascinating process of lifespan development has both personal and practical relevance. Through its study, each of us gains a deeper understanding of our own lives now, in the past and in the future, as well as a clearer understanding of those older and younger than ourselves with whom our own lives are entwined. This understanding will be of practical value to teachers, nurses, therapists, health professionals, human resource managers and everyone else who works with people on a daily basis. Though everyone's unique lifespan charts a distinctive course that differs from everyone else's, there are predictable regularities in psychological growth over time, as well as the occasional life-cycle surprise.

This chapter explains and illustrates the tools that lifespan researchers use in their quest to understand human psychological development in all its complexity. We see *why* developmentalists strive to observe behaviour through the lens of science, and *how* research is conducted so as to study the processes of change over the complete lifespan. Many research techniques and strategies are available to the developmental scientist, each with unique strengths as well as inevitable limitations. By thinking critically about the methods and measurement strategies underlying a piece of psychological research, you will become skilled in drawing your own conclusions from research you read about and in weighing up scientific evidence realistically. In this way, you can continue to inform yourself of research breakthroughs that occur in the future.

The remainder of Chapter 2 is an exploration of some seminal theories that underpin and direct the study of human development through the lifespan. We approach these theories from four broad perspectives: (1) the psychoanalytic approach of Sigmund Freud and Erik Erikson; (2) the cognitive-developmental approaches of Jean Piaget and Lev Vygotsky; (3) social, behavioural and cognitive learning theories; and (4) two types of adult-focused lifespan theories: (a) the organic self-determination approach pioneered by Buhler and continued by Vaillant and Levinson, and (b) Paul Baltes' selective optimisation and compensation theory. Recent research evidence on lifespan development supplies support for key propositions of several of these theories and suggestions for their integration. After examining the strengths and weaknesses of each approach, we see how all the theories can be drawn together around some of the core concepts of development that were introduced in Table 1.1.

The scientific goals of lifespan research

The study of lifespan human development offers something for everyone. This is the field of psychology that talks not only about the age you are now, but also about the age groups you will be joining in the near and more distant future. Perhaps its worth pausing to consider what you are hoping to learn as you read further through these pages. Are there things you'd like to know about your own and other people's journeys through the lifespan? What is the systematic, scientific study of developmental change likely to offer over and above the rich everyday experiences we all bring to this personally relevant topic? The exercise in Box 2.1 may be of assistance in organising your thinking about what this future-oriented field of study can hold in store for you personally.

The goals of the developmental scientist are quite simple. Researchers seek to know what happens as people grow up and grow old, why this happens, and how to intervene effectively when things go wrong. Some key research questions are simple questions of fact, such as 'How do humans gain intelligence and social understanding as they grow up and grow old?' Other questions are reflections of common beliefs and stereotypes about

the lifespan, not all of which are true (see the section on ageism in Chapter 1). An example that we will explore in Chapter 16 is 'Will my memory capacity decline when I get to be aged 60?' and so on. There is also interest in causal questions and explanations ('What causes [will help me to achieve] increased life satisfaction during retirement?'; 'How do children [can I help my child] learn to read?') and in questions of practical significance for everyday life ('What qualities in a parent, infant nurse or primary school teacher can optimise a child's development?').

These are all important questions—too important to have simple answers. However, lifespan developmental science approaches their answers in a unique way. Three basic goals characterise the entire research enterprise of lifespan developmental psychology.

Three key scientific goals

Developmental scientists study how people grow, develop and change over the lifespan through research that embraces one or more of the discipline's three key goals: *description*, *explanation* and *optimisation*. The descriptive goal defines the terrain of lifespan human development. Like a botanist or naturalist identifying new species of flora or fauna in the Australian outback, developmental researchers need to know what the basic facts are. Some

Activity suggestion

BOX 2.1

What can research tell us that we don't already know?

Add to the list in the cartoon by examining your own goals and asking friends of various ages to play '5 Questions': *What are the five most important things to be learned from studying human development through the eyes of the research scientist?*

Make your own list and ask friends who are older or younger than you to suggest additional questions about how people develop over the lifespan to which they would like to know the answer. Add these to your list. Then, with a list of at least 10 goals in front of you (including any from the cartoon that you endorse), place a number from 10 (most important) to 1 (least important) beside them to indicate their subjective importance to you right now. Once you finish reading this chapter, return to the list and consider how the study of lifespan developmental psychology can help you achieve these goals.



aspects of behaviour and psychological functioning change in a regular way as most people grow up and grow older. Others stay relatively constant. Which aspects change at particular ages, and how? The second goal is explanation. Once we know *what* changes (via description), we are in a position to ask *why* change occurs. This is the explanatory, theoretical aim of the discipline. Finally, contemporary developmental researchers are motivated to apply their scientific findings to real-world problems, as we saw in Chapter 1. The optimisation goal addresses these key practical and intervention concerns.

Psychology studies core questions about people and their motivations, thoughts, values and actions through the objective lenses of science. This offers special advantages, especially when it comes to the study of age groups, and developmental possibilities that are beyond the range of our own personal, everyday experience. As Mihaly Csikszentmihalyi (Seligman & Csikszentmihalyi, 2000) explained:

Psychology is not just ... concerned with illness and health. It is about work, education, insight, love, growth and play. And in this quest for what is best, it does not rely on wishful thinking ... it tries to adapt what is best in the scientific method to the unique problems that human behavior presents to those who wish to understand it in all its complexity (p. 7).

Descriptive research: Picturing psychological development age by age

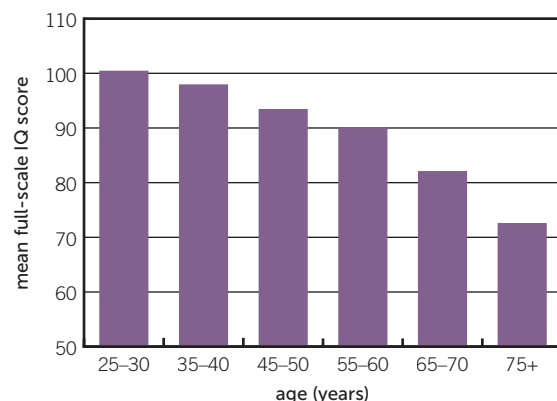
The descriptive goal of developmental psychology is to gather facts and figures about age groups and age-related

changes. For example, a descriptive developmental researcher with an interest in mental ability might administer a standardised test of intelligence (an IQ test) to groups of adults of three different ages: (1) 25 to 30 years, (2) 45 to 50 years and (3) 65 to 70 years. Figure 2.1 shows the results of one such study (Kaufman, 1990), in which mean (average) IQ scores were plotted by age group. Descriptive evidence like this offers a view of how adult intelligence relates to chronological age (see Figure 2.1).

Descriptive developmental research has many uses. One important use is to catalogue the progress of development for some psychological process of interest. When the developmental characteristics of large and sufficiently representative samples of people at different ages are

FIGURE 2.1

Age differences in adult intelligence test scores



Source: Based on data in Kaufman (1990).

collected to provide *generalisable* descriptions (see pages 35 and 38 for discussions of generalisability), they can be grouped together to produce averages at each age level. Known as *age norms*, these averages suggest the qualities or behaviours that can be expected from members of different age groups, or a picture of what is typical. For example, Figure 2.2 shows physical growth norms and Figure 2.3 overleaf shows the norms for the infant's biobehavioural development of locomotor skills, a topic that will be examined in more depth in Chapter 4.

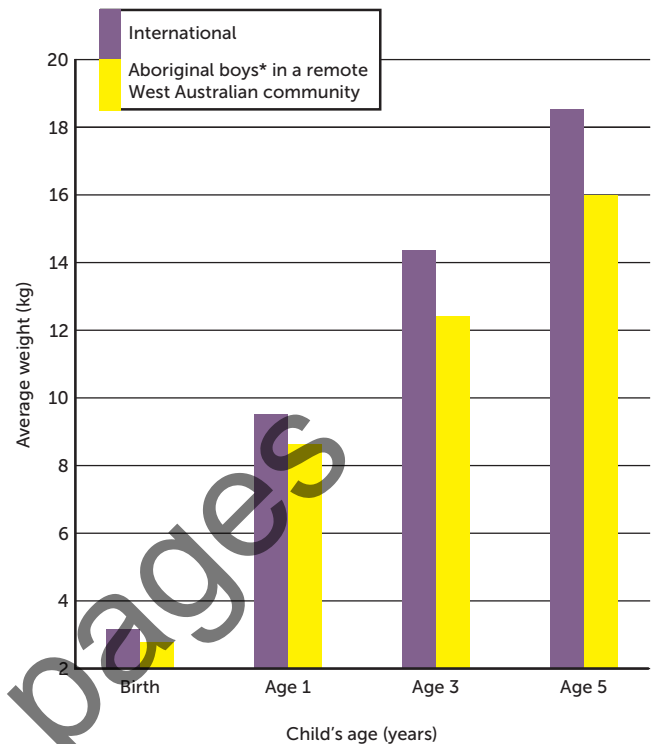
In addition to providing the database upon which developmental theories are constructed, age norms have clear practical value. Parents can use them as a guide for comparing their own child's progress to that of other children the same age. Doctors, nurses and therapists rely on norms to identify problems in individual patients. Teachers can plan better for the age groups they work with by knowing how the average person of that age is likely to behave. As a simple example, a parent, teacher or therapist could make good use of the age norms for locomotor skill development in Figure 2.3 for each of these purposes. Child-care staff could also make use of norms to guide when to introduce highchairs, playpens and climbing toys to infants in their care. Norms facilitate social services



Age norms and other descriptive developmental information can be used to assist in the design of playground equipment

FIGURE 2.2

Age norms for Indigenous Australian boys' growth compared with international norms for boys



* Only boys of normal birth weight are included. See Chapter 3 for a discussion of low birth weight in Indigenous infants.

Source: Based on data in Gracey (1991; 2007); and Roberts, Gracey & Spargo (1981).

and environmental design for particular age groups. Height norms can be used to guide construction of school desks and neighbourhood playground equipment. Simple descriptions enable a comparison between one person and other members of the same age group, thereby pinpointing the need for special intervention in cases where the individual's development appears to be blocked, delayed or exceptionally advanced (see Figure 2.2).

Interpreting descriptive age norms

Age norms are very useful for suggesting general trends. However, it is essential to interpret them accurately. Mistakes and misunderstandings can arise when the group average alone is considered, without taking account of variations among individuals. No two babies develop at exactly the same rate. This is true of simple physical growth in weight and height (see Figure 2.2). It is even more true of the patterns of growth of children's complex behavioural, cognitive and social skills (e.g. the motor skills illustrated in Figure 2.3). Thus, descriptive research needs to supply information on the range of variation among healthy individuals in an age group, not just group averages. It is easy to forget, when looking at averages, that the norm is in fact based on a wide range of individual scores. For example, in a classic study Mary Shirley (1933) visited

FIGURE 2.3

Age norms for the growth of motor skills and locomotion in infancy (age in months when up to 85% of healthy infants have mastered the skill)



Source: Based on data in Coovadia & Wittenberg (2004); Frankenburg et al. (1992); and Shirley (1933).

25 normal, healthy children regularly at home at weekly or monthly intervals to measure the locomotor norms in Figure 2.3. She discovered wide variation, even in this small group. Some infants in her sample could sit alone by four months of age but others could not do so until eight months. Variations such as these are perfectly normal, so being a few months later than the exact norm (six months) does not mean a child is ‘abnormal’ or delayed.

Age norms are also liable to differ as a function of the child’s ethnic background. While the North American data collected in Mary Shirley’s classic study placed the average age for sitting with support at four months, in Australia Annette Hamilton (1981) discovered an age norm of two months two weeks for the same skill when she studied Indigenous children who were being reared in a traditional environment in a remote community in Arnhem Land. Norms for growth in height and weight also differ for Indigenous Australian children versus children in Europe and North America, as Figure 2.2 illustrates.

Even seemingly similar cultures can yield contrasting norms. One seminal, large-scale study of the first independent steps taken by more than 1000 children in Brussels, London, Paris, Stockholm and Zurich yielded two different walking norms: 13.2 months for French, Swiss and English children, compared with 12.2 months for Belgian and Swedish children (Hindley et al., 1966). Possible explanations for these differences are considered in Chapter 4. Such variations among subgroups within an age category indicate how misleading it can be to regard normative trends as fixed, absolute and inevitable.

In addition, whether the norm is designed to be specific to subgroups or broadly generalisable, its validity as a scientific tool depends heavily on the principle of *representative sampling*. This means that the people chosen to represent a particular cohort or age group in a normative study should be typical of other members of that cohort who did not happen to be chosen. Thus it is misleading to choose only university students when hoping to generalise the norm to all 18-year-old Australians, and even

more misleading to sample nursing-home elderly as representative of everyone over the age of 65. Adults’ lifetime diversity of experience may make the search for universal norms seem like ‘combining chalk with cheese’. As John Flavell (1970) explained, ‘Experience is a far more promising source of interesting adult cognitive changes than are biological events’ (p. 250). Thus, when creating normative descriptions of adult development, it is often necessary to come up with separate norms for adults with different backgrounds and varying kinds of lifestyles and life experiences.

Perhaps the most important limitation of descriptive developmental information is its failure to explain *why*. This includes answering questions about why particular age groups differ from one another, and why a particular pattern of behaviour happens to be the norm for people of a given age. To prove this, try completing the exercise in Box 2.2 on next page. Age norms, like descriptive findings generally, have added importance as guides to those aspects of lifespan psychological development where optimisation research (see pages 31 and 40) is clearly needed. Consider the age norms for Indigenous boys’ growth over the first five years of life, as shown in Figure 2.2. Michael Gracey (2007) highlighted poor nutrition as responsible for the delayed growth that is prevalent among Indigenous Australian children in remote communities throughout the Western and Central deserts and Far North of Australia today. As he explained, ‘Nutrition is a key issue for Aboriginal children and a major reason why they are not reaching their physical and functional potential in today’s society’ (Gracey, 1981, p. 270). Reflecting on the situation in 2007, he lamented the fact that, despite some small improvements, the nutritional and health status of children in remote Indigenous communities remains poor and that, later in the lifespan, the gap in life expectancy between Indigenous and non-Indigenous Australians (see Chapter 18) is currently as wide as it was 25 years ago. Optimisation research into how to ‘use psychology’ to improve the nutritional status of children and families in remote communities is clearly an urgent priority. In Chapter 9 we will look at some recent success stories from this exciting and challenging field of psychological research.

Explanatory research: Creating theories and testing predictions

In the words of Cicero (106–43 BC), ‘The causes of events are more interesting than the events themselves’. A causal explanation for developmental change adds interest and clarity to ‘facts’ or ‘events’ by helping to resolve the paradoxes that may arise when purely descriptive information is examined on its own. Explaining development involves finding a reason *why* a particular behaviour or psychological attribute (e.g. an IQ score) shows its descriptively observed relationship with chronological age. At a broader level, explanatory research seeks causal connections to account for developmental outcomes.



Age norms are group averages. A height norm for 18-month-olds is calculated by measuring a group of toddlers of this age and calculating their mean height.

BOX 2.2

How can you explain it? Age differences in IQ

The dilemma: Descriptive studies of age groups and age differences tell us what happens as people grow up and grow older. But they do not tell us *why*. Often more than one possible explanation suggests itself. Consider Figure 2.1 again. One explanation for the normative difference in IQ scores between younger and older adults could be that intelligence declines with age. But that is not the only possibility. How many alternative possibilities can you think of? Write these down before you read further.

A few other possibilities:

1. *Ageist tests.* K. Warner Schaie (1983) pointed out that many standard IQ tests favour young adults. For example, tests of vocabulary size may sample words that have entered the lexicon very recently (e.g. 'cyberspace', 'megabyte' or 'tweeting'). Do you know what the word 'soughing' means? Probably not, even though it was commonly used when contemporary 90-year-olds were in high school.
2. *Cohort obsolescence.* Cross-sectional studies estimate age difference by comparing age groups of people who have had different life experiences, many of which may have been relevant to their cognitive development. For example, unlike more recent cohorts, the 70-year-olds in Kaufman's (1990) study would have lived through two world wars and the Great Depression, disrupting their education and health.



The educational and other life experiences of the cohort born around 1920 who served in World War II were very different from those of cohorts born in the latter part of the 20th century.

The task of coming up with plausible and experimentally testable explanations for psychological development has been compared to the exercise of discovering 'whodunnit' in a mystery story. In each case, the first step is to get a clear picture of the facts (descriptive data). Next, a *hypothesis* (or possible explanation) is formulated. Finally, further information is sought that will either confirm or

BOX 2.3

Activity suggestion Test your sleuthing skill

Figure 1 presents descriptive evidence about the relationship between age and hearing loss for men in the United States. By looking at the graph we can see that the young men in this study (all in their early 20s at the time of taking part) had suffered no discernible hearing loss at any sound frequency. But older men (aged 60 and above) showed moderate loss of hearing acuity at intermediate frequencies and serious loss for high-frequency sounds. Can you think of two different reasons (hypotheses) for the descriptive age difference shown here? (See Box 2.4 for an answer.)

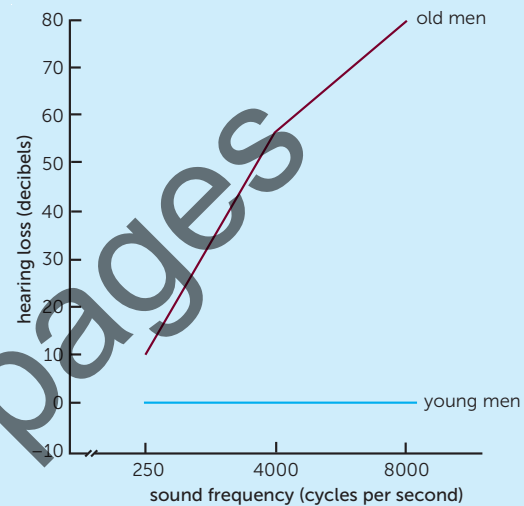


FIGURE 1 Age and hearing loss in the United States

Source: Based on data in McFarland, R.A. (1968). The sensory and perceptual processes in aging. In K.W. Schaie (Ed), *Theory and methods of research on aging*. Morgantown: West Virginia University Press.

refute the hypothesis, using one of the research designs that we consider later in this chapter. To try this out for yourself, complete the hypothesis-generating exercise in Box 2.3.

Hypotheses are testable predictions that suggest ideas requiring scientific data collection for their answers. In addition to deriving these kinds of predictions from a descriptive data-gathering exercise, as in the examples above, it is also possible to work in the other direction. Theories, like empirical data, inspire testable hypotheses. For example, consider the age norms for Indigenous Australian children's growth in Figure 2.2. One possibility is that low birth weight (a problem more common for children in remote than urban Australian communities (see Chapter 3)) delays growth in infancy and throughout the lifespan (Gracey, 2007). Another is that access to nutritionally adequate food is difficult in remote communities owing to the transport costs and lack of locally grown market options. We will explore these possibilities in more detail when we look at child growth, health and nutrition in Chapter 9.

Explanations for individual age-related phenomena, such as changes in weight, handedness, IQ scores, hearing acuity or motor skills, are sometimes called



School experiences vary with culture and shape development. These Japanese primary school students are learning about hygiene while helping serve school lunch.

‘mini-theories’. They are theoretical because they demand assumptions and deductions that go beyond the tangible descriptive level. But they are miniature because their scope is limited to making a few specific age contrasts within a relatively narrow area of psychological functioning. Major theories and explanatory systems, on the other hand, are designed to encompass and interconnect large fields of behavioural development. They incorporate a great many specific deductions, which are themselves derived from a large number of basic assumptions, or axioms (Reese & Overton, 1970). Later in this chapter, we will examine several of the major theories that have guided contemporary thinking about developmental psychology.

Analogies for development: Pre-theoretical models

As Hayne Reese and Willis Overton (1970) pointed out, the important theories in developmental psychology that we examine later in this chapter are grounded in an implicit model or analogy. This hidden but crucial component of every major theory is not a formal part of the theory, although it flavours, guides and constrains the way explanations are formulated. According to Reese and Overton, most relatively new areas of inquiry borrow simple and well-explained phenomena from other fields to serve as models for theory-building. The model acts like a lens that lends shape and colour to complex and disorganised

patterns until they come to look familiar and manageable. Three different kinds of pre-theoretical models are prevalent in lifespan developmental psychology: the environmental-mechanistic model, the organic-maturational model and the dialectical model.

The environmental-mechanistic model

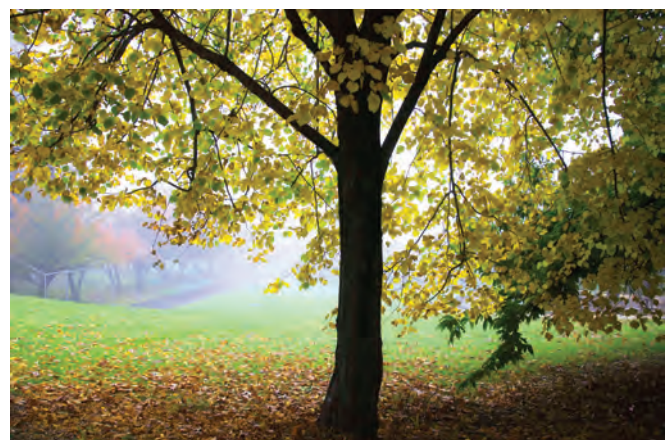
Theories built on the environmental-mechanistic model emphasise the role of the external environment in guiding and building developmental change. Think about assembling a computer from its component parts. Circuit boards and other components resemble the biological and physical factors that provide the foundation for human development. But psychological functioning, in all its complexity, is built up over time through active intervention from a developmentally nurturant environment, according to learning theories and other theories that adopt the mechanistic analogy. Consequently, this model leads to theories that concentrate on dissecting complex, mature behaviour into its simpler parts and earlier beginnings.

Artificial intelligence research in cognitive science supplies contemporary examples of the application of environmental-mechanistic models. Neural networks used in artificial intelligence research are computer programming constructs that are built in an effort to model how the human brain might work (Arbib, 2002). They can create simulations of developmental change in the same way that a physical computer or software package could be built or extended: by adding extra circuitry and connecting it into the main system.

An example of a mechanistic theory of sensory functioning in adulthood appears in Box 2.4 on next page, together with a solution to the deductive exercise presented in Box 2.3.

The organic-maturational model

Organic or biogenetic models of development equate psychological development to natural physical growth in simpler species such as flora and fauna—for example, a plant’s growth cycle. First a seed is planted. Then, in a nurturant environment, it grows, sprouts, increases in size,



The organic model compares human growth to the sprouting, blossoming and fruiting of a tree.

Using science

BOX 2.4

From description to explanation: Why do we age?

As noted in Box 2.3, the mystery of why old men's hearing is less acute than younger men's has a number of plausible explanations. Perhaps the ears decline in acuity with the changes in their physiological structure and operation that inevitably arise during old age (see Chapter 16). Compared with a young person's body, the body of an older adult has several distinctive characteristics, including slower nerve conduction speeds and a decreased diameter, number and reactivity of muscle fibres. Do these changes explain the reduction in acuity of aged ears?

An alternative explanation is that the ageing of the ears is not a function of chronological age (the number of years since you were born), but rather is the product of how well the ears have been treated at all stages in the lifespan. A teenage rock musician can have an 'elderly' auditory system through exposure to loud noise. As Figure 1 below shows that a 60-year-old who has spent a lifetime in the quiet surroundings of the remote African bushland can have the ears of a young adult. In other words, the 'wear-and-tear' theory of ageing (see Chapter 16) proposes that how quickly you age both psychologically and even physically is not a matter of years but rather of experience. Just as a car's 'ageing' is often indicated best by the number of kilometres on the clock, so a person's ageing depends very much on the experiences they have had, and choices they have made, throughout all phases of the lifespan.

In a classic study testing the biological programming theory of ageing (see Chapter 16) against the wear-and-tear explanation, the auditory acuity of elderly African bush dwellers was compared with that of Americans exposed to louder noises (McFarland, 1968). The results, shown in Figure 1, provide explanatory information that was not available in the simple

descriptive evidence of Figure 2.2.

The fact that the elderly men who spent their lives in the remote stillness of the African bush had better hearing than young Americans implicates noise exposure, not ageing per se, in aged hearing loss. The young US pilots' premature hearing loss at high frequencies can likewise be ascribed to their heavy noise exposure in the cockpits of WWII aircraft. Thus, while supporting the mechanistic, wear-and-tear model of ageing, these individual difference data also show the link between descriptive information and explanatory theorising. It would seem that the wear-and-tear to the hearing system that builds up over a lifetime in a noisy environment accounts for the observed declines in auditory acuity. This is an example of the mechanistic model of development.

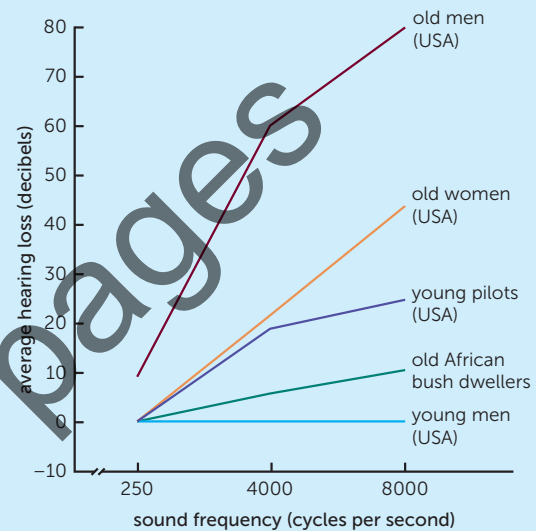


FIGURE 1 Hearing acuity of younger and older Americans and elderly African bush dwellers

Source: Based on data in McFarland, R.A. (1968). The sensory and perceptual processes in aging. In K.W. Shaie (Ed), *Theory and methods of research on aging*. Morgantown: West Virginia University Press.

flowers, fruits and spreads its seed. But eventually, even under ideal conditions, ageing and death are inevitable. The plant dies and, perhaps, new seeds sprout from soil that its remains have nourished to begin a fresh lifespan.

In human development, the organic model relies on maturational programs wired into the human genome (see Chapter 3), as well as on biological and neurocognitive modular processes within the brain as major influences on developmental timing. Qualitative change is prevalent throughout nature (seeds turn into trees, tadpoles into frogs and caterpillars into moths and butterflies), so that organic theories do not necessarily expect earlier psychological attributes to be discernible in, or even functionally related to, those that emerge later.

The dialectical model

The dialectical model presents human psychological development in terms of confrontations between opposing forces, in a continuing state of flux, that can be resolved into higher levels of synthesis and integration.

Thus, challenges and setbacks are seen as the impetus for psychological growth. By resolving contradictions at earlier developmental levels, people progress towards ever higher and more effective levels of complexity, integration and organisation. The name originated from the Greek philosopher Plato's analysis of the teaching style of his mentor, Socrates. Socrates would challenge his pupils by astute questioning, thus highlighting the inherent contradictions in the students' original positions. Opposing viewpoints could then be resolved through open discussion until a higher-order resolution was achieved.

Applied to human development, the dialectical analogy suggests that psychological growth is set in motion by struggles, setbacks, debates and disputes. Genuinely developmental change feeds on opposition so as to incorporate the best features of each side and draw them together into a higher-order synthesis (Riegel, 1975). Like an orchestral symphony, the initially discordant musical counterpoints are resolved into an intricately textured melody. The dialectical model, inspired as it is by Karl



The dialectical model presents development as a resolution of contradictions, as is common in Eastern philosophy, such as between the risky excitement of the new and the proven security of ancient traditions.

Marx's (1858/1967) theory of economics and history, also emphasises the interdependence between an individual's development and the current historical and cultural context within which his or her unique life cycle unfolds (Baltes & Staudinger, 1996).

Applied to lifespan development, there is a dialectical opposition between 'nature' and 'nurture', taking the form of a continually changing balance between biogenetic

and cultural influences on individual growth (Glassman, 2000). Genetic inheritance (see Chapter 3) and biological growth and ageing place constraints upon the directions psychological development can take. However, cultural forces challenge these biological limits and propel development freely in the directions determined by human cultural ingenuity. Thus, mature cultural gains compensate for biological or physical decline (Baltes, 1997).

The ancient Greek philosopher Heraclitus argued that both harmony and conflict were so essential to human functioning and social organisation that 'There is nothing permanent except change' (Evans, 1978, p. 95). Together with these occidental roots, dialectical approaches to biological and psychological development were also important components of ancient Oriental philosophies. Traditional Chinese philosophers identified a polarity between the *yin* forces of weakness, softness and passivity and the *yang* forces of power, heat and activity. These somewhat resemble the modern masculinity/femininity dialectic that we explore when we look at sex-role development in Chapters 8, 12 and 13. A dialectical model also stresses the unity of opposites:

Dialectic polarities not only exhibit opposition, thereby partially excluding one another, but they also complement and provide a definitional base for each other. For example, the idea of interpersonal harmony implies and helps define interpersonal conflict, and vice versa ... The yin–yang concept of Chinese philosophy assumes that some amount of either pole of an opposition is always present, no matter how powerful the other. If one pole completely dominated the other then the larger system of which they were parts and to whose coherence they contributed would not exist. (Altman, Vinsel & Brown, 1981, p. 121)

In contemporary developmental psychology the dialectical model has broad appeal because, possibly, it

BOX 2.5

Activity suggestion Test your taste for the dialectical model of development

Does the dialectical approach to lifespan development as a continuing progression of resolving challenges and contradictions into more complex systems appeal to you? One way to find out is to try a simple experiment devised by Kaiping Peng and Richard Nisbett (1999). Two proverbs appear below. Your task is to rate how much you like each one on a scale from 1 (not at all) to 7 (very much).

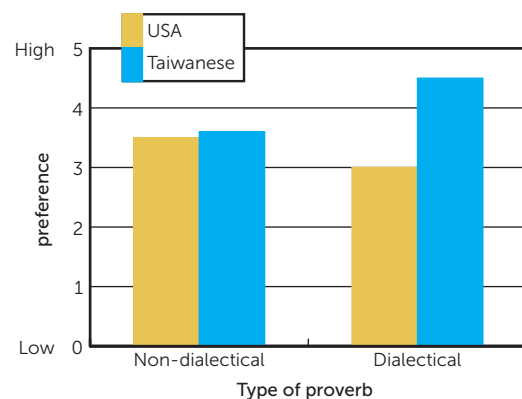
Proverb 1: 'Being too humble is a form of pride'.

Proverb 2: "For example" is no proof'.

Interpretation: Did you rate one of these proverbs as more appealing than the other? If you picked Proverb 1 over Proverb 2, you have a taste for dialectical explanations of human behaviour, according to Peng and Nisbett. (For more details of their research into this issue, see the next page of the text and Figure 2.4.)

FIGURE 2.4

US versus Taiwanese students' preferences for dialectical versus non-dialectical proverbs



Source: © 1999 by the American Psychological Association. Adapted with permission. Culture, dialectics, and reasoning about contradiction. Peng, Kaipeng, Nisbett, Richard. E. *American Psychologist*, Vol 54 (9), Sept 1999, 741–754. The use of APA information does not imply endorsement by APA.

solves the vexing puzzle of why behaviour continually develops and changes as individuals grow older, even well into adult life. Instead of viewing stability as normal and change as unusual, the dialectical model argues that growth-driving forces are inevitable and periods of apparent stability (or stagnation) are the deviant phenomena that a developmental theory must explain. According to Kaiping Peng and Richard Nisbett (1999), a dialectical model suits lifespan development owing to the complexity of human nature and human life:

Life is full of contradictions. Even in science, the concept of a complex system reflects the reality of the world we are living in, a reality that is multilayered, unpredictable, and contradictory. Therefore, a dialectical approach may enable people to tolerate and even appreciate contradiction, consequently maintaining a view of the big picture. (p. 751)

Peng and Nisbett (1999) observed that our cultural backgrounds influence our preferences for dialectical versus mechanistic or biogenetic explanations for development. Asian cultures, in particular, have a long tradition of emphasis on harmony, ‘middle ground’ and integration of contradictions into larger unities. ‘Because change is constant, contradiction is constant. Old and new, good and bad, strong and weak, and so on coexist in everything’ (Peng & Nisbett, p. 743). To test this idea scientifically, they performed an experiment similar to the activity in Box 2.5. University students in the United States and Taiwan were asked to rate their preferences for 16 different proverbs, half dialectical and half positivistic (non-dialectical). (To control for familiarity they chose Yiddish proverbs, which neither group of students had encountered.) The results of their study are shown in Figure 2.4.

Another strength of the dialectical position is its role in inspiring key elements of many of the major theoretical positions that guide contemporary psychology, including the theories of Erikson, Piaget and Vygotsky, which we examine more closely later in this chapter.

Optimisation: The goal of applied research

As noted in Chapter 1, the lifespan approach to human development has a very optimistic ‘bottom line’: genuine growth and gains in psychological capacity are possible throughout the whole of life. But this fact places a burden of responsibility on people whose lives, careers and leisure pursuits are intertwined with the lives of other human beings of any age. How can we foster optimal psychological development in ourselves and those we care for throughout the whole lifespan? Applied, optimisational researchers strive to answer these questions, while contributing to the progress of scientific understanding at the same time. By testing intervention strategies in the laboratory of real life, optimisational research can supply useful new insights to guide the construction and evaluation of developmental explanations and theories. In fact, when striving to weigh theories about development against one another, two very

important considerations are (1) whether or not a theory can suggest useful applications to nurturing development, and (2) whether or not those interventions actually work.

Thus, optimisational research stretches one step beyond explanation. With its roots in well-tested description and theory, applied optimisational research seeks ‘to modify and optimize individual development in a more robust, long-tested manner by programmatic individual and ecological intervention’ (Baltes, Reese & Nesselrode, 1977, p. 88).

Lifespan examples of successful optimisation research

Applied interventions to boost development or remove obstacles in its path can supply ways of testing models, explanations and theories of human development. If a prediction from a theory can be made to ‘work’, in the sense of boosting an individual’s developmental progress, this provides verification of its underlying ideas about the causes of development.

Throughout the remainder of this book, many successful examples of optimisation research will be highlighted. For example, in Chapter 3 we will see how studies of the developing foetus’ ability to learn (Kisilevsky & Muir, 1991) and sensitivity to maternal stress (Di Pietro, 2004) have led to optimisation strategies for neonatal care (see Chapter 4). In Chapter 9 we explore optimisation of children’s physical growth as a way to optimise psychological wellbeing, including an intriguing example from a remote Indigenous Australian community. In Chapter 10 we will examine optimising interventions using adolescent idealism (see Chapter 11) to combat teen problems of body image dissatisfaction and inappropriate dieting (Stice et al., 2008), and in Chapter 17 we will explore how enhancing personal control over the environment can optimise health and psychological wellbeing in extreme old age (Rodin, 1984).

Descriptive studies highlighting television’s daily broadcasting of scenes of violent death and destruction have likewise led to applied research in Australia, New Zealand and overseas. A goal has been to examine the effects of viewing aggressive television on children’s and adolescents’ development (Sheehan, 1983). Many other instances of problem-centred approaches to understanding and improving people’s developmental opportunities are considered in more detail in later chapters of this book. Based on the results of optimisation research findings, psychologist Phillip Zimbardo (2004) stated:

I am proud to be a psychologist ... our scientific approach to understanding the behaviour of individuals has guided some policy and improved some operating procedures in our society. (p. 343)

Life-cycle surprises and optimisation research

In designing and evaluating interventions to optimise development, it is especially important to maintain a lifespan perspective. As we saw in Chapter 1 when we examined Jean Walker MacFarlane’s ‘life-cycle surprises’,

unexpected events sometimes arise when we examine development over long spans of time. This highlights the need to evaluate optimising interventions over the whole of life. Short-term gains may not be maintained in the long run. Conversely, development that appears problematic at one stage in life does not necessarily breed problems at later stages. Thus researchers adopting the optimising goal need to consider the whole of lifespan development. There may be unexpected twists late in the developmental story.

Consider an example. When Lorelle Futterweit and Holly Ruff (1993) analysed the long-term results of an early-intervention program for low-income US families with babies aged 0 to 2.5 years, they discovered a life-cycle surprise. The intervention had focused on early learning. However, despite a small IQ advantage in middle childhood, the main advantage to the intervention group was motivational. In comparison to a control group they maintained better school attendance and academic achievement all the way through high school. They also had less need for special services from remedial teachers, guidance officers, disciplinarians, clinicians and therapists. Their mothers' own developmental prospects likewise improved. Although matched for education levels at the beginning of the study, by its end 10 years later the mothers of the intervention children had completed more years of schooling than control mothers. Thus, by boosting the mothers' educational achievements, self-esteem and opportunities for further adult development, the wellbeing of the entire family had improved as a result of this optimising intervention in early infancy. The researchers concluded:

Frequent, ongoing long-term evaluation processes need to be built into studies to capture periods of stability and change in individual children. In this manner, we ... can monitor how well the intervention is working, what processes are being affected, and when states of transition are occurring. (pp. 167–8)

Another example of an unexpected long-term benefit from an early educational input appears in Box 2.6. As Paul Baltes (2001) explained, these examples highlight the value of using psychology in everyday life. By testing optimisation strategies in this way, new insights emerge both for science and for further practical application. As Baltes wrote:

Lifespan psychology does not prescribe the goals of development. Rather, it has taken on the mission to accumulate and disseminate knowledge about which processes and characteristics contribute under which circumstances to the optimization of development. Eventually, it will be this kind of knowledge that every individual may use to compose his or her life in a fulfilling manner. (p. 8848)

The methods of developmental psychology

In pursuit of these broad scientific goals, developmental researchers use a variety of techniques to gather descrip-

BOX 2.6

How can you explain it?

Learning music in childhood boosts mental ability in old age

Did you learn to play a musical instrument before you were age nine? If so, you are likely to have better verbal memory skills after age 60 than other older men and women, according to a recent study by Brenda Hanna-Pladdy and Byron Gajewski (2012). They compared elderly men and women (aged 60 to 80 years) who had studied music for 10 years or more in early childhood and/or more recently to a control group without musical training. To make sure that any differences were due to music learning itself, they matched the control group not only by age and amount of schooling but also by current activity and engagement in pleasurable leisure activities. Those who studied music before age nine were found to score higher than everyone else in verbal memory ability. How would you account for this unexpected long-term advantage of taking music lessons?

Interpretation: The authors of this study speculated that early musical training may produce 'brain changes in musicians that can transfer to non-musical cognitive abilities' (p. 198). However, since most of the musicians in their sample who had learned music early continued to enjoy it and play it in old age, current exercise of the cognitive functions involved may equally have been responsible.

tive information about development and to test theories and optimising interventions. These techniques can be grouped into four main categories: (1) case studies and individual life histories, (2) naturalistic observation of spontaneous everyday behaviour, (3) controlled laboratory experimentation and (4) self-report techniques (e.g. interviews, standardised tests). We briefly examine the main characteristics of each approach, including their strengths and weaknesses.

Case studies

The idiographic or *case study* method involves an in-depth focus on an individual—a child, an adolescent or an adult. The aim is simply to understand that one person. This can have many uses. Clinicians compiling a case study amass many records (e.g. birth complications, school reports), and may interview key players in their client's life (e.g. parents, spouse or work colleagues) while also undertaking interviews, tests and behavioural observations. The goal is to compile as complete a picture as possible of all the interconnected facets of that individual's overall psychological functioning that may contribute to current psychological wellbeing or problems. The portrait that emerges, while idiosyncratic, can sometimes be useful for suggesting hypotheses about development that can be followed up using broader sampling techniques. Neuropsychological case histories of adults who have suffered head injuries or strokes are one example; Sigmund Freud's psychoanalytic insights based on patients' retrospective memories and clinical case notes are another

(see pages 49–51), as are Jean Piaget’s diary records of the growth and development of his three children (see page 53), echoing naturalist Charles Darwin’s diary of his son Doddy’s early development. Often the parent’s primary purpose in keeping a baby or child diary was personal reminiscence or for family records, much as parents today might compile a photo album or DVD. Although the developmental patterns discerned in case studies like these are idiosyncratic, they provide a vivid glimpse of a real, whole person that can serve as a useful adjunct and reality check when we dissect development into separate cognitive, personality or social dimensions using other styles of research. An example appears in Box 2.7.

The validity of a case study depends largely on how accurately and objectively it depicts the chosen target person. No claim is made that a case study like the one in Box 2.7 would fit any other child of the same age, or even that it will accurately depict Louise herself when she is a few months older. Like a photographic snapshot, it permanently records just one point in one person’s lifespan. Thus idiographic descriptions are rich sources of future research questions, rather than scientific ends in themselves. For example, we might wonder the following after reading about Louise at 16 months:

1. Are most 16-month-olds able to climb, open and close boxes and speak in single words just like Louise does? (See page 34 for a discussion of individual differences in motor skills like these.)
2. Is Louise’s way of responding to the frustration of losing her toy a general feature of her being the age she is (e.g. at the threshold of the ‘terrible twos’)? (See Chapter 6.) Or is it peculiar to Louise’s own personality? (See Chapter 5.) Will Louise herself develop different ways of reacting to frustration as she grows older?
3. Is Louise ‘spoilt’, perhaps through being an only child? (See Chapter 7). If she is, what could her parents do to rectify the problem?

Answers to questions like these require systematic studies of larger groups of children, using one of the developmental research strategies that we examine next.

Naturalistic observation

One way to think about developmental research methods is in terms of how intrusive they are, or how much they disrupt the ongoing activities of the people being studied. At the least-intrusive extreme is the technique of *naturalistic observation*. This entails watching people of different ages in their normal habitats while taking precautions to ensure scientific objectivity. For example, a researcher interested in children’s temper tantrums might sit quietly in the kitchen of a child’s home, waiting for an anger outburst to occur. Alternatively, the observer might borrow a shopping trolley and track children through supermarkets as their parents shopped, waiting for parent–child confrontations over purchases of toys, sweets or a cool drink. The use of two independent observers in settings like these is one way of checking accuracy and objectivity. When observers

BOX 2.7

A child called Louise

This example of the case study approach comes from the diary of an advertising executive named Arthur Clifford, who kept a record of the development of his daughter, Louise, from her birth until her 18th birthday.

19 July. *Today our daughter is 16 months old. She is 31 inches tall and weighs over 24 pounds—above average I believe. She is very much a real person. She talks, in single words, she runs, climbs, gets down by herself, enjoys pictures, likes to close and open boxes and understands a surprisingly large amount of what we say. She is almost always amiable, is cross only when hungry or tired, or when barred from some place she wants to go. When she is cross, she hollers, but even her hollering is largely a matter of form: if it works, all right; if not, too bad. Except last Friday when she came out of the doctor’s office crying as though her heart was broken. It was over a blue plastic duck she had specially selected among the toys made available in the waiting room for children to play with. She kept it all during her examination and bitterly resented having to give it up when she left. For a half hour in the car she cried for her lost ‘ducko’. We got her something else and that made a little difference. Still from time to time she would say ‘ducko’ and sob.*

© Peterson, 1974, pp. 60–1, reproduced with permission.

Note: We meet up with Louise again in later chapters. Her father’s diary is used to show some of the links between the science of development and a child growing up in real life. Sometimes the points that her father noted or wondered about have been investigated by psychologists in the laboratory or in natural settings. Sometimes they have been incorporated into the major theoretical explanations of psychological growth, which are examined later in this chapter. Most often they are merely incidental details which, though unimportant in themselves, motivate the search for more accurate and general facts about deve



Louise at 16 months.

record the same behaviours without conferring, a high level of agreement suggests objectivity.

One major advantage of the naturalistic style of data gathering is real-life validity. Since the behaviours being observed arise in their natural context, a researcher can feel quite confident that they are genuine. But there are also problems involved in using this method. In the first place, it is only useful for gathering data on events that occur reasonably often and are overtly visible or audible. Thus a child's understanding of death and dying (see Chapter 18) is not usually accessible to direct observation, since children rarely discuss this 'taboo' topic spontaneously. It would likewise be both unethical and impractical for observers to intrusively observe children who are in the throes of coping with, say, the death of a beloved pet.

Other issues to consider with naturalistic observation are (1) the risk of subjectivity in interpreting behaviour and (2) the danger that individuals may behave unnaturally when they realise they are being watched. One solution to subjectivity bias is to have several independent observers watch the same events, as noted above. The problem of 'acting for an audience' or 'hamming it up' can often be overcome by using video cameras, one-way glass observation rooms or other ways of shielding (informed) participants from reminders of their contact with the observers.

While observation has the clear advantage of authenticity as a picture of genuine everyday behaviour in real-world settings, deciding on causal inferences can be difficult. A toddler's supermarket temper tantrums are a good example (see Chapter 6). The time of day, the child's temperament and features specific to the supermarket setting (such as noise, being restrained in a trolley, boredom or the overwhelming availability of forbidden treats such as lollies) could all be influential. Experiments in controlled settings are therefore useful supplements, as we see next.

Experimental research in developmental science

The *experimental method* involves a tighter level of control over both the testing environment and other factors that could influence behaviour than any other methodology. Thus, by using it, the researcher is able to test causal hypotheses. Systematic manipulation of one variable at a time tests for its outcome on behaviour. At the same time other likely influences are excluded or controlled. The manipulated variable (known as the IV, for *independent variable*) may produce a change in some measured outcome (known as the DV, for *dependent variable*). This can be assessed precisely. Often there is also a control group not receiving the IV manipulation. This enables further controlled comparison. In addition, by conducting the experiment in a controlled laboratory setting, other causal influences apart from the IV can be excluded. An example is Hanus Papousek's classic (1974) study of infant conditioning (see Chapter 4). After controlling other

variables, Papousek was able to show that infants only four months old reliably increased their head-turning (his chosen DV) as a function of the IV (an electric light). Very early awareness of causality was demonstrated when infants not only reliably increased their head-turning to make the light go on, but also were able to master complicated sequences (such as first turning to the left then the right) to bring the interesting stimulus of the light flash under their own control.

Laboratory experiments have definite advantages. Indeed, this is the method of choice for testing specific explanatory predictions in a controlled manner. But there are limitations to laboratory experiments when it comes to generalising their findings outside the laboratory into everyday life. For example, a baby at home would rarely encounter contingencies as pure and simple as the connections to be learned in Papousek's laboratory where all potentially confusing visual, auditory and tactile stimuli were eliminated. Mastery of real-life causal chains would conceivably take longer for infants to acquire than under Papousek's perfectly controlled conditions.

Self-report techniques

Many developmental scientists use *self-report* methodologies such as interviews, questionnaires and standardised tests. These techniques enable study of abilities, ideas or personality dispositions not readily accessible to direct observation. For example, a child psychologist with an interest in young children's concepts of death (see Chapters 7 and 18) might interview children about living and non-living things (e.g. plants versus bicycles), or probe their memories and current understanding of the causes of the death of a pet (e.g. Slaughter, Jaakkola & Carey, 1999).

With teens and adults, more ambitious and varied self-reporting techniques are possible. Reed Larson (1997; 2000) implemented a novel approach. Recognising that adolescents crave privacy, both in their everyday lives and when questioned by psychological researchers, Larson fitted the teenagers with electronic paging devices that 'bleeped' at random intervals throughout the day. When beeped, participants had to tell the researchers how they



Direct self-report questioning is useful, such as asking this 6-year-old about her dream.

Piaget's life

BOX 2.11

Jean Piaget (1896–1980) was born in Neuchâtel, Switzerland, and died in Geneva, Switzerland, at the age of 84. His father was a professor of medieval literature at the University of Neuchâtel and Piaget himself taught there briefly, from 1925 to 1929, before moving to the University of Geneva where he spent most of the remainder of his academic life.

Piaget is often deemed to be the greatest developmental psychologist of the 20th century, and his remarkable discoveries of children's unique ways of thinking about the world have earned him the nickname 'Giant in the Nursery' (Elkind, 1978). However, as Piaget himself (1976a) explained, he was drawn to the study of child psychology almost by accident. His scientific career began precociously with the publication of an article on the albino sparrow in a biology journal at the age of 11. He continued publishing at a rapid rate until one of the journal editors (who would nowadays be dubbed 'ageist') learned how young he was and refused further publication on the grounds of age alone.

At about the same time, Piaget was whiling away boring intervals in his high school classes by drafting a theory of philosophy, which he 'imprudently' published as a novel at age 21. His dissatisfaction with this high-flying venture eventually brought home to him the need for an empirical basis around which to organise the analysis of consciousness; some years later, after completing a doctorate in biology, he discovered this basis in psychology.

In 1923 he married Valentine Châtenay, a fellow scientist. During the early years of his marriage he tested children in Paris to standardise the IQ test that Theodore Simon and Alfred Binet had recently developed. The children's wrong answers piqued Piaget's curiosity, and he gradually evolved his own style of interviewing, the *clinical method*, which enabled him to probe

beneath the surface of children's replies by posing challenges and investigating their underlying reasoning.

For the next 50 years Piaget continued to interview children, using games, scientific dilemmas and verbal challenges that still have their place in the contemporary developmental psychologist's repertoire of investigative techniques.

Piaget's unique approach to child psychology is best captured in an incident he recorded in his autobiography (Flavell, 1963). He tells of being commissioned by Albert Einstein to discover whether Newtonian mechanics or the relativity theory had primacy in the developing mind. The crucial test was whether children first understood the concept of time and derived velocity from it (which is the position taken by classical mechanics), or whether they began with velocity as a first given and constructed time in relation to it (the approach taken by relativity theory). Piaget eagerly set about testing these two views, using some of the tasks described in Chapter 7. Disappointingly though, while he found some support for relativity's priority, the notions of velocity that young children began with were themselves derivative of even more basic spatial relationships. In other words, he found that the children's first implicit 'theory' of physics was different from both Newton's and Einstein's.

This experiment illustrates, on a small scale, what Piaget's basic approach to cognitive development entailed. He endeavoured to understand the organisation of the human mind by witnessing the first glimmerings of thought in early infancy and tracing them through their ever-increasing shades of complexity as the mind developed. By this means he not only enhanced the understanding of children and how they think, but also supplemented the philosophy of knowledge. Until Piaget, philosophers had focused primarily on adult cognition, thus missing out on the rich store of insights to be derived from observing the growth of thought in the mind of a child.

the external environment, as when animals grow thick fur to combat the cold of winter and shed their coats in the heat of summer.

In Piaget's theory, assimilation and accommodation conflict dialectically to achieve ever higher orders of 'equilibration' or balance. Accommodation brings new input (e.g. a new idea) and assimilation incorporates it into an existing cognitive structure, or *schema*. Thus, in the sensorimotor stage (see below), the reflex schema for sucking on the human breast (see Chapter 4) assimilates new items such as rubber teats and dummies to become more versatile, or better 'adapted'. Piaget's mental schemas range from the newborn's simple sucking reflex to the *schema of intuitive qualitative correspondence* (a method used by school-age children for deciding the numerical equality of groups of numbers).

Accommodation is triggered, according to Piaget, when assimilation fails (e.g. a breastfed baby cannot assimilate a bottle's inanimate teat into his sucking schema). The schema is then modified to accommodate the new item. This interplay between assimilation and accommodation

leads to higher and more versatile levels of functioning (e.g. the baby can feed by both bottle and breast). Development is jointly the product of the neurobiological maturation of the brain and the varied experiences that the child encounters while growing older, according to Piaget. He also described a sequence of stages (or qualitative changes: see Chapter 1) in development running from infancy through to the end of adolescence. Each stage gives rise to a new kind of thought, as described below.

Sensorimotor stage

(Up to age two) The sensorimotor stage is a period during which the infant learns to deal effectively with the physical and social world at the level of overt behaviour. It ends with the beginnings of symbolic thought.

Preoperational stage

(Two to seven years) The preoperational stage is a period during which the ability to think about objects, words and other symbols, and to manipulate them mentally, evolves and spreads into the areas of play, moral awareness and

social functioning. Thinking in this stage is ‘prelogical’, according to Piaget. The preschooler is intrigued by many natural and social phenomena and their causal origins, as seen in the average three-year-old’s perpetual question ‘Why?’

Preschoolers are also quite adept at devising their own intriguing explanations for puzzling dilemmas such as what makes the sun come up and go down, or how dreaming occurs. But their line of reasoning is more likely to be *transductive* (linking one idiosyncratic particular to another, see Chapter 7) than *inductive* or *deductive*. Hence it is likely to seem illogical to an adult. This illogicality is drawn out into the open when children argue with one another or with a parent, motivating cognitive development through an overt dialectical clash between opposing points of view in which more advanced logic eventually triumphs over prelogicality to progress development to the next stage. Indeed, for Piaget, arguments make a major contribution to qualitative developmental progress towards higher stages, a belief reinforced by more recent research findings of contemporary Swiss developmental psychologists including Anne-Nellie Perret-Clermont (1980), examined in more detail in Chapter 7.

Concrete-operational stage

(Seven to 11 years) During the concrete-operational stage, the child’s thoughts become organised into an integrated system of logical operations called groupings. As a result, the child acquires a rational and consistent understanding of tangible objects and events. Thinking is still limited, however, when it comes to higher-order abstractions and intangibles.

Formal-operational stage

(After age 11 or so, but see Chapter 11) For Piaget, the formal-operational stage is the pinnacle of logical thought. When fully mastered, formal operations enable the adolescent to think rationally, hypothetico-deductively and thoroughly about even such remote abstractions as friction and momentum, the mechanisms of human thought or the possible future of the world. Genuinely qualitative cognitive development ceases, according to Piaget, with the attainment of formal operations. But the quantitative assimilation of further information and its integration into existing formal thought structures can continue through the remainder of the lifespan.

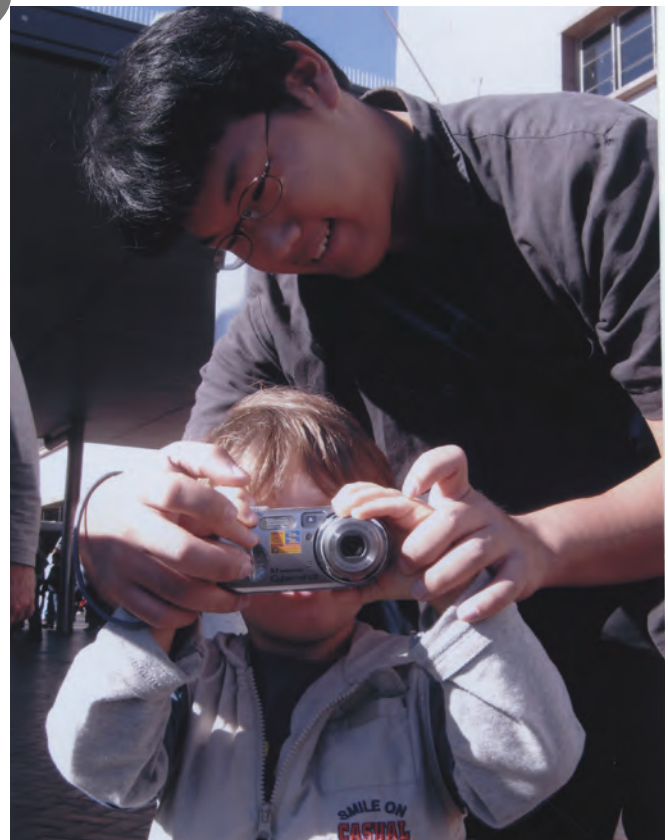
Vygotsky’s theory

Lev S. Vygotsky developed a sociocultural theory of cognitive development that, like Piaget’s, emphasises the role of social interaction, including logical disagreements, as a motive force behind cognitive gains. According to Vygotsky, the cultural tools that a child receives from the social environment, through interactions with parents, peers and teachers, are essential in enabling the human mind to grow. There are three ways that these tools can be acquired. One is through imitative learning where the

child watches and copies the actions of an interaction partner. The second is through internalisation of lessons that are socially conveyed through play, teaching, coaching or other kinds of explicit instructional communication. Gradually, ideas that first entered the child’s mind via the speech of others become internalised as implicit, covert speech: ‘Thus, with the help of speech, children . . . acquire the capacity to be both subjects and objects of their own behavior’ (Vygotsky, 1978, p. 26). The third route for the acquisition of cultural tools is via collaborative learning with peers. Using a dialectical model Vygotsky proposed that, by mutual striving to understand and convince one another, children working collectively can eventually surpass their earlier levels of private understanding.

While resembling Piaget’s theory in many respects, Vygotsky’s theory is more explicitly social, and more attentive to the unique features of the child’s own sociocultural environment that can drive cognitive development in a different direction from that seen among children of the same age in a very different social milieu. According to Vygotsky:

From the very first days of a child’s development his activities acquire a meaning of their own in a system of social behavior and, being directed towards a definite purpose, are refracted through the prism of the child’s environment. The path from object to child and from child to object passes through another person. (1978, p. 30)



According to Vygotsky’s theory, children can perform tasks with help from others that they cannot yet perform on their own.

Vygotsky's life

BOX 2.12

Lev Semyonovich Vygotsky (1896–1934)

was born in Belarus and died in Moscow. He studied law at the University of Moscow during the heady days preceding and following the October Revolution of 1917 from which Russian socialism was born. His experiences as a student activist and moral thinker (see Chapter 11) inspired him to contribute to children's development through education. He also developed a sensitive appreciation of the importance of cooperation with other people and the support of human society for both individual and political development.

After graduation, Vygotsky worked as a teacher. He published his first theoretical volume, *The Psychology of Art*, in 1925 before joining forces in psychological research with Alexander Luria and Alexei Leontiev, working on his theory of cognitive development. In spite of its premature curtailment by Vygotsky's untimely death from tuberculosis at the age of 38, his seminal sociocultural theory remains alive and well today, having exerted major influences upon the disciplines of both developmental and educational psychology.

Another important theoretical construct introduced by Vygotsky was his notion of a *zone of proximal development* (ZPD). The zone is a range of capacity stretching from sole performance to assisted capability. What this implies, in line with Vygotsky's discoveries about the benefits of collaborative social learning, is that children who work on a cognitive problem with a skilled partner are able to accomplish tasks that they could not solve alone. The ZPD is the gap between the child's private problem-solving capacity and the level of potential development that can be achieved by working under adult guidance, or in cooperation with a cognitively advanced peer. Eventually, after mastering cognitive concepts through this kind of collaborative social interaction, the new knowledge is internally assimilated and the ZPD extends to a more developmentally advanced style of problem solving. Here again, the sophistication of the child's cultural environment is the major determiner of the extent of development that can be achieved.

Learning theories: Classical theories and the social learning approach

At its broadest level, the learning perspective views human development primarily as the product of experience, postulating that the basic principles governing the acquisition of new knowledge and skills by organisms ranging from a rat in a Skinner box to a university student taking a course in microbiology also contribute importantly to developmental change over the lifespan. A number of these core learning concepts are listed and explained in Box 2.13.

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, merchant-chief, and, yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors. (p. 104)

According to Watson, a person's developmental future rests in the hands of parents, teachers, peers and others who engineer that individual's overall learning environment. Disputing the relevance of hereditary, physiological and neurobiological predispositions, Watson took an extreme view in ascribing even the most complex gains in human development to basic learning processes (see Box 12.13).

Another classic behavioural learning theorist, B.F. Skinner (1953), proposed that learning principles of reward, extinction and punishment are responsible for much of the behaviour and psychological functioning that human beings develop, including language. Wise and consistent parenting is critical, according to this view, to ensure that children acquire the right habits and avoid learning the wrong ones.

Learning theories also aim to explain how the process of learning itself changes as the learner gets older. While varying in detail, many agree that there are two separate stages in children's learning (e.g. Kendler & Kendler, 1972; Luria, 1961; Pavlov, 1927). During the first stage, learning is viewed as the gradual building of relatively simple and direct sensorimotor associations. In the second stage, more advanced and abstract cognitive strategies and functions come to control the learning process. This implies both (1) that theories of learning need to include age in their explanatory frameworks and (2) that developmental theories postulating learning to account for changes in behaviour must incorporate different learning models for individuals of different ages.

Developmental learning theories mostly focus on the first half of the lifespan, up to adulthood. However, recent research suggests that qualitative changes in the learning process may occur during the latter half of life, not all of which can be equated with weakening or loss of capacities developed earlier (see the section on Baltes' theory later in this chapter).

Social learning and Bandura's social-cognitive learning theory

A different learning approach, known as *social learning theory*, initially proposed in 1941 by Neal Miller and John Dollard, was elaborated and applied to children, first by Robert Sears (Sears, Maccoby & Levin, 1957) and then by Albert Bandura (1969). Bandura (1989, 1997) has continued to refine the theory to include a new role for cognition (Bandura, 1989), renaming it 'social-cognitive theory' to reflect this added emphasis.

Social learning theory, in both its original and its social-cognitive incarnations, strongly emphasises observational learning. Through processes of imitation, modelling and vicarious reinforcement (see Box 2.13),

BOX 2.13

A glossary of learning terminology

Behaviour modification/cognitive behaviour therapy:

The principles of classical conditioning, operant conditioning and instructional learning can be applied in a practical way to the treatment of behaviour problems, the central assumptions being:

- a person's behaviour is his problem (as opposed to the view that the behaviour is a symptom of some underlying conflict) and
- the problem is due to learning—for example, the child has either learned to do the wrong things or not learned to do the right things. If she has learned to do the wrong things, extinction is called for. If she has not learned to do the right things, conditioning is called for.

Classical conditioning: The classical conditioning procedure involves the repeated pairing of a neutral stimulus with a stimulus that instinctively or 'unconditionally' evokes a response. Eventually the neutral stimulus comes to evoke the same response. (Example: Pavlov's dog was conditioned to salivate to a bell after repeated pairings of the bell with the taste of food.)

Extinction: Reduces the strength of a conditioned response. In classical conditioning this occurs by repeated exposure to the conditioned stimulus without the unconditioned stimulus. (Example: the bell is rung without food being given. Eventually the dog no longer salivates when hearing it.) In operant conditioning this occurs by repeated failure to gain reinforcement after the response. (Example: food is withheld when the lever is pressed. Eventually the rat ceases lever-pressing.)

Generalisation: The spontaneous transfer of learned responses to similar situations. (Example: the dog salivates to the sound of a buzzer.)

Mediation: The learning of an abstract concept linking a stimulus to a learned response. (Example: after learning to select a small red diamond and a small red heart, a child learns to select all *small* or *red* objects.)

Modelling: Learning to do something by observing someone else (the model) do it. (Example: a child copies an adult's patting of a dog.)

Operant conditioning: Alters the frequency of designated behaviours by delivering reward or punishment whenever they occur. (Example: a hungry rat gropes randomly around its cage until it chances to press a lever. Food reinforces the lever-pressing—the rat learns to press reliably.)

Punishment: An aftermath that decreases the frequency of the behaviour with which it has come to be associated. (Example: rats learn to avoid a bar producing an electric shock.)

Reinforcement: Anything that changes the probability of a response with which it is associated. (Example: earning pocket money reinforces a teenager's tidying of his room.)

Vicarious reinforcement: Observing positive consequences for others of a particular behaviour pattern increases the likelihood that the observer will copy it.

children may acquire complex social behaviours ranging from aggression to altruism. They can also acquire sex roles and standards of conscience in this way, supplemented by classic learning principles of reward, extinction and punishment. Throughout their growing up children have ample opportunity to watch others, copy their behaviour and learn from others' observed successes as well as their mistakes. For example, a toddler might observe an older sibling pumping a swing or building a sandcastle at the beach, and try to copy these behaviours via modelling. If the model (the older sibling) earns a reward for expressing the behaviour (e.g. a peer admires the sandcastle) the learner's chances of copying it are likely to increase still more, through the principle of vicarious reinforcement (see Box 2.13).

Albert Bandura (1969) showed early in his research career that aggression can develop via observational learning and modelling. Children who watched a violent film subsequently played more aggressively than those who did not. Much further along in his lengthy career, Bandura's research continues to show that people effectively learn to do things they have never done before by observing a model do them (e.g. Bandura, 2011; Bussey & Bandura, 2004). Observational learning can occur even without reward to either the model or the observer. New behaviours that are not directly observed can also be acquired through imitation. Social learning through modelling can be abstract as well as specific.



Children learn to do new things by observing others.



Feelings of self-efficacy develop out of successful learning experiences and reflection on one's own achievements, such as growing an attractive garden.

Observation can also teach a child not to copy—as when children who see another fall off a playground slide become wary of going on it. Its effects can show up months (and possibly years) after a single observational opportunity (e.g. Hicks, 1965).

Bandura's social-cognitive theory also includes a stronger emphasis on self-regulatory motivational mechanisms than classic learning theories. He proposed that the core observational learning process, modelling, has cognitive elements. Modelling, for Bandura (1989), is a four-step process:

1. *Attention.* The learner must notice the model and keep attention focused on the behaviour to be modelled.
2. *Retention.* Using memory, people can recall behaviours they have observed and copy them days or weeks later.
3. *Reproduction.* When learning complex behaviours via observation, mental organisation and insight are involved. Even very young children copy the intentions behind the actions they see, rather than just blindly copying mistaken or inefficient attempts to reach a goal (Nielsen, 2012).
4. *Motivation.* In order to want to copy a behaviour, the person needs an incentive, sometimes an anticipated or vicarious reinforcement.

Two other important features of Bandura's social-cognitive learning theory are his notions of self-regulation and self-efficacy. *Self-regulation* involves (1) becoming aware of one's own behaviour, (2) assessing it against

internalised standards and (3) a self-response of reward or punishment. Thus, a seven-year-old girl might help a younger child tie his shoelaces, reflect on her helpful act, judge it positively and then self-reward with feelings of gratification at her adherence to the moral standard to be helpful.

Self-efficacy is the collection of beliefs people have about their own abilities and areas of incompetence. These influence the decision to imitate others. Thus, a boy who believes himself incompetent at sewing will be unlikely to model his sister's mending of her school blazer, despite the vicarious reward of watching the praise she earns for her successful sewing efforts.

Adult-oriented lifespan theories: Organic self-determination

Whereas each of the theories considered so far, apart from Erikson's, has begun in infancy and followed development up to adulthood, with a heavy emphasis upon infancy and childhood, other important theories of lifespan development have turned the process around. For theories viewing the whole of life as the focus of interest, childhood is merely a preparation for major qualitative changes and growth throughout the adult life. Many see old age as continuing that process. We will examine three such theories of adult psychological development in this section. The first is the pioneering organic self-determination approach of Charlotte Buhler. Her influence continues today in the adult-development theories of George Vaillant and Daniel Levinson.

Buhler's theory

Charlotte Buhler (see Box 2.14) was an influential lifespan theorist, especially through her contributions to the thinking of contemporary adult development theorists such as Robert Havighurst (1973), Daniel Levinson (1986), Abraham Maslow (1968), Donald Super (1990) and George Vaillant (Mariano & Vaillant, 2012; (Vaillant & Vaillant, 1990). She presented adult development in terms of intentionality, goal setting and self-actualisation. Her research and clinical case histories of adult patients in therapy alerted Buhler to a lifelong pattern that she labelled 'intentionality'. Evident in all but the most forlorn of lives, intentionality is a developmental process of (1) choosing life goals, (2) working towards them, (3) evaluating goal achievement and (4) selecting new goals, revisiting neglected ones and revising life plans in order to fulfil one's full human potential for self-actualisation and self-determination.

According to Buhler, most of us are not consciously aware of these core life goals, which can often be discerned only through deep psychotherapy or by piecing together a person's complete life story after they have died. Nevertheless, a basic assumption of Buhler's theory is that each human life is coherently organised from birth to death around a goal activity. These goals manifest themselves in

BOX 2.14**Buhler's life**

Charlotte Buhler (1893–1974) was educated in Munich and worked in Vienna until 1938, when she fled from Hitler—first to Norway, then to Minnesota and then to southern California, where she lived and worked until her retirement. She was a pioneer in both developmental and humanistic psychology. Children were the first subjects of her research but later she came to devote most of her attention to mature adults, whom she studied through biographies, diaries and in-depth interviews. As she put it:

I studied infancy to get an idea of life's earliest trends. But after some years I decided that life as a whole could be better understood from the end than from the beginning.
(Havighurst, 1974, p. 1)

The concept of goal-direction, which guides development through all the phases of her theory, also explains Buhler's own coherent pursuit and accomplishment of personal and intellectual achievements. Robert Havighurst wrote that: 'No one who knew Charlotte Buhler would describe her as a "shrinking violet". She believed in herself and she let others know it' (p. 1).

all the various spheres of the person's life endeavour (from career activities to intimate relationships and private thoughts). Goals also change in predictable ways over the lifespan as they are worked towards, achieved or amended, and reformulated or abandoned.

Buhler divided intentionality into five major goal tendencies (Havighurst, 1973), culminating in *self-fulfilment*. She postulated that, over the lifespan, goal tendencies ascend and descend in an organic manner, from sprouting to fruition and then decline. However,

purposeful choices, effort and a supportive environment are crucial in order for adults to continue to progress towards self-fulfilment.

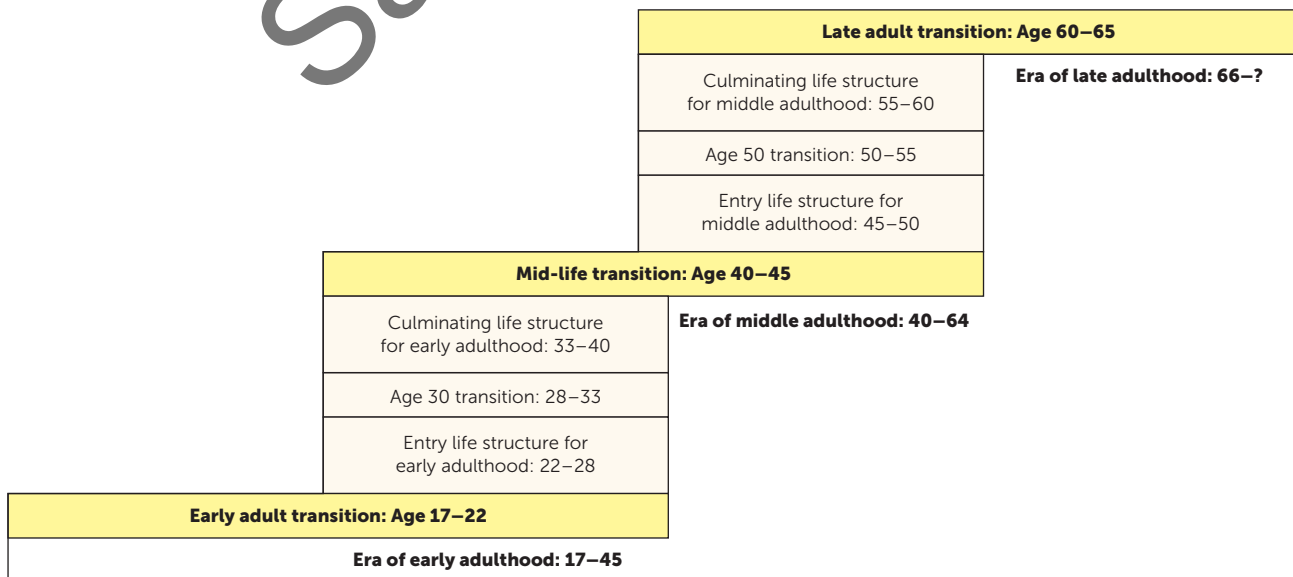
Thus, for Buhler, lifespan psychological growth depends on (1) a realistic initial set of goals, (2) hard work through life to achieve these goals and (3) skilled self-monitoring, assessment and redirection.

Levinson's theory

Daniel Levinson (1920–94) was inspired by Charlotte Buhler's organic view of development as being similar to the seasons of the year. He described development as the 'seasons' of a person's life from spring through to summer, autumn and then winter. This view was based on longitudinal data that he first collected on the overall patterns of the lives of a group of adult men (Levinson, 1978), and then through a similar study of adult women (Levinson, 1986). From his in-depth interviews, Levinson built his theory around a concept of adult development as 'the evolution of the life structure' (1986, p. 3). His model of adult development from age 17 to age 65 has proved highly influential in career-development psychology and is consequently described in detail in Chapter 14.

Levinson's (1986) longitudinal data revealed an orderly pattern of qualitative (stage-wise) changes in all the adult lives he analysed. Furthermore, the stages themselves were very similar for everyone. Levinson's model of the lifespan consists of a regular alternation between stable periods of life functioning (the 'life structures') and periods of developmental upheaval (the 'transitions') during which life goals and life activities are evaluated intensively and new goal directions are apt to emerge.

Levinson's theory has influenced organisational psychology and human resource management as well as

FIGURE 2.10**Levinson's theory of the adult lifespan**

Source: © 1996 by the American Psychological Association. Adapted with permission. A conception of adult development, Levinson, Daniel. J., *American Psychologist*, Vol 41 (1), Jan 1986, 3–13.

developmental psychology. The career stages he devised explain workers' motivations at different stages in their careers (see Chapter 14).

For Levinson (1986) himself, the most striking thing about adult psychological growth was its orderly, stage-like progression. Figure 12.10 shows his stages in their development sequence from youth into late adulthood. According to Levinson:

The life structure develops through a relatively orderly sequence of age-linked periods during the adult years. I want to emphasize that this is an empirical finding, not an a priori hypothesis (p. 5) ... Biologically the forces of senescence come to equal and then gradually to exceed those of adolescence. Psychosocially there are possibilities for further growth, but they are by no means assured of realization. (p. 10)

Vaillant's theory

Another organic-maturational model was developed by the contemporary theorist George E. Vaillant (Mariano & Vaillant, 2012; Vaillant & Vaillant, 1990). Vaillant has continued to extend and further define Buhler's self-determination theory, using data from a longitudinal study that is 'arguably, the longest study of male adult development in the world' (Mariano & Vaillant, 2012, p. 281). Inspired by Buhler's ideas that goal direction and purpose in life are the key determiners of healthy personality throughout the lifespan, he is currently exploring links between these men's early childhood, adolescent and youthful experiences and their uptake of opportunities for psychological growth throughout the later phases of adult life. Vaillant himself first assessed a group of 20-year-old university students (mean age = 20; range = 18 to 25) between 1938 and 1942 just before they completed their studies and embarked on their careers. Seventy years later the men were in their 90s. Those who remained alive were assessed for a final time at this point. Data were likewise collected from the volunteers at decade intervals between age 30 and age 80. The assessments were all-encompassing. They included interviews both with the men themselves and with their family members, together with psychological tests (e.g. the IQ tests we considered earlier in this chapter) and in-depth profiling by clinical psychologists.

One key variable emerged as crucial in these adults' lifespan developmental outcomes. This, for Vaillant, was their goal-directedness. Reminiscent of Buhler, he ranked life goals in terms of their potential to stimulate positive psychological growth. His data from the longitudinal study were illuminating. In particular, Vaillant found that men who, as young and middle-aged adults, had been driven by a purpose larger than themselves and had aimed to achieve goals that had a 'beyond-the-self' focus were developing optimally. Furthermore, although the men had refined and expressed this purpose mostly after graduation through their work, leisure and adult relationships, it had already been evident even when they were youthful students. In

college, the studies that these men had pursued and the plans they were making for their lives were centred on other people, the world and, especially, future generations. Somewhat reminiscent of Erik Erikson's 'generativity' concept (see page 52), college men in the sample who stood out for their high sense of purpose-beyond-self were aiming for 'generosity, kindness, compassion and citizenship ... commitment to pro-social issues ... [and] desire to be of service to other people' (Mariano & Vaillant, 2012, p. 285). Philosophical and spiritual values interacted with these goals to a certain extent, but the degree of adherence to conventional religion was largely unrelated. Vaillant (2008) measured religious involvement comprehensively on a range of variables from church attendances to prayer to personal feelings of religiosity and found that, from age 47 to age 85, 'religious involvement, no matter how measured, was uncorrelated with ... late life physical, mental and social wellbeing' (p. 221).

However, the fact of having sustained a strong life purpose beyond the self was a major predictor of men's wellbeing in old age. The elderly men who had been driven by goals to 'make a difference' and serve culture, civilisation or their own local communities in some way were more satisfied with their lives, and psychologically more fully developed and effective, than other men from the same advantaged university background whose life focus had been narrower and more self-preoccupied. Vaillant also found (Isaacowitz, Vaillant & Seligman, 2003) that older men and women in general, together with the Harvard graduates in his longitudinal sample in particular, were higher in life satisfaction and happiness in old age if they had (1) hope for the future, (2) the capacity for a loving relationship with someone else, (3) citizenship values and goals (to help others) and (4) an appreciation of beauty (whether in nature, culture, art, music or literature).

All these qualities are aptly illustrated in the lifespan of the composer Ludwig von Beethoven (Seligman & Csikszentmihalyi, 2000). At age 31 he was suicidal and in deep despair. Yet, his devotion to music gave him a purpose in life that took him beyond himself and, in his mid-50s, he composed 'Ode to Joy'. Despite deafness, ageing and poverty he was able to capture, appreciate and convey the beauty in life to countless future generations. Based on cases like this, Vaillant concluded that true happiness cannot be measured without taking account of a person's full adult lifespan, up to and including death (see Chapter 18) and his theory models how adults develop throughout old age to achieve 'integrity' (Erikson: see page 51) and full expression of their life's potential.

Paul Baltes' cognitive lifespan theory

Paul Baltes viewed development throughout life as a dialectical process of balancing gain against loss. As development proceeds from conception through to old age, some psychological capacities grow and develop, according

to Baltes (1997; 2001), while others wane and decline. This is true even from the earliest stages of development, as we will see when we examine prenatal development in Chapter 3. But over the course of the lifespan, the balance changes. While growth predominates over loss in the first half of the lifespan, losses (at least of a biological kind) gradually come to predominate over gains during late adulthood and old age.

Consequently, according to Baltes (1997), ‘for growth aspects of human development to extend further into the lifespan, culture-based resources are required at ever-increasing levels’ (p. 388). Adults learn to rely on other people as resources to compensate for deficiencies in their own individual performance that may come about for any of a variety of reasons, including immaturity (a young child needs her parents’ help to learn new skills and perform many tasks) and ageing (owing to biological declines, an elderly man or woman may need a younger adult’s help with household jobs requiring strength (e.g. moving furniture), keen eyesight (e.g. threading a sewing machine) and so on). Therefore, in Baltes’ theory, development at all stages of life is ‘essentially social in nature’ (Baltes & Staudinger, 1996, p. 2) so that:

If progress is to occur during the last part of life, this progress has to be anchored essentially in culture, including the social-interactive components and socially mediated artefacts of culture (p. 15).

Selective optimisation with compensation

A key principle in Baltes’ theory is that of development via selection, optimisation and compensation. According to Baltes, developmental progress via judicious use of cultural and other resources to build upon the lifelong human potential for psychological plasticity often takes the form, in Baltes’ theory, of a drawing together of mechanisms of selection (S) and compensation (C) in the service of the optimisation (O) of psychological potential. Denoted S-O-C for short, this overarching theoretical construct serves as the cornerstone of Baltes’ (1997) lifespan approach. He argues that, at all stages in life, ‘the orchestration of selection, optimisation is ... inherent in any developmental process’ (p. 371):

- Selection entails choosing or developing a psychological attribute, element or strategy to perform a particular psychological function (e.g. choosing a rehearsal strategy to remember a shopping list).
- Compensation involves finding an alternative means to the same end when a selected strategy fails or a goal is blocked for some reason (e.g. writing the shopping list on paper if rehearsal fails).
- Optimisation is ‘the hallmark of any traditional conception of development ... a movement towards increased efficiency and higher levels of functioning’ (p. 371). For example, an older adult might compensate for memory declines and optimise the efficiency of

Baltes’ life

BOX 2.15

Paul Baltes (1939–2006) was born in Saarluis, Germany, on the Alsace-Lorraine–Luxembourg border and died in Berlin, the centre of his major empirical study of ageing in community-resident adults, the Berlin Aging Study (BASE). As John Nesselroade (2007) noted:

He was probably the most influential developmental psychologist on the international scene at the time of his death. His broad scientific agenda was devoted to establishing and promoting the lifespan orientation to human development—an area that he more than any other scholar of modern times, shaped into its current form. (p. 696)

Baltes’ early life was characterised by resilience in the face of the hardship of growing up in wartime in the Nazi era followed by post-war deprivation and struggle. Baltes (2000) recalled his own developmental struggles to develop psychological coping strategies for overcoming these difficulties, as well as his mother’s warm social support. An anecdote from his early life epitomises two processes he later built into his developmental theory. In 1946, when he was seven, an officer of the French occupying army gave him a toy tank. He was thrilled at first (children in his environment had very few toys) but then could not help noticing his mother’s disappointment as she struggled with rationing and the problem of how to provide healthy food for four growing children. After playing with the toy for a day or two he came up with a solution. He offered to a neighbouring child (whose father was a butcher and owned a meat factory) to swap the tank in exchange for a large string of sausages. The child agreed and Baltes took the sausages home for the family, enjoying the dual pleasures of a delicious family meal and his mother’s tears of pride for her son.

As noted in the main text, Baltes’ theory incorporates concepts of balancing developmental gains against losses and using ‘psychology’ to overcome problems. Links of childhood to advanced old age can be extrapolated from this anecdote. (Loss of a toy meant gains in social recognition, friendship and family wellbeing. By thinking through his discomfort over the initial gift of the toy he was able to use cognition to everyone’s advantage.)

Throughout his distinguished and productive career, Baltes was notable not only for the magnitude and significance of his intellectual contributions but also for his warm and generous concern for others and their intellectual growth. As John Nesselroade (2007) noted:

Paul cared deeply about the next generation of behavioural scientists ... At each opportunity, he gave generously of his time and energy to promote younger scientists ... he leaves behind a legion of well-trained, ambitious intellectual descendants. (p. 696)

a memory strategy such as rehearsal by repeating the list a number of extra times or by combining repetition with a visual imagery strategy.

Baltes cited the piano playing of the noted concert pianist Arthur Rubinstein at age 80 as an illustration of judicious use of S-O-C. Despite the biological ageing changes that had slowed his finger movement speed, Rubinstein, who was still performing at a peak level to audiences around the world, explained in a television interview that he had come up with some new techniques to assist his stage performance. Baltes could readily translate each of these into his theory. Rubinstein said he now had a smaller range of pieces that he performed at concerts. For Baltes, this was an instance of being selective (S). Rubinstein commented that he now spent more time planning ahead for a concert and longer hours practising the piano than he had when he was younger. For Baltes, this was the optimisation (O) of performance by compensation (C) through practice and thinking ahead. Rubinstein also used another compensation (C) strategy. To make up for his age-related loss of mechanical speed, he had a few

stage tricks up his sleeve. Like a stage magician, he had learned to create the illusion of faster playing with drama and contrast. Thus he might deliberately introduce a slow rhythm with dramatic change in volume just before a very fast segment in the music so that his playing would seem faster than it really was.

According to Baltes, the S-O-C process pervades all of human psychological functioning at all ages. The shifting gain–loss balance amplifies its relevance in old age. Yet, later in life adults can look forward to cultural compensations for biological ageing. The theory highlights the utility of cultural resources such as books, language and interaction with friends. The giving and seeking of wise advice from experienced friends, colleagues and mentors can also be understood in terms of the S-O-C model, as we will see in Chapters 15 and 16 when we examine Baltes' theory of the development of wisdom in more detail. In Chapter 17 we will likewise explore Laura Carstensen's extensions of Baltes' theories into the domain of adult friendship and the social compensation strategies that mature adults can draw upon in order to enjoy successfully and satisfying social interaction well into old age.

CHAPTER SUMMARY

This chapter sets the stage for the study of human development through the rest of this book by examining the guiding assumptions, interdisciplinary perspectives, research methods and theoretical insights of a lifespan approach to developmental psychology. In studying changes in human psychological functioning through the whole of life, researchers seek to understand the individual, cultural and historical diversity that makes each human life story unique. At the same time they seek general patterns across all human lives in their pursuit of goals to describe, explain and optimise lifelong psychological growth.

The study of human development over the lifespan is integrated by a set of premises and tools of practice, including (1) three key goals for the scientific study of development, (2) a range of techniques for gathering of objective data to test ideas about development, (3) the view that patterns of growth in physical, cognitive, personality, emotional and social domains unfold coherently and predictably with increasing age and (4) the notion that all human beings have the potential to grow psychologically from conception through to extreme old age in positive new directions.

Methods for gathering developmental data are richly diverse. They include case histories, naturalistic observations of people's spontaneous ongoing behaviour, self-report interviews and questionnaires, standardised psychometric tests and tightly controlled experiments conducted in laboratory or field settings. The developmental researcher must also decide whether to use a cross-sectional, longitudinal, time-lag or sequential design to carve out a portion of the lifespan and infer how psychological functioning changes over time. Longitudinal studies of unique populations, such as Aboriginal children in the remote Australian outback and Maori New Zealand families, provide exceptionally rich insights into lifespan development.

The theoretical approaches that have guided the field of lifespan developmental psychology are also very diverse. Because of their overarching importance for understanding behaviour and change throughout life, we examined four major theoretical approaches in this chapter: (a) the psychoanalytic theories of Freud and Erikson, (b) the cognitive-developmental approaches of Piaget and Vygotsky, (c) learning theories, both classical and social-cognitive and (d) adult stage theories, including organic self-determination theories (Buhler, Levinson, Vaillant) and Baltes' selective optimisation and compensation theory. As well as offering plausible accounts for a variety of developmental findings, each of these broad theoretical approaches has implications for the optimisation of human development by assisting people of all ages to grow to their full potential.

For further interest

Multimedia

For a vivid account of the theories of Bandura, Erikson and Piaget, schedule viewings of the following films (or borrow them on video via www.davidsonfilms.com):

- *Bandura's Social Cognitive Theory: An Introduction* (Davidson Films, San Luis Obispo, CA, 2001: 30 minutes)
- *Erik H. Erikson: A Life's Work* (Davidson Films, San Luis Obispo, CA, 1989: 38 minutes)
- *Piaget's Developmental Theory: An Overview* (Davidson Films, San Luis Obispo, CA, 1989: DVD, 25 minutes)
- *Habituation* (MyVirtualChild, Pearson, Upper Saddle River, NJ: a short video clip of a key methodology for testing infants' cognition and learning).

Answer to Box 2.8 on page 45

Only the dimension of irritability showed a difference;

My Virtual Child

You may wish to use the MyVirtualChild or MyVirtualLife simulation (www.myvirtualchild.com or www.myvirtuallife.com) to explore examples of the ideas related to lifespan development and parents' role in optimising their children's psychological growth described in this chapter.

1983 babies were more irritable; possibly better education, advice and services for Australian parents in recent years may help explain the difference.

Sample pages