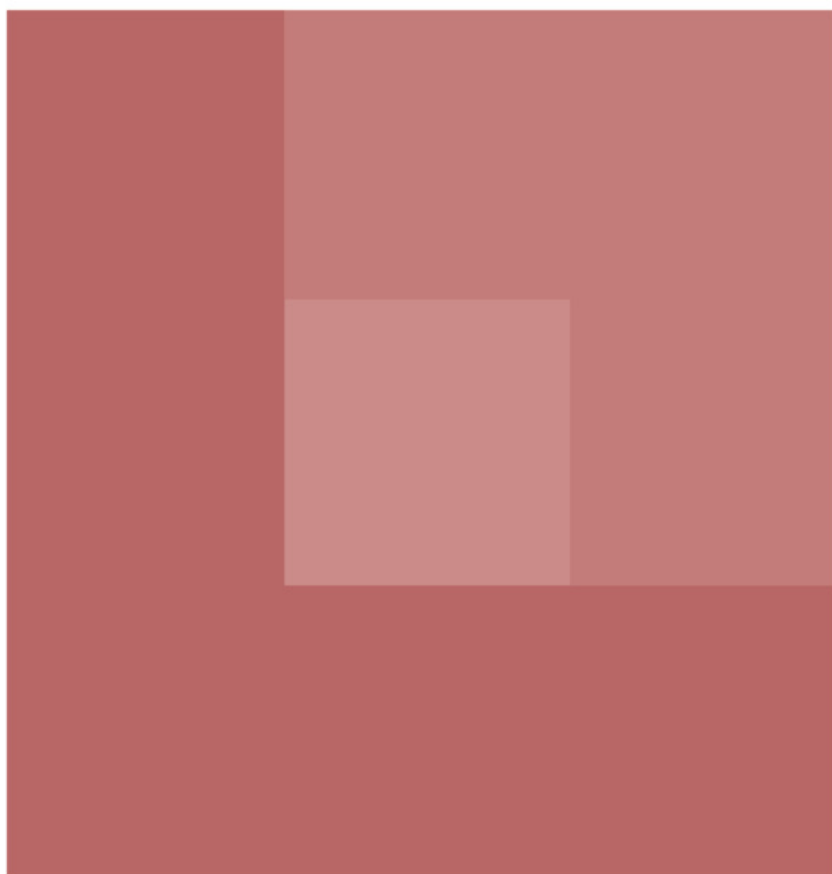


**Introduction to
Research Methods**

LIFE-SPAN DEVELOPMENTAL PSYCHOLOGY



**Paul B. Baltes
Hayne W. Reese
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Life-Span Developmental Psychology: Introduction to Research Methods

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Publisher's Note

The publisher has gone to great lengths to ensure the quality of this reprint
but points out that some imperfections in the original may be apparent.

Preface

This book is both more and less than a source of facts and information—a cookbook—about research design in developmental psychology and human development. More, because we go beyond a presentation of simple design methodology; we offer our version of what it means to do research with a developmental orientation, and we illustrate the need for a strong convergence between theory and methodology. Less, in part because the state of knowledge in developmental research design is incomplete. The eye and mind of a critical and creative reader will make this book work, though, since we believe we've identified the key questions and strategies of developmental researchers.

This text is introductory, although its content is usually not presented to lower-division students. At most institutions, the student audience for this book will comprise juniors, seniors, and beginning graduate students in the behavioral and social sciences (psychology, sociology, child development, human development, family studies, and so on). Occasionally, with appropriately selected audiences, the text may be used at the sophomore level. This is particularly true if the text is supplemented with other introductory materials.

The book is organized into five parts, each beginning with an overview of its contents. The initial two parts provide a general introduction, first of the developmental orientation in psychology (Part One), then of general issues in theory construction and research design (Part Two). Parts Three through Five reach the heart of the matter by presenting key methodological issues in developmental psychology. Part Three delineates the scope of developmental psychology in terms of research questions and research paradigms. Part Four deals with descriptive research strategies aimed at the identification of developmental change. Finally, Part Five presents methodol-

Preface

ogy aimed at explaining developmental change; that is, it deals with the search for the origins and processes of change.

In this book, we focus on life-span developmental psychology, for we are committed to advancing that particular emphasis and therefore prefer to think and write in life-span terms. In fact, once in a while we allow ourselves to believe that the life-span developmental view can be considered at least the umbrella for any other more specialized developmental approach and perhaps even the only appropriate developmental orientation.

In our judgment, the focus on life-span developmental psychology has both costs and benefits. The theoretical and methodological benefits derive from the fact that a life-span approach is apt to dramatize key methodological issues of developmental research in an extreme and exemplary fashion—an effective feature from a didactic point of view. The major theoretical cost of a life-span orientation is its current strong focus on age development. We are, of course, aware that many developmentalists argue that the goal of developmental research should be the identification of key behavior-change processes rather than age changes and that they see the age variable as transient and therefore unproductive for theory construction. We will understand, therefore, if some readers wonder why much of our discussion centers around age development rather than behavior-change processes. We hope that such readers will be flexible enough to transfer our methodological perspectives to their own research questions.

This book—we still don't really know why—was a very difficult one for us to produce. If it were not for our sympathetic and supportive spouses (Margret Baltes, Nancy Reese, and Carolyn Nesselroade), cooperative and able editorial and secretarial helpers (Sally Barber, Diane Bernd, Kathie F. Droskinis, Barbara Gary, Margaret Swanson, and Ingrid Tarantelli), and competent editorial assistants (Steven Cornelius, Kathie F. Droskinis, Carol Ryff, and Alison Okada Wollitzer), the book would probably still be in its conception. We would also like to express our thanks to Nancy W. Denney, of the University of Kansas, and K. Warner Schaie, of the Pennsylvania State University, who provided many helpful comments and criticisms as editorial consultants for the original publisher, to Freda Reblsky and Lynn Dorman, editors of the series in which this book originally appeared, and to the most able editorial staff of Brooks/Cole, the publisher of the original volume. At the same time, we are the ones responsible for any shortcomings that the full-term book may have. You, the reader, will determine whether or not the book will age gracefully.

*Paul B. Baltes
Hayne W. Reese
John R. Nesselroade
November, 1987*

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Part One

The Field of Developmental Psychology

Developmental psychology deals with behavioral changes within persons across the life span, and with differences between and similarities among persons in the nature of these changes. Its aim, however, is not only to *describe* these intraindividual changes and interindividual differences but also to *explain* how they come about and to find ways to *modify* them in an optimum way. In addition, developmental psychology recognizes that the individual is changing in a changing world, and that this changing context of development can affect the nature of individual change. Consequently, developmental psychology also deals with changes within and among biocultural ecologies and with the relationships of these changes to changes within and among individuals.

Chapter One

Why Developmental Psychology?

A Rationale for Developmental Sciences

What are the advantages to organizing and building knowledge about behavior around the concept of developmental psychology? The case for a developmental approach to the study of behavior is similar to the arguments developed in other sciences for using:

- knowledge about sociocultural history to better understand present political events;
- knowledge about paleontology to understand the nature of current world geography;
- knowledge about the length and frequency (life history) of cigarette smoking to predict the probability of adult lung cancer;
- knowledge about past stock market trends to predict next year's stock market situation and the value of a given portfolio;
- knowledge from archaeology to develop a fuller understanding of modern civilization; and
- knowledge about the summer climate in California to predict the quality and taste of California's fall wines.

The developmental psychologist, in a parallel fashion, is interested in questions centering around the description, explanation, and modification of processes that lead to a given outcome or sequence of outcomes. Examples of questions about the description, explanation, and modification of processes and outcomes are:

- Is cognitive behavior the same in various age groups, or does it change from infancy through childhood, adolescence, and adulthood?
- If there are stages of cognitive functioning, why do they follow one

another, and what mechanism explains the transition from one stage to another?

Are there sex differences in adult personality traits, and, if so, how do they come about?

Is schizophrenia in adulthood related to early life experiences, or does it develop instantaneously due to stress in adulthood?

What are the tasks that characterize adult development (for example, marriage, parenthood)? Is successful mastery of these tasks related to early life experiences, and how can a given life history be designed to maximize adult functioning?

How and when is achievement motivation formed? To what aspects of parenting behavior does it relate, and what do parents have to do in order to increase achievement motivation in their children?

In all of these examples, both from other developmental sciences and from developmental psychology, there are two primary characteristics: a focus on *change* and the study of *processes* leading to a specific outcome. Specifically, the sample questions presented suggest:

1. The phenomenon under study by a developmental scientist is not fixed and stable but subject to continuous and systematic change that needs description.
2. Because phenomena come about not instantaneously but as a result of processes, it is useful to know something about the present and the past when explaining the nature of a phenomenon, predicting its future status, and designing a context for optimization or modification.

Phenomena, then, are not fixed; they are changing. Furthermore, both the past and the present are a prologue to the future. Most scientists have acknowledged the usefulness of such a “historical,” process-oriented developmental approach to the study of their subject matter. It is worthwhile to think a bit about other sciences that focus on change and time-related phenomena (history, archaeology, astronomy, and others).

All time- and history-oriented sciences share with developmental psychology a number of rationales and complexities of methodology. For example, when attempting to understand why some adult persons are extroverts and others introverts, a developmental psychologist may design a methodology to “retrospect” into the past in order to find key antecedents to the emergence of extroversion/introversion behavior. Such retrospective methodologies are not easily developed and validated. In our rapidly changing world, it is often possible only to approximate ideal methods, using so-called quasi-experimental (Campbell & Stanley, 1963, 1966) methodology. The same methodological complexity is confronted by the astronomer, the archaeologist, or the political historian, in at least equally dramatic fashion.

As will be seen later, it is occasionally desirable for the developmental psychologist to look to other “historical” disciplines for ideas about adequate research methodologies, since these disciplines are often more ad-

vanced. The development of sequential cross-sectional or longitudinal strategies, for example (see Chapter Fourteen), has a precursor in demography that goes back to the 18th century. Similarly, the term *development* has been widely discussed in the biological sciences, and the biologist's view of development has strongly influenced the meaning of this term in the behavioral sciences. As another example, the recently suggested use of path-analysis techniques (see Chapter Twenty-Four) as a way of testing hypotheses about long-term developmental chains has its roots in other "historical" disciplines such as epidemiology and sociology.

Describing, Explaining, and Optimizing Development

Before the methods of developmental psychology are described, the task of developmental research will be outlined. This exercise is aimed at helping the reader to focus on the questions developmental psychologists typically ask (Baltes, 1973).

Definitions of a concept or a discipline always reflect personal biases, and most researchers are somewhat reluctant to freeze a theoretical idea or orientation by specifically defining it. For the present purpose, a definition of developmental psychology is proposed that is methodology-oriented and that views developmental psychology less as an independent body of knowledge than as an orientation toward the way behavior is studied:

Developmental psychology deals with the description, explanation, and modification (optimization) of intraindividual change in behavior across the life span, and with interindividual differences (and similarities) in intraindividual change.

Intraindividual change is *within*-individual change; *interindividual* differences are *between*-individual differences. The focus of a developmental approach, then, is on examining within-person (intraindividual) variability or change and the extent to which such variability is not identical for all individuals. If intraindividual change is not identical for all individuals, it shows between-person (interindividual) differences. Although these terms may appear clumsy and confusing, their widespread use by behavioral scientists interested in methodology makes it desirable to include them here as key concepts.

The task of a developmental approach, however, does not stop with naturalistic description of the course of change. The aims of developmental psychology include the pursuit of knowledge about the determinants and mechanisms that help us understand the how and why of development: what causes the change? This aspect of knowledge-building is often called explicative, explanatory, or analytic, because its goal is to find causal-type relationships and thus to go beyond descriptive predictions of the nature of

behavioral development. The decision as to where description ends, when explanation starts, and which form of explanation is acceptable to a given scientist will always be an arbitrary one. As a matter of fact, philosophers of science question the logical merit of such a distinction on the grounds that description and explanation go hand in hand and are intrinsically confounded. For didactic purposes, however, the distinction is useful because it helps us present a perspective on research strategies and particular emphases in theory-building.

The proposed definition of developmental psychology further states that developmental psychologists are interested not only in description and explication but also in modification and optimization of the course of development. This task requires that we discover which interventions or treatments are powerful change agents. A useful benefit of this aim is that knowledge that may be generated for its own sake may, by its application, serve society in its attempts to design an optimal context for living.

The simultaneous knowledge of what behavioral development looks like (description), where it comes from and why it comes about (explanation), and how it can be altered (modification) makes for a full-fledged body of knowledge. Accordingly, useful developmental methodology consists of methods that permit us to describe intraindividual (within-person) change sequences and interindividual (between-person) differences in these patterns of change, as well as assist us in our search for explanatory and modification principles.

Developmental psychology is a fairly recent scientific field. Therefore it is understandable that its methodology is often insufficiently formulated or inadequately adapted to the unique features of its basic approach. In fact, to give one example, many of the classic experimental designs (such as analysis of variance) have been developed within the framework of interindividual differences and not intraindividual variability. The best developmental designs, however, are the ones that yield descriptive and explanatory information about intraindividual change patterns.

Summary

A developmental approach, in any science, is based on the belief that knowing the past allows us to understand the present and to predict the future. In psychology, this belief leads to a developmental psychology that deals with the description, explanation, and modification (including optimization) of intraindividual change in behavior across the life span, and with interindividual differences in intraindividual change. For these purposes, methods are needed that permit description of intraindividual change and interindividual differences in the nature of intraindividual change, and that assist in the identification of causal mechanisms (explanation) and modification principles (optimization).

Chapter Two

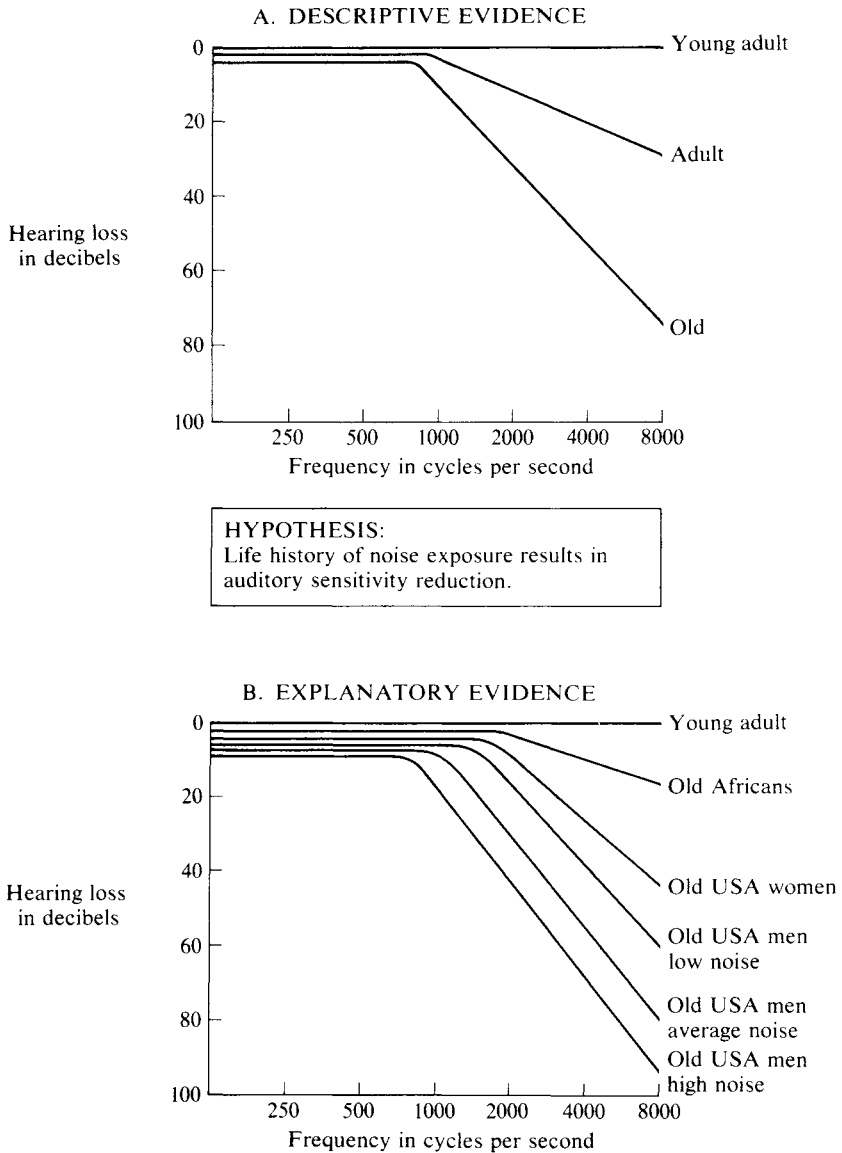
An Illustration of the Developmental Approach: The Case of Auditory Sensitivity

The area of auditory sensitivity provides a good example to illustrate the goals of describing, explaining, and modifying a developmental phenomenon. This area of research has been well summarized by McFarland (1968), using data from a number of studies, including those by Glorig and Rosen and their colleagues. Figure 2-1 illustrates the key arguments.

Description

Auditory sensitivity, or acuity, has been measured in large samples covering a wide age range. When auditory acuity is plotted against pitch of tones, a fairly robust age-difference pattern can be seen. Specifically, Part A of Figure 2-1 shows the loudness (in decibels) required for a particular tone to be detected. In general, it takes more loudness for an older person to hear a particular tone than for a young adult to hear it. The louder a tone has to be in order to be heard, the less is the person's auditory sensitivity.

There is a definite age-related decrease in sensitivity, especially for the higher pitches (frequencies of 2000 cycles per second and higher); that is, as shown in Part A of the figure, auditory sensitivity seems to exhibit a definite developmental trend in that the loss is neatly correlated with tone pitch or frequency. (For a summary of design questions involving the distinction between age changes and age differences, see Chapters Thirteen and Fourteen.) Thus, auditory sensitivity is not fixed for a given person but changes with time. Moreover, as shown in Part B of the figure, there are interindividual differences in the developmental trends obtained. For example, women tend to show less of a decrement than men.



C. MODIFICATION/OPTIMIZATION OF SENSITIVITY LOSS

1. Alleviation: hearing aids
2. Prevention: control of noise history

Figure 2-1. Descriptive and explanatory research on auditory sensitivity in adulthood. Based on data from McFarland (1968).

Explanation

Part A of Figure 2-1 describes average change in hearing acuity in adulthood. A series of studies has been conducted to shed light on the causes of this robust age-related change pattern in auditory sensitivity. Most of the studies were based on some kind of hypothesis about neurophysiological and/or environmental effects that accumulated over the life history of individuals. In this sense, most of the explanatory research was process oriented and focused on historical methods, looking into past organism-environment interactions in order to understand the decrement phenomenon in the elderly.

One class of hypotheses dealt with the relationship between the *life history of noise exposure* and the nature of auditory development. Part B of Figure 2-1 summarizes some of the explanatory evidence. The studies were designed around the hypothesis that loss in auditory sensitivity is largely controlled by the overall magnitude of noise exposure that a person experiences over his or her life history. This hypothesis was supported by three independent research programs, each with a different criterion sample that presumably varied along a continuum in magnitude of noise exposure. On one end of the continuum were members of an African tribe (low noise history), on the other American men living for most of their lives in a highly industrialized area (high noise history). American women (medium noise history) were somewhere in between.

The outcome of these research programs aimed at explanation of hearing loss are presented in Part B of Figure 2-1. First, women in the United States showed less of a decrement than men. Second, in the United States, persons with a life history of minimum exposure to noise exhibited less decrement than persons from urban and industrialized areas. Third, natives of an isolated tribe in Sudan (the Mabaans), whose environment was exceptionally free of noise, were found to retain auditory acuity throughout their life span into the 80s. (Incidentally, there were also no sex differences among the Mabaans.)

The critical reader may object that the three studies reported did not produce undebatable results, since they were based on nonexperimental and cross-sectional methodology (see Chapters Thirteen and Fourteen). However, it is generally held that the pattern of the results argues rather persuasively for the strong impact of noise exposure on the rate and perhaps on the form of auditory development through adulthood. In fact, it seems that no other explanatory research on this topic has provided us with an equally consistent outcome and equally strong relationships. Nevertheless, in principle the pursuit of explanations for developmental patterns never stops: researchers are currently seeking further explanations of the developmental relationship between noise and hearing sensitivity by searching for relationships of hearing sensitivity and noise to physiological mechanisms. They are also looking

for additional developmental components that will more fully explain the phenomenon of auditory development.

In any case, the explanatory evidence available led McFarland (1968, p. 34) to formulate a developmental model of auditory sensitivity in adulthood. The model assigns fairly low importance to intrinsic physiological aging *per se*, and moderate importance to general life-history events associated with connective-tissue changes, vascular reactions, metabolism, nutrition, and stress. However, in line with the data summarized in Figure 2-1, the model assigns the major controlling power to the life history of exposure to noise. In this sense, then, the area of auditory sensitivity provides a good example of how descriptive developmental changes come to be explained in terms of age-correlated mechanisms without using age (or chronological time) *per se* as the final explanatory principle.

The explanatory analysis of observed age changes in terms of age-correlated mechanisms is a long and tedious task. The nature of the explanatory process differs along many dimensions of methods (such as experimental versus correlational, and laboratory versus naturalistic) and theoretical orientations (experiential versus genetic, learning versus maturational, behavioristic versus cognitive, organismic versus mechanistic). In fact, since strong disagreement about methods and theoretical emphasis is characteristic of developmental researchers, the presentation of developmental methodology is a complex project. Theory and method are closely related, and each is difficult to describe without the other; often what is sufficient explanation from one theoretical viewpoint is at best tentative description from another.

In this book, we emphasize the notion that a developmental approach to the study of behavior focuses on explanations or paradigms of research that are historical, not merely concurrent, in nature (Baltes, 1973)—on paradigms or theories that concentrate primarily on chains of events (antecedent-consequent relationships) as they lead to a given developmental product. The cumulative effect of noise input on auditory sensitivity is an example of such a historical paradigm. Explaining the cumulative linkage of causative chains making for developmental change is at the heart of developmental theory-building.

Modification-Optimization

Our illustration of the usefulness of a developmental approach can now be taken one step further to the task of modification and optimization. In many cases, the available explanatory evidence may not, for ethical or pragmatic reasons, permit the researcher to intervene effectively. Nevertheless, it seems fair to conclude that one of the strongest arguments for knowledge generation is that knowledge can be applied. Obviously, in some cases a

developmentalist may judge the observed outcome to be acceptable or irreversible and thus decide not to interfere with the natural course of development.

When designing modification programs, one can distinguish between two classes of strategies. One is the *a posteriori* type, usually labeled *alleviative*. The second is aimed at altering the course of development in an *a priori* fashion and is labeled *preventive*.

In Part C of Figure 2-1, these two strategies of modification are summarized. In the case of auditory acuity, the classic technique of alleviation is to provide a hearing aid designed to amplify frequencies according to the specific losses in auditory sensitivity of the person involved. Alleviation is important because untreated loss in auditory sensitivity leads to other problems in interpersonal and cognitive functioning.

The remarkable strength of a developmental approach, however, lies in its potential for preventive action and optimization. Knowledge about the history of the dysfunctional behavior or problem permits interventions that direct development into more appropriate channels. For example, if loss in auditory sensitivity is seen as undesirable, noise reduction and the use of protective devices will be very effective and desirable interventions. Additional explanatory evidence on critical periods may help us further in designing optimal environments. For example, there is evidence that high noise levels damage the hearing of young adults more than that of older adults. The popularity of rock music among young adults may therefore be creating a serious problem.

Individual Development in a Changing World

Our illustration points to another core issue in developmental research—that of the relationship between individual and biocultural development (Baltes, Cornelius, & Nesselroade, in press; Riegel, 1976). This relationship is partially a reflection of the notion that developmental psychology deals not only with intraindividual change but also with interindividual differences, which can result from a host of factors, including biocultural, historical change. The relationship between individual and biocultural development becomes most apparent in the context of life-span developmental research, since the time period necessary for life-span development is obviously large compared with, for example, development in a restricted age range such as infancy or childhood.

Whereas it is a key assumption of developmental psychology that individuals are not fixed in their behavior, it is also necessary to realize that individuals do not develop in a fixed physical and social ecology; the world is also changing. The world changes both within a given cultural unit (intraculturally) and in distinct cultural settings (interculturally). It is reasonable to

assume that any course of individual development varies over historical time periods, distinct cultural milieus, and biological generations.

Although there are no convincing data available to us, the area of auditory sensitivity can be used to illustrate the relationship between individual and historical development within a culture. In most Western societies, the average intensity of auditory stimulations has probably increased significantly over the last several decades. In addition, fads such as those for rock music, stock-car racing, or aviation have probably led to novel forms of auditory experiences. Consequently, the developmental pattern presented in Figure 2-1 for auditory sensitivity may very well be quite different (in level or shape) for generations to come, as it may be for members of different cultures. The differential age-related patterns for Americans and Africans shown in Figure 2-1 constitute one such case.

Historical time—consisting of myriad ecological conditions—thus defines the context for individual development. For the period 1970–1972, for example, Nesselroade and Baltes (1974) have shown that American adolescents (regardless of their specific chronological age) “develop” in the direction of less achievement orientation, less superego strength, and more independence. This pattern of adolescent development, however, may be typical only for the 1970–1972 period. Historical, time-related trends in childhood-socialization goals and styles are equally well documented in the literature and should be mirrored in the types of individual development exhibited by persons who are reared during distinct historical epochs. Furthermore, sociologists such as Keniston (1971) have argued that adolescence as a distinctive period of the human life span appeared only in the 20th century and that, especially in the past decades—with the ever-increasing speed of social change—a life stage called “youth” has emerged. As Neugarten and Datan (1973) noted, similar arguments can be made for novel forms of middle age, due to increases in life expectancy and changing rhythms of the work and family cycle.

Viewing a changing individual in a changing world has numerous implications for developmental psychology. For example, there is a need for methods that clearly identify within-individual (intraindividual) change as opposed to between-individual (interindividual) differences. Also, methods are needed to relate such within-individual trends to sociobiological, ecological change.

Max Weber, a noted German sociologist-philosopher-historian, reflected in the following manner on the essence of developmental sciences in general and their continuous need to adapt to a changing world:

There are sciences which possess everlasting youth, and these are all historical developmental disciplines; all those disciplines which are faced with a continuous stream of new issues associated with eternal cultural change. Developmental sciences, therefore, have not only a built-in perva-

sive transitoriness of constructs but also the inevitable task of developing perpetually novel systems and models [1968, p. 57; translation by the authors].

Indeed, a developmentalist must be aware not only of the changing nature of his developing individuals but also of the changing ecological conditions that link his search for knowledge intrinsically to patterns of historical and evolutionary change.

Core Requirements for Developmental Methodology

The preceding section, along with Chapter One, highlighted the basic rationale of a developmental approach to the study of behavior. This exercise allows us to compile a set of basic research questions with which a developmental methodology should be able to deal. These questions go beyond those that characterize the scientific method in general.

The following core requirements are derived from our proposed working definition of developmental psychology: developmental psychology deals with the description, explanation, and modification of intraindividual change and interindividual differences (and similarities) in intraindividual change across the life span.

1. As to the task of *description*, developmental-research methodology needs to focus on intraindividual change and interindividual differences therein. Such behavior change is not to be confused with time-specific interindividual differences and momentary behavior fluctuations.
2. As to the task of *explanation*, developmental-research methodology must be appropriate for historical analyses that will successively explain time or chronological age in terms of specific developmental antecedents and processes.
3. As to the task of *modification*, developmental-research methodology must be capable of examining the range of intraindividual variability both within and between individuals. The knowledge gained should help us better understand behavior and facilitate the planning of alleviation and optimization programs.
4. As to the *ecological* context for individual development, developmental-research methodology should be able to describe individual change in a changing biocultural ecology.

It will be useful to keep these core requirements in mind while reading the following chapters. The various chapters will amplify each of the issues mentioned and add a series of new ones. A sensitivity for what is unique to a developmental orientation and a developmental-research methodology, however, is critical and perhaps more important than an understanding of the numerous technical details contained in this book.

Methodological questions in developmental psychology are rampant and often badly conceptualized. The complexity of the historical study of behavioral development within a changing biocultural context calls for unique methodologies and a heightened sensitivity to the pitfalls, blind alleys, and frustrations produced by malignant data. Reflecting on the usefulness of history in the preface to *The Gulag Archipelago*, Solzhenitsyn (1973, p.x) quotes a Russian proverb that illustrates the conceptual and emotional dilemma of developmental researchers rather nicely: “Dwell on the past and you’ll lose one eye—Forget the past and you’ll lose both eyes.” Indeed, developmental researchers are often put in a situation of conflict when they come to the task of implementing the goals of developmental research with complex and tedious methodologies. The belief in the long-range merits of the developmental approach is important when choosing not only what is practical but also what is right.

Summary

The developmental approach is well illustrated by research on developmental changes in auditory sensitivity, which seems to decline in old age, especially for the higher pitches. This descriptive fact is explained by research showing a relationship between hearing loss and a life history of exposure to noise. Modification in this case can be alleviative—the use of hearing aids—or it can be preventive—the reduction of noise levels or the use of protective devices during early segments of the life span.

The developmental research on auditory sensitivity also illustrates another facet of developmental psychology: relationships of intraindividual change and interindividual differences to the physical, social, cultural, and historical context of individual development—that is, the key concept of the changing individual in a changing world.

The core methodological requirements illustrated by the case of auditory sensitivity, and by the very definition of developmental psychology given in Chapter One, are methods that permit (1) distinguishing intraindividual change from interindividual differences, (2) identifying specific developmental antecedents and processes (beyond time or age) as explanatory variables, (3) developing effective programs for alleviation or prevention of dysfunctional developments and optimization of functional developments, and (4) describing individual change in a changing biocultural ecology.

Part Two

General Issues in Research Methodology

In Part One, developmental psychology was briefly defined to illustrate the unique features of a developmental approach to the study of behavior. The dominant focus of this approach is on describing, explaining, and modifying (optimizing) patterns of intraindividual change in behavior and inter-individual differences in such change characteristics. A methodology for the study of behavioral development deals with the principles and strategies involved in the pursuit of knowledge about the ways individuals change with time.

Any methodology has at least two aspects. The first concerns issues of the empirical method in general. The nature of knowledge, the nature of the scientific method, and the strategies of theory construction and hypothesis testing are examples of such general issues of methodology. The second aspect of methodology is unique to the subject matter concerned. In our case, it is specific to developmental psychology. Examples of development-specific methodology are techniques developed to observe infant activity and social-interaction patterns in the elderly, or data-analysis models formulated to quantify and structure behavioral change along multiple dimensions. Comparing the use of cross-sectional designs with the use of longitudinal designs is another problem characteristic of development-specific methodology.

The chapters in Part Two provide an overview of general aspects of design methodology. Occasionally, we will show how issues of general methodology apply to the study of development, particularly when questions of measurement and the interplay between theory and methodology are discussed. The use of the term *development* is a good case in point. Various views of the term lead to distinct ways of operationalizing research questions, interpreting data, and building theories.