

Handbook of Theories of Aging

2

EDITION

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Editors

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Dedication

Dedicated to,

James E. Birren, PhD, Dean Emeritus, USC Davis School of Gerontology

One of the founders of the field of gerontology

*and originator of the first scientific theories in the psychology of aging
on his 90th birthday.*

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Preface

Theory appears to be growing in importance in gerontology today. By theory, we mean “attempts to explain,” and frequently in the past it was noted that “the field of gerontology is data-rich but theory-poor” (see the previous edition of this handbook). Recently, however, there seems to be an increase in “attempts to explain,” going beyond descriptive data to propose mechanisms and processes underlying them. Perhaps nowhere is this more visible than in the growth of cross-disciplinary studies concerning the mechanism of aging, which is one of the underlying themes of this volume.

The purpose of this handbook is to advance the development and applications of theories of aging. Its intended audience is researchers who wish to build theory in order to better understand their findings about processes of aging. Another audience is the next generation of researchers in gerontology: graduate students, postdoctoral fellows, and junior investigators—those who will be leading the course of knowledge construction in aging in the 21st century.

As noted in the first edition, many of these future leaders in gerontological research were learning the tools of their trade in an intellectual and scientific context that seemed, at the end of the 20th century, increasingly dismissive of the importance of theory. Technological sophistication in statistical modeling—but not theoretically based explanations—were demanded by journal reviewers. Applications of research findings to specific problems—but not basic research to advance theoretical development—seemed to be the priority of National Institutes of Health study sections reviewing grants. At the same time, some critics were saying that we are at *The End of Science* (Horgan, 1996), while some post-modernists suggested that the very enterprise of theoretical explanation was little more than intellectual nonsense.

Since the first edition was published in 1999, however, there has been a renewed interest in encouraging theory-based research among editors of several distinguished journals, including the *Journals of Gerontology: Social Sciences* and, most recently, the *Journals of Gerontology: Psychological Sciences*. Editorial policy in these journals, among others, has changed to explicitly encourage the inclusion of manuscripts that report theory-based research findings as well as those presenting research findings that can contribute to theory.

The stated goal in the first edition of this handbook was to reestablish the importance of theory in discourse about problems of aging. Throughout the 25 chapters of the first edition of this handbook, authors addressed the primacy of explanation in the vastly expanding scientific literature reporting empirical findings about aging. The handbook was highly lauded and sold very well;

apparently, a host of readers were looking for attempts to explain, not just describe, phenomena of aging, and the chapter authors were eminently successful in doing so. The scope of the first edition of the handbook was multidisciplinary, reflecting the many scientific and applied disciplines engaged in gerontological research and interventions, encompassing the biology of aging, the psychology and sociology of aging, and social policy and practice concerning problems of aging. While the first edition was multidisciplinary—presenting an array of disciplinary theories of aging—the current edition aims at crossing disciplinary boundaries.

In this second edition of the handbook, the authors continue this tradition of developing explanations. But there is a new emphasis: cross-disciplinary or interdisciplinary explanations. In just the past few years, a number of investigators have reached out beyond traditional disciplinary boundaries to partner with researchers in adjacent fields in studying aging and age-related phenomena. Our goal in this book was to discuss, develop, and promote such interdisciplinary work. The chapters in this volume were commissioned from scholars whose research in aging has achieved international recognition and who we believe have something new to say about the advancement of cross-disciplinary theorizing in our field. In our letter of invitation to the contributors of this handbook, we included a specific request to discuss the interdisciplinary aspects of gerontological theory in their topic.

This edition of the handbook consists of 40 chapters written by 67 experts in the field of aging. It is organized in eight parts, reflecting major theoretical developments in gerontology since 1999.

1. *The context of theories of aging*: The three chapters in this part examine the role and dimensions of theories in gerontology, problems and prospects for multidisciplinary theories in aging, the history of theories of aging, and an evolutionary, anthropological perspective on aging and the human life span.
2. *Theorizing aging across disciplines*: Chapters in this part focus on biodemography, an example of gerontological inquiry across disciplines; a philosophical inquiry into the nature of time, age, and aging; meaning in life as a forum for interdisciplinary theory; and a biopsychosocial theory of healthy aging.
3. *Biological theories of aging*: Topics here include an overview of biological theories of aging; revisiting the immunological theory of aging; gene action and classical evolutionary theory of aging; neuroscientific theories of learning, memory, and aging; programmed longevity and aging theories; and free radicals and oxidative stress theories in aging.
4. *Psychological theories of aging*: These five chapters cover the convoys over the life course theory; building theories of social context, cognition, and aging; dynamic integration theory of emotion, cognition, and equilibrium in later life; a theory of cognitive plasticity; and a cognitive control theory of aging and emotional well-being.
5. *Social science perspectives on theories of aging*: Chapters in this part present an integrative theory of social gerontology; phenomenological theories and aging; life course theory and aging; cumulative inequality theory; theorizing lifestyle, agency, and structure in the life course; theories in feminist gerontology and sexuality; theorizing across cultures; anthropological theories and the experiences of aging; and theorizing about families and aging.

6. *Society, public policy, and theories of aging*: The six chapters in this part look at theoretical accounts of aging policy development in the United States, the political economy theory of aging, theory informing public policy with the life course perspective as a policy tool, theorizing the social in social policy and aging, the impact of globalization on aging, and aging policy in the welfare state.
7. *Translating theories of aging*: In this part, the issues discussed include theorizing the relationship between law and aging; spirituality, finitude, and theories of the life span; theories of a “good old age,” mental health, and aging; translational theory and interventions to enhance well-being in later life; and the construction of knowledge in gerontological education.
8. *The future of theories of aging*: In a concluding chapter, the editors review some of the major themes and developments reflected in this volume. On the basis of these, they offer some predictions about the future of theory development in aging and some suggestions for the next generation of theory builders in gerontology.

The authors represent the United Kingdom, Switzerland, the Netherlands, Sweden, Israel, and the United States. Each has taken part in some cross-disciplinary research or writing in gerontology. All have labored long and hard to meet the demands of creating explanations for aging phenomena; one author said, “I feel like I’ve just taken my second doctoral oral.” Theory building is hard work because it requires thinking.

This handbook includes a remarkable array of contributions that present state-of-the-art innovative inter- and intradisciplinary theorizing in the study of aging. It represents the current status of theoretical development in the study of aging. In the near future, we can expect a plethora of research articles presenting findings from innovative multidisciplinary and interdisciplinary collaborations in the study of aging. We hope that the authors of these publications will address the theoretical implications of their findings and pursue explanations that go beyond specific empirical findings. While theorizing—and especially theorizing across disciplines—is a challenging task, it is of crucial importance to the cumulative construction of knowledge.

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Reference

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Acknowledgments

We wish to dedicate this volume to James E. Birren on his 90th birthday. He is one of the founders of scientific gerontology and one of the first presidents of the Gerontological Society of America. In his years at the National Institutes of Health, he fostered an amazing increase in research on aging, and in his decades at the University of Southern California's Andrus Gerontology Center, he mentored scores of students and younger scholars to careers in aging. Throughout his career, he has always been searching for explanations—and that is why we think he is truly the master of theory in our field.

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Setting the Context of Theories of Aging

Theories About Age and Aging

1

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Some humans are active and vital at age 90, while others are frail at age 60.

Why? What causes aging? Why is there so much variation in aging among members of the same species? (see chapters 4, 5, 10, and 12)

Some older individuals perform as well as younger people on cognitive tasks, while others show significant deficits in cognitive functioning. Why?

Is there a secret to avoiding memory loss, such as “keeping active”? (see chapters 15 and 17)

Some social contexts and societies provide significant care for their aged, while others leave it to the individual and his or her resources. Why? Why is there so much variation in public policy about aging? (see chapters 29, 31, and 34)

Some older adults appear to have emotionally gratifying lives despite experiencing significant losses. How do they manage this? (see chapters 18 and 37)

These are only a few examples of the many puzzles that gerontological researchers are addressing in their investigations. The answers to such “why” and “how” questions require theory, which is *an attempt to explain*.

The scientific study of aging is only three-quarters of a century old. But over the past three-quarters of a century, our field has accumulated a wealth of data about aging. We have come to know a great deal about cellular and molecular aging and changes in memory with age as well as the variation across societies in age-related health behaviors. At the same time, we do not know as much as we would like about *why* or *how* these aging phenomena and their consequences occur or about why and how there is so much variation in aging.

In this chapter, we attempt to present an overview of the multiple perspectives evident today concerning the nature and place of theorizing in our multidisciplinary field. We address three questions, three issues that we hope will guide tomorrow’s researchers as they plan their investigations:

1. What is theory? How is it useful in research on aging?
2. What are the latest developments in theory from perspectives of biology, psychology, sociology, and social policy applied to aging?
3. What is interdisciplinary theorizing? Why is it the wave of the future in research on aging?

What Is Theory? Theorizing in Aging Research

Theorizing is a *process of developing ideas that allow us to understand and explain empirical observations*. The term *theory* is used in many ways to describe interpretations of ideas or observations—from theory as a conjecture or guess to what physicists define as a “coherent group of general propositions used as principles of explanation for a class of phenomena” (Webster, 2003). Even within a given field of knowledge such as gerontology, perspectives on theory change over time (as can be seen from the previous edition of this *Handbook of Theories of Aging* [Bengtson & Schaie, 1999]). But there are some features of theory that remain constant over time.

Theory as Explanation

“An attempt to explain” is the simplest and most direct way to define theory. Theorizing is the attempt to solve some puzzle we have encountered in our experience as scholars. Whether in the laboratory, in field studies, or in surveys—or indeed in everyday life—humans seek explanations and meanings for *what* they observe or experience. And that leads to their questioning the *why* and the *how* beyond their immediate observations. This is theorizing—the search for explanation.

Theories are like lenses. Look at an object through one kind of lens, and the viewer will see one thing; look at it through another lens, and the viewer will be able to see something different. For example, the field of aging and the social sciences is a multiple-paradigm arena, with several different theoretical perspectives or paradigms (e.g., critical theory and science-based theory) operating and changing all at the same time. It should be obvious that several lenses are required to see the complexity and diversity of aging processes.

Theory is crucial for useful research about aging. Lack of theory leads to one-shot, limited application of research findings that do not lead to building cumulative knowledge about an issue. Researchers—whether students or professors, whether using qualitative or quantitative methods—cannot design adequate studies without ideas about *what* it is they want to find out and *why* that is important. Making these explicit is crucial to a successful study design. And at the end of the process, when researchers select the most important results or findings to write about, they are theorizing—highlighting ideas that are important to share with others.

Theorizing as a Process

It may be helpful to refer to *theorizing* rather than use more passive terminology such as *using theory*, *applying theory*, or *developing theory*. The focus is on *theorizing*, the verb, rather than on *theory* as a noun or modifier. Theory should be viewed more as a *process* than as an end product. Too often “theory” is associated with some abstract set of ideas, disconnected from the process that led up to those ideas. Or it is associated with the memorization of the ideas and names of people long dead. As a graduate student said, “Theory is some arcane body of reasoning associated with a name that you have to memorize in order to appear knowledgeable in this class.”

That is not the point of theory. We theorize, whether we are aware of it or not, in attempting to understand our observations and experiences. It is natural to go beyond describing the *what* of the data we have collected (whether from brain slices to census reports or in-depth qualitative interviews) to attempt to explain the *why* and *how* of the biological, social, or psychological processes underlying them. This is theorizing.

Theorizing Should Be Explicit

We submit that researchers should be *explicit* in theorizing. We should be aware that the data on aging we collect or statistically manipulate are not just “facts.” They also constitute the essential raw materials of our reasoning and theorizing about our findings. Too frequently, theorizing is covert or implicit; this can lead to problems in research. In developing research, the investigators’ “implicit theory” and underlying assumptions about the nature of the phenomena to be studied inevitably guide the selection of research questions as well as the concepts and variables to be measured. If the investigators do not recognize or acknowledge these implicit assumptions, this can bias or distort their interpretation of their findings.

Interdisciplinary Theories of Aging

Probably the most striking theoretical trend since the publication of the last edition of the *Handbook of Theories of Aging* 10 years ago has been the development of interdisciplinary theories of aging. Despite the difficulties in bridging traditional disciplinary boundaries and despite the challenges of working with different research paradigms and technologies, there have been significant breakthroughs in explanations of aging phenomena that take approaches from several disciplinary perspectives and blend them together into a unified theory.

The Foundations of Theories of Aging

Achenbaum (chapter 2) reminds us that theories of aging have a very long tradition in human thought, dating back at least to the epic of Gilgamesh in Babylonia about A.D. 3000. Hebrew and Christian Scriptures offered insights about the wisdom and suffering associated with gray hairs. Aristotle may have been the first to codify theories of age; he ascribed humors to four stages of life, with youth being hot and moist and old age cold and dry. Current theories about successful aging can be traced back to the texts of past masters; Coronaro in 1557 offered a regimen to promote healthful aging that consisted of exercise, diet, and temperance—eerily similar to that prescribed in Rowe and Kahn's (1998) bestseller four centuries later. That we "stand on the shoulders of giants" is unmistakably true of developing theories of aging. It is unfortunate that so many gerontological researchers appear not to be aware of this.

Certainly the growing body of evidence from evolutionary biology represents a foundation for current theories about the aging process. Kaplan, Gurven, and Winking (chapter 3) provide a useful review of such findings applied to species-typical aging. They note that an understanding of how the aging process and age-specific mortality respond to novel environmental variation requires a theory of how natural selection has acted on human biology over the course of human evolution. Their chapter presents such a theory, suggesting that the adaptive niche occupied by our species has selected for a coevolved suite of characteristics, what they call the *human adaptive complex*. They then present a theory about why the ability to live at least to age 65 has played such an important role in human adaptation, without which many other human characteristics could not have evolved.

Philosophical foundations are also crucial in attempts to understand aging, although researchers seem much less aware of these than the historical and evolutionary foundations. Baars (chapter 5) examines some epistemological attributes of the three central constructs in gerontology: *age*, *aged*, and *aging*. These are applications of the much larger concept of *time*, and the even broader concept of *change*. Theories of aging, then, are attempts to answer the question of how specific changes can be explained as part of processes of aging. Baars distinguishes between two kinds of time that are useful in gerontological research: *chronological time*, a causal representation, and *intrinsic time*, the personal and collective meanings given to past, present, and future. It is the latter that Baars suggests is the most useful perspective from which to examine human aging; it is too rich, he says, to be reduced to chronological age, life expectancy, or mortality rates.

Biodemography and Explaining Aging

The biodemography of aging, as summarized by Vasunilashorn and Crimmins (chapter 4), investigates questions relating to the variability in the rate of aging in populations. It attempts to understand how generalizable the current human condition is by examining different species or human populations in different settings. Researchers in the biodemography of aging are developing two types of theories. First are the “why” theories—why do animals and humans age? Why do some species, subpopulations, or societies age faster than others? Theories of programmed aging suggest that a biological clock drives the process of human development and aging process. Proposed explanations of these temporal molecular pathways include cellular aging and related genetics. Recent work has produced evidence that there are cross-species similarities in the patterning of life spans and also that within species life spans are considerably influenced by environment—for example, deviations in fertility and survival schedules in response to changing environmental conditions.

Second are the “who” theories—which populations age more quickly than others, and which individuals die sooner than others? Biopsychosocial theories attempt to explain how environmental, medical, and technological changes experienced by populations change the rate of aging. They attempt to determine which individuals within a population are most vulnerable to adverse health and age-associated conditions. The stress theory of health and aging has been proposed to explain such differences. This suggests that excess strains, because of greater exposure to chronic and acute strains, lead to increased risk for disease and disability. This theory is linked to the theory of cumulative disadvantage employed by sociologists (see Ferraro, Shippee, & Schafer, chapter 22). Most of these studies are motivated by the fundamental biodemographic question: how important is the role of environment on an individual’s health and survival at later ages?

Multidisciplinary Theories of Meaning in Late Life

The search for a meaningful life has been a concern of philosophy and religion since humankind’s earliest recorded history. But as Krause (chapter 6) points out, this is not merely an academic curiosity. Research on meaning in life is important because it speaks directly to key issues that face an aging population. A growing number of studies suggest that people who have found a sense of meaning in life tend to enjoy better physical health and tend to experience fewer symptoms of depression than individuals who have not been able to derive a sense that their lives have meaning. In addition, people with a stronger sense of meaning also tend to be happier and report higher levels of satisfaction with their lives.

Krause notes that meaning in life is a complex, multidimensional construct comprising four factors or dimensions: (a) having a clear set of values, (b) a sense of purpose, (c) goals for which to strive, and (d) the ability to reconcile things that have happened in the past. We can develop the theory by starting with a few key linkages: (a) personality traits shape the nature of social relationships that are formed by older adults; (b) relationships with significant others, in turn, help determine an older person’s sense of meaning in life; (c) the social process of meaning making is influenced by the language that actors use

at they jointly create a sense of meaning in life; and (d) once a sense of meaning has been negotiated and is firmly in place, findings from research in biology and physiology help show how it may affect health in late life. Scholars such as Frankl, Jung, Berger, and Maslow have argued that the ability to derive a sense of meaning in life represents the high-water mark of human development. If they are correct, then many of the biological, psychological, and sociological processes that researchers study should somehow contribute to the attainment of this ultimate goal.

Biopsychosocial Understanding of Healthy Aging

Almost everyone today would agree that there is no single fundamental cause of healthy aging but rather a multiplicity of factors working together to facilitate optimal functioning well into later life. But trying to understand the interplay among these multiple influences is a key challenge in formulating theory and executing empirical studies. Ryff and Singer (chapter 7) provide some innovative suggestions for making sense of these issues. First, they provide two definitions of “healthy aging” corresponding to biological and behavioral/medical orientations: (a) fending off cellular and molecular damage for the longest possible period of the life course and (b) the maximal delay of illness, disease, disability, and hence mortality—factors that keep the organism functioning optimally for the longest period of time. Second, they delineate an integrative approach to the task of understanding the causes, processes, and pathways of healthy aging, given the growing evidence that factors at multiple levels of influence are involved.

Healthy aging is fundamentally a biopsychosocial process involving three broad contributing factors: (a) social structural influences (gender, socioeconomic status, race, age, and cultural context), (b) individual influences (psychosocial and behavioral), and (c) biological influences (inflammatory and oxidative damage, damage to irreplaceable molecules and cells, and blood metabolic hormones). By integrating a huge body of literature concerning these processes, Ryff and Singer develop several propositions that are key to their biopsychosocial theory of healthy aging. For example, one proposition is about health promotion: positive psychosocial factors predict better biological regulation. Another is about resilience: positive psychosocial factors protect against the damaging effects of external adversity. A third concerns recovery and repair processes: positive psychosocial factors facilitate the regaining of functional and biological capacities. In each of these, we see the value of interdisciplinary investigation, which vaults us beyond traditional disciplinary boundaries and limitations.

Biological Theories and Aging

Part 3 of this handbook, on theories of the biology of aging, represents a set of chapters that, taken together, are inclusive of the major theoretical explanations for why aging occurs in living organisms. While the biological mechanisms responsible for aging are exceedingly numerous, the major theoretical paradigms guiding research in the field can be condensed into two general orientations:

stochastic processes (such as random genetic mutation and oxidative stress) and *programmed senescence* (structured genetic expressions in old age). This parsimonious rendering of biological theories of aging highlights both a growing degree of consensus about the role that evolution and natural selection play in the development of senescence and longevity and a sharpening contentiousness between competing perspectives about *how* this process might have occurred.

Generally, each chapter in this part favors one perspective while paying homage to the alternative perspective, and several chapters are formally integrative in their approach. Effros (chapter 9) reviews the role of the adaptive immune system in senescent aging and mortality. The immunological theory of aging posits that the very system that served a crucial protective function early in life becomes a liability in old age when it works less effectively because of replicative senescence of T cells—an explanation for aging generally known as *antagonistic pleiotropy*. The body is capable of forming a staggeringly large number of possible responses to fight the almost infinite number of foreign antigens that interfere with normal functioning. However, this fine-tuned response system breaks down with aging, impairing the body's ability to resist these invaders. Dysregulated immune response has been linked to cardiovascular disease, inflammation, Alzheimer's disease, and cancer. Although direct causal relationships have not been established for all these detrimental outcomes, the immune system has been at least indirectly implicated. Effros points out that an immunological explanation for aging is not inconsistent with other wear-and-tear theories, such as oxidative stress—that may impair immune response or be exacerbated by it—as well as programmed aging, as deteriorated immune response appears to be related to shorter telomere length.

Martin (chapter 10) takes us on a grand tour of the main currents of thought in the biology of aging, taking the perspective of a classical evolutionary theorist. In the traditional evolutionary formulation, maladaptive genes responsible for the declines associated with aging have escaped the force of natural selection either because they are expressed only after reproduction or because they are expressed early in life with positive functions, only to have deleterious effects later in life. Martin is particularly concerned with species-specific variations in the life span that are related to environmental exposures. The particular genes that are selected for improved resistance or robustness in each species depends on the types of challenges presented by its unique environment. Thus, he uses universal principles of evolutionary theory to explain particularistic disease and life span outcomes within a species. In pointing out phenotypic differences between identical twins in later life, Martin suggests that stochastic processes in genes *and* exposures to random elements in the environment are inseparable in evolutionary theory, thereby bridging major camps in the biology of aging.

Woodruff-Pak, Foy, and Thompson (chapter 11) use a mouse model system to test hypotheses about mechanisms related to learning and memory. Using classical conditioning techniques related to eyeblinks (aural stimulus that is coupled with a puff of air), the authors are able to demonstrate variation in learning and age-related memory losses. They further find that estrogen appears to protect the hippocampus against the negative effects in adult and aged groups of mice. Their work suggests plasticity in neural brain structures and their consequent behavioral outcomes. In linking physiological and psychological processes, the authors add to our understanding of the malleable nature of aging.

Gonidakis and Longo (chapter 12) take a strong stand that aging is genetically programmed as an adaptive response to changing environmental conditions—a perspective that stands at odds with stochastic perspectives on aging. Key to their formulation is the notion that expression of genes is programmed to variously extend life or trigger senescence depending on the nutritional environment to which the organism is exposed. The authors seek to reconcile the apparent contradiction between findings that caloric restriction leads to life span extension (by directing energy toward maintenance rather than reproduction) and findings that programmed altruistic death improves the fitness of a population at the expense of individual fitness. Using a well-studied strain of yeast, the authors' experiments show that yeast cells senesce in order to provide nutrients for enhancing survival of better-adapted mutant cells that then repopulate the strain—a form of altruistic suicide by the older, less adapted yeast cells. The model proposes that programmed longevity and programmed aging are not contradictory but unique reactions to changing nutritional conditions.

The chapter by Shringarpure and Davies (chapter 13) provides a comprehensive review of the free radical theory of aging, the most prominent of the theories proposing that wear and tear is the root cause of senescence. When oxygen is metabolized, unpartnered electrons are discarded, causing damage to cells, DNA, and eventually body systems. Paradoxically, the very processes necessary for life—respiration and metabolizing nutrients—are oxidative. The authors propose that the accumulation of oxidative stress results in disease and death. While molecules in the body can absorb these free radicals and systems are adept at repairing such damage, the defense systems of the body are not completely effective and also weaken with age. The cumulative damage caused by free radicals over a lifetime and the weakened effectiveness of repair systems with aging putatively may cause a threat to survival. However, the authors point out that there is little direct evidence that increased oxidative stress accelerates aging and shortens the length of life. While oxidative stress remains a compelling theory of cellular aging, more research is needed before it can conclusively be viewed as a theory of human aging.

Austad (chapter 8) is the most sanguine that empirical evidence now points to a single theory for why all living organisms decline and die. In coming to this conclusion, he first takes up the question of what constitutes a theory. Resting his argument on the notion that theories are capable of explaining a wide variety of phenomena and (unlike hypotheses) are mutually exclusive, he argues that there are only three general theories of biological aging. He reviews the empirical support for rate-of-living (wear-and-tear), programmed aging, and evolutionary senescence theories of aging. Austad judges which of the theories is most consistent with the extant findings. He finds weak evidence for rate-of-living theories—among them, oxidative stress—noting that energy expenditure, speed of metabolism, and oxidative damage bear little relationship to overt markers of aging and longevity. He notes that while programmed aging (such as altruistic suicide) has merit in limited instances, it has been found too infrequently in nature to serve as an explanation for a phenomenon as ubiquitous as aging. Austad concludes that evolutionary senescence theory finds the greatest empirical support in the literature. This theory proposes that genes with deleterious effects in later life accumulate because they have escaped the

force of natural selection. In Austad's view, empirical findings to date are most consistent with this explanation of senescent aging, thereby meeting his criterion that a successful theory is one that casts the widest net.

The chapters in this part reveal the enormously fertile state of theorizing in the biology of aging. Collectively, they reflect exciting intellectual enterprises to make sense of the wealth of data available and to fit them to the dominant theoretical orientations in the field. Much of what is presented points to a consolidation of knowledge and a growing parsimony in theory construction. As Austad points out, the more than 300 theories of aging identified by a review of the literature can be effectively reduced to three—a remarkable condensation but one that accurately describes theoretical paradigms and their scholarly camps. Each chapter in this part of the volume makes an effort to link to an “opposing” camp, but as of yet there is no unified theory on the horizon in the biology of aging. Taken as a whole, the chapters point to remaining fissures between theoretical orientations as well as irreconcilable differences between explanatory theories, making finding an integrative paradigm, however worthwhile, an elusive goal. Paradigmatic integration will require additional cross-level, cross-system, and cross-species research to gain further insight into the multiplex reasons for aging.

Psychological Theories and Aging

The chapters in part 4 are guided by the life span developmental perspective and the theory of selective optimization with compensation (Baltes & Baltes, 1990). Three chapters (Blanchard-Fields and Stange, chapter 15; Willis, Schaie, and Martin, chapter 17; Kryla-Lighthall and Mather, chapter 18) also extend socioemotional selectivity theory. Antonucci, Birditt, and Akiyama (chapter 14) offer the convoy model of social relations.

Contributors converge on such concepts as complexities and dynamic processes, the need to situate microprocesses in larger social and historical contexts, and the interplay between levels of analysis and reciprocal influences (e.g., chapter 17 emphasizes the reciprocal influences of neural structures, behaviors, and the sociocultural). The importance given the stress process brings together biological, psychological, sociological factors and signals the necessity of crossing disciplinary boundaries. Noteworthy in these chapters is the strong emphasis on articulating mechanisms: the *how*.

Contributors convey optimism about growing old and being old, focusing less on decline and more on the positive. Indeed, the leading concepts—adaptation, optimization and compensation, and plasticity—are revealing. On the other hand, there are thematic differences evident in the theories, fundamental some would say: change (reflected in the concepts of plasticity) versus stability (emotional regulation and equilibrium).

In chapter 14, Antonucci, Birditt, and Akiyama expand the theoretical scope and complexity of the convoy model of social relations. Based on life span development principles, the theory conceptualizes and explains individual development nested within social relations as they move across the life span and the abiding influence of social relations on health and well-being. A basic assumption of the model is that people need social relations. The major components of

the social relations model include social networks, social support, and satisfaction with support. A dynamic feature of the model pertains to feedback provided by consociates, such as family members and friends, as an individual matures and grows old. The convoy metaphor acknowledges that individual lives are shaped by personal, situational, and support relations. A dimension of the latter category, social networks are the structures that provide the foundation from which subjective aspects of relations emerge. In addition to the objective characteristics of social networks or members of the convoy who provide tangible or emotional support of some type, the model incorporates an interpretative aspect of social relations, that is, the individual's personal evaluation of their relations.

Understanding the social relations of an individual's social convoy across time is extraordinarily important because of their far-reaching effects on health and well-being. Recent empirical and theoretical work has extended the model to include (a) stress and the role of social relations as a buffer, expanding its cross-disciplinary reach, and (b) development of a social relations/self-efficacy model to investigate mechanisms through which social relations affect well-being over time. A strength of the convoy model of social relations has been its widespread applicability in cross-national settings.

Guided by the theories of selective optimization with compensation and socioemotional selectivity, Blanchard-Fields and Stange (chapter 15) develop a model specifying the role that socioemotional context plays as it interacts with cognitive decline to moderate or compensate effects of decline on well-being. The authors are interested in the functional dynamics of everyday cognitive behavior beyond the laboratory. Their aim is to examine effects of contextual factors on social judgments by identifying developmental mechanisms and social contexts that determine when older adults' social judgment is adaptive and when it is not. As with the other contributions to theory in this part, the central issue in this model concerns adaptation; the outcomes of interest are life satisfaction, quality of life, and health.

The authors argue that past research on cognitive loss and aging is incomplete and that a very different picture emerges when socioemotional context is taken into account. Emotional processing, social expertise, and emotional regulation can remain intact in the face of cognitive decline. The authors show that cognitive resource limitations may operate in conjunction with other social or personal correlates, such as social expertise, or, when personal beliefs are violated, to produce a reliance on dispositional inferences instead of situational adjusted inferences. If social expertise is present, snap judgment (dispositional inference) could result in an adaptive outcome. Outcomes of social judgments can include health and quality-of-life issues in old age, so it is important to include social judgments in models of cognitive loss and aging. The task is to assess when a social judgment such as a dispositional inference is biased or contextually adaptive. As noted in chapter 17, the age-period-cohort problem can challenge interpretation of findings in life span developmental research. Referencing related research on causal attribution biases, Blanchard-Fields and Stange found that differences in social beliefs and values accounted for age differences in causal attribution biases. But on closer examination, they determined that those age differences were in fact generational or cohort differences in beliefs that subjects perceived were violated, causing social judgment bias.

Labouvie-Vief (chapter 16) advances a theory of dynamic integration, drawing from life span development and the work of Piaget. This psychological theory of aging focuses on mechanisms for maintaining emotional regulation at older ages. Labouvie-Vief observes that there have been two views of the developmental course of emotions in adulthood and aging. One is that in aging, an increase in emotional well-being is the result of general improvement in emotion regulation. The alternative view states that older adults' ability to process affective information is frequently compromised. Dynamic integration theory (DIT) integrates these two views. This theory articulates a dynamic interaction of developmental, situational, and individual difference-related mechanisms that result in more and less effective ways of regulating equilibrium. Emotion regulation is seen as a dynamic response to challenges. The question is how older people, in the face of decline, manage to maintain good self-concepts and well-being.

The theory predicts that highly activating situations create escalating levels of emotional arousal in older adults more easily than in younger ones. Studies indicate that older individuals may have difficulty inhibiting high emotional arousal. The theory predicts that with advancing age, the capacity to integrate a sense of well-being and high levels of complexity will be impaired. In addition to older age, increased vulnerability is more likely under conditions of resource limitations, high levels of activation (arousal), or low levels of socioemotional resources. Labouvie-Vief is skeptical of socioemotional selectivity theory's focus on changes and adjustments, seeing them as higher-level intentional processes assessed by inference.

Using a life span developmental perspective, Willis, Schaie, and Martin (chapter 17) extend the theory of selective optimization with compensation by presenting a theory of cognitive plasticity in adulthood. The theory is predicated on the idea that development is a process of lifelong adaptation and as such is modifiable or plastic at all phases of development. The research agenda integrates the contributions of developmental psychology, concerned with cognitive plasticity, and neuropsychology, concerned with cognitive reserve. A central focus is interindividual and intraindividual variability, and what needs to be specified is why there are interindividual differences in intraindividual adaptation and plasticity.

The authors discuss five issues that must be addressed in developing a comprehensive theory of cognitive plasticity: (a) the levels where adaptivity and compensation can be observed: neural, behavioral, and sociocultural (research must take account of the reciprocal influence between the brain, experience, and behavior); (b) different time scales, short term and long term; (c) the processes and mechanisms associated with plasticity; (d) developmental issues, such as sensitive or critical periods associated with learning and cognition and periods associated with reductions in plasticity or reductions in neural patterns of functional connectivity; and (e) methodological issues in the study of plasticity.

Willis, Schaie, and Martin give attention to positive aspects of aging that follows from the notion of adaptability and provide some ideas how better understanding of cognitive plasticity might be applied to improve the lives of older people. For example, they observe how cognitive potential can remain even when neural structure has been compromised. Neurogenesis can occur even in older humans and animals as a result of cognitively stimulating activities at the behavioral level. Efficient acquisition of new cognitive skills and behaviors in

later life depends on reconfiguration and customization of cortical networks in the brain, represented as critical mechanisms for brain plasticity.

More recently, the study of cognitive plasticity has given attention to sociocultural influences. Here researchers are using cohort-sequential designs to try to distinguish age effects from cohort effects (increased education and exposure to technology). A bioconstructionist perspective suggests that there are reciprocal influences between individual and cultural plasticity. It indicates that increasing cultural resources are required for cognitive plasticity with age but that utilization of these cultural resources becomes less efficient with age.

In chapter 18, Kryla-Lighthall and Mather present a cognitive control theory of emotional well-being. Their research is in concert with the emphasis on positive aging now prevalent in gerontological research, which contrasts with a view of aging as inevitable decline. The chapter attempts to explain “the surprising robustness of emotional well-being” among older people. Building on socio-emotional selective theory, the authors propose a theoretical framework that integrates findings from cognition, emotion, and neuroscience research. Socio-emotional selective theory posits that the perception of time is a major determinant of human motivation. In contrast to younger people, who are motivated to invest in the future by focusing on knowledge acquisition goals, older people, who are more cognizant of time limitations, shift their attention to emotional regulation goals. A key proposition is that with advancing age, cognitive control resources are increasingly allocated for enhancing emotional well-being.

Older adults use control strategies, such as inhibiting negative information, refreshing goal-relevant information, and selectively rehearsing positive memories, to achieve their emotional goals. For example, a key strategy is the “positivity effect,” whereby older adults devote more attention and processing time to positive stimuli and less to negative stimuli. Kryla-Lighthall and Mather indicate that because memory recollection is affected by internal goals, older people will selectively distort their memories in order to promote emotional well-being. Another strategy used to reach emotion regulation goals is selective attention, allowing older people to focus on more positive information. Kryla-Lighthall and Mather note that age-related changes to cognitive control structures appear to negatively affect emotional regulation. But despite these declines, regulation of emotion and frontal lobe-controlled social behavior functions well in old age. The authors point to recent imaging research showing that older adults spontaneously recruit additional cognitive resources to meet their processing needs and in so doing enhance their emotional well-being. This corresponds to the selective optimization with compensation model and the plasticity of cognitive function discussed by Willis, Schaie, and Martin (chapter 17).

Social Science Theories and Aging

In contrast to theory development in the biological and behavior sciences, theoretical progress has been more challenging in social gerontology. In part this is because social phenomena over the course of life are extraordinarily complex and fluid but also because researchers approach their topics with different epistemologies.

What Is Meant by Theory?

Earlier in this chapter, we examined what is meant by theory and how it is used. In a majority of the 10 chapters in part 5, on social science theories of aging, the authors define theory as an explanation and are in alignment with the scientific perspective on knowledge development. Phenomenology, as presented by Longino and Powell (chapter 20), uses an interpretive approach to knowledge and focuses on understanding rather than explanation. Those writing from a feminist perspective, as evidenced by Calasanti (chapter 25), Dilworth-Anderson and Cohen (chapter 26), and Allen and Walker (chapter 28), often combine interpretive and critical theory approaches, depending on the topic of interest. We point out that a chapter topic and how it is addressed theoretically and epistemologically in this part of the handbook may not necessarily reflect the author or authors' preferred perspective. An author may elect a critical approach toward a topic in one theoretical essay or project, combine interpretive and critical approaches in addressing another topic, and use a scientific approach toward still another. Some authors see virtue in being eclectic in their theorizing.

Inequality and Cumulative Disadvantage

Inequality is a major theoretical focus among the contributors to the social science perspectives on theories of aging. Many of the chapters demonstrate a convergence of thought on the theoretical and substantive significance of *cumulative advantage or disadvantage* across the life course. For example, Ferraro, Shippee, and Schafer (chapter 22) develop the ideas of cumulative advantage and disadvantage and present a middle-range formal theory of cumulative inequality. The authors point out that while social advantage and disadvantage are often seen as outcomes for individuals, they use the term *inequality* to emphasize the importance of systemic properties in how individuals become stratified. The authors selected cumulative inequality as a more concise phrase than cumulative advantage/disadvantage. The theory incorporates elements of macro- and microsociological content and takes account of the way that social systems generate inequality on multiple levels. Cumulative inequality theory gives explicit attention to *perceptions* of disadvantage rather than just the objective conditions of their situations, which has been the dominant approach in previous studies of accumulating disadvantage. In addition, their cumulative inequality theory gives explicit attention to the intergenerational nature of inequality, which is not systematically covered in cumulative advantage/disadvantage theory.

Theoretical concern with cumulative advantage and disadvantage is also evident in the chapters by Hendricks and Hatch (chapter 23) and Settersten and Trauten (chapter 24) in terms of their focus on *social class as an explanatory mechanism*. Settersten and Trauten predict that social class will almost certainly become the most powerful factor in determining life course patterns and outcomes and will continue to create even greater disparities within societies.

In her discussion of anthropological perspectives on aging, Fry (chapter 27) highlights cultural diversity—a constituent element in the cumulative advantage/disadvantage framework. A theoretical interest in inequality can be inferred when Fry observes how modernization as an explanatory concept in anthropology has been replaced by globalization.

Feminist theorists are also centrally concerned with inequality. Allen and Walker (chapter 28) observe that feminist thought shares the common assumption that the various power/privilege asymmetries of gender, race, class, age, and sexual orientation are major and intersecting, not competing, inequalities, and that they make up systems of influences on people's everyday lives. "Intersectionality" is advanced as a key concept in feminist theorizing. Calasanti (chapter 25) argues that a focus on intersecting inequalities is critical to understanding those experiences of aging and that feminist gerontology is uniquely able to offer scholars a lens through which to view these intersections.

It is perhaps not surprising that scholarly concurrence on the need for theorizing inequality should emerge now, as evidenced in so many of these chapters, at a time when wealth disparities are increasing in all societies. The authors of chapters in part 6 theorize why this has occurred.

Life Course and Social Forces

A focus on the life course perspective represents another important theme among the chapters in this part. Certainly those concerned with cumulative advantage and disadvantage are using a life course perspective. Hendricks and Hatch (chapter 23) present a theory of lifestyles within a life course perspective. The authors articulate how lifestyles, through their connection to life choices and life changes, can link agency and structure, a major theoretical goal in social gerontology. Lifestyles can be conceptualized as a central mechanism within the life course framework and more generally as a linkage between the micro and macro in developing theories of aging. Moreover, lifestyles can be empirically grounded.

Dannefer and Kelley-Moore (chapter 21) contend that while the life course perspective has become increasingly useful and widely applied, a sociological theory that explains how social forces shape the life course is still needed. The authors dissect life course theorizing to show an overemphasis on agency and "personalistic" explanations and a neglect of "sociologic" explanations. They also assert that there has been a neglect of within-cohort variability. They extend their model of life course *explanans* and *expalanas* by adding a cultural component—perhaps with a nod to Dilworth-Anderson and Cohen (chapter 26) and Fry (chapter 27). They define this as a "symbolic apparatus of age-related meanings, values, and norms."

Also reflecting the life course focus, Settersten and Trauten (chapter 24) consider the implications for how societies might function when age-based norms vanish—a consequence of the deinstitutionalization of the life course—and suggest that these implications pose new challenges for theorizing aging and the life course in postindustrial societies. Dramatic reductions in mortality, morbidity, and fertility over the past several decades have so shaken up the organization of the life course and the nature of educational, work, family, and leisure experiences that it is now possible for individuals to become old in new ways. The configurations and content of other life stages are being altered as well, especially for women. In consequence, theories of age and aging will need to be reconceptualized.

Toward Interdisciplinarity

The chapter by Bass (chapter 19) is illustrative of efforts to cross disciplinary and epistemological boundaries in theorizing. Bass argues that social gerontology is becoming an integrative discipline in its own right. But in contrast to the rapid evolution of interdisciplinary work in the natural sciences and engineering, Bass suggests that social gerontology—and the social sciences more generally—has not kept pace. Despite the benefits that would come from cross-fertilization of knowledge bases, disciplines in the social sciences have not produced widely shared methodologies or theories. Nevertheless, Bass observes that social gerontology is maturing. A small but growing group of scholars in social gerontology have advanced theoretical thinking in the past two decades, bringing fresh ideas and insights. Bass suggests that out of this theoretical ferment, at least two “schools of thought” have emerged in social gerontology: critical gerontology and postmodern gerontology. He contrasts these two theoretical perspectives, their epistemological grounding and assumptions and topics of concern. A central focus is how to theorize the aging individual within a larger historical, political, social, cultural, and economic environment, one characterized by increasing risk where social responsibilities are shifting from the state to individuals and families.

Bass takes up the interdisciplinarity challenge by proposing an integrative theory of social gerontology. This theory blends a macroperspective, examining the larger social, economic, environmental, cultural, and political contexts that influence human behavior and health, with the micro-individual, and family perspectives. Critical to this framework is how these macrostructures differentially allocate resources and support an aging population and, as a result, how individuals respond to their own aging and others aging around them.

A Phenomenological Approach

Phenomenology, an established theoretical tradition in the social sciences, provides an epistemological underpinning for several theoretical approaches in social gerontology (feminist theories, critical theories, and postmodernist perspectives). In their chapter, Longino and Powell (chapter 20) extend theoretical understanding by presenting the theory of phenomenology and its application in the study of aging. The focus of phenomenology is on illuminating the human meanings of social life. By using phenomenology through its in-depth qualitative gathering of intimate human feelings and meanings, the approach emphasizes how individuals understand the means by which phenomena, originating in human consciousness, come to be experienced as features of the social world.

In our previous review of theories in social gerontology (Bengtson, Burgess, & Parrott, 1997; Bengtson, Putney, & Johnson, 2005), social constructivism was described as one of the most frequently used microlevel perspectives for understanding the experiences of older people and their families and the subjective meanings of age and aging. In fact, social constructivism is a constituent element of the phenomenology approach to knowledge. Researchers using feminist theories such as Allen and Walker (chapter 28) and Calasanti (chapter 25) are guided by social constructivist ideas and methods. Longino and Powell

provide us with a greater understanding of social constructivism within the theory of phenomenology and in so doing extend its range of application in social gerontological theorizing.

Dilworth-Anderson and Cohen (chapter 26) draw conceptual guidance from social constructivism and phenomenology to explore the meanings and understandings of a group of elderly caregivers from diverse ethnic backgrounds caring for an older relative with dementia. They describe the importance of values in studying culturally diverse groups and how it challenges researchers to uncover what culture means to those being studied. In their research, they combined social constructivism with a sociocultural perspective that recognizes that meaningful experiences are interpreted within one's own culture (see also Fry, chapter 27). The authors note how "the very fabric of social order is determined by the meanings assigned by its members as well as the interpretations that they make in legitimizing what they have created." The authors describe how they used a grounded theory approach that lends itself to social constructivism and the search for meanings.

Society, Public Policy, and Theories of Aging

Part 6 addresses theories of aging as they explain the complex interrelationships among societal process at the macrolevel, the formation of public policy, and the welfare of the aged population. The chapters in this part demonstrate how social processes can shape old-age policy and in turn shape the experience of the aged population or even construct old age (see chapter 29 for the United States and chapter 34 for Sweden), how the interactions between social processes and old-age policy can have differential effects on different subgroups within the aged population (chapters 30 and 33), how larger social forces such as globalization affect the aged population (chapter 33), and how individuals themselves can shape the very social structures (that in turn shape their social context) by exercising agency (chapter 32). This process of interdependence between individuals, or the principle of "linked lives," as well as the understanding that agency is embedded within social structure, is supported by both critical theories (chapter 32) and the life course perspective (chapter 31).

Hudson (chapter 29) takes readers on a fascinating journey of the development of American old-age policy. The journey is guided by an integrative discussion of three clusters of theoretical explanations of aging policy formation. The first cluster addresses economic theories and discusses how emerging industrial economies conditioned welfare state development. The second cluster introduces society-centered approaches and focuses on values, behaviors, and actions of individuals and groups and their interactions with policy formation. The third cluster is state centered, discussing both the state itself and the policy outcomes. Hudson's discussion illuminates how old-age policy has transformed the status of the aged in the United States from a vulnerable population defined by needs to an increasingly well-organized and well-off population. In concluding this theoretically driven analysis of old-age policy formation, Hudson reminds us that aging policy constructs old age by providing an answer to the question of "who is old?" Following this line of thought, Hudson claims that the current debate over raising the age of eligibility to Social Security benefits is

more than just a practical matter. Raising age eligibility may, in his words, carry significant consequences, as it may undo the achievements of old-age policy and transform the aged from the institutionalized population that they are today back to a vulnerable group, a process he calls “reresidualizing the aged.”

While Hudson focuses on old-age policy in the United States, Thorslund and Silverstein (chapter 34) provide a stimulating discussion of the development of the welfare state in Sweden. An important aspect of Swedish policy is the recognition that there is a third party affecting social welfare in addition to the individual and the state. This third party includes traditional community organizations such as civic or religious groups that provide services to those in need. A reduction in state involvement in caring for the aged population may result in a renewed increased involvement of such organizations in supporting the aged population. While Thorslund and Silverstein discuss this as a possible way to maintain the well-being of the aged population even in an era of budget cuts, such a solution is indeed based on viewing the aged as a “needy” group, perhaps leading to exactly what Hudson (chapter 29) discusses as “reresidualizing the aged.”

Phillipson (chapter 33) goes beyond national contexts and discusses the effects of globalization on the aged and the aging experience. He suggests that globalization produced a “distinctive stage in the history of aging” where the distinctions between domestic or national and international are blurry and less well defined. In such a climate, tensions arise between state-based policies and those formulated by global institutions. While globalization affects aging directly through its effects on the economy, Phillipson claims that its most central effect is in “redefining the social”—creating deregulation of the social order. Again, this takes place in a much less predictable and regulated environment. Thorslund and Silverstein (chapter 34) suggest that national values regarding the welfare state in terms of the target population and the preferences for care are mediating factors between the effects of macrolevel factors such as globalization and the microlevel aging experience. However, Phillipson observes that globalization may very well shape and redefine the very national norms that once were so important to national old-age policy formation.

Walker (chapter 32) takes the reader through the captivating process of theory formation that explains the social. The social is defined as “the outcome of constantly changing processes through which people, to a greater or lesser extent, realize themselves as interacting social beings.” This self-realization process is interdependent with the creation of collective identities. As individuals interact with one another, they often have to compromise and sometimes face constraints. In such an approach, therefore, agency or choice is viewed as embedded within structure. The role of the welfare state is to enable choice and “to empower people to negotiate their way through the rapidly changing life course.” Welfare state policies and rational or individual choice should be seen not as competitors but rather as compensatory.

While Walker uses critical gerontology to emphasize that agency is embedded within structure, Marshall (chapter 31) reaches a similar conclusion from a completely different theoretical direction—the life course perspective. In an innovative chapter, Marshall discusses the life course perspective, often used to explain individual developmental changes over the life course, as a useful analytical approach to inform public policy formation. Using the case of an

innovative Canadian policy initiative, Marshall discusses the tenets of the life course perspective and its strength in guiding policy formation. Marshall pays special attention to the importance of considering interdependence among individuals—the life course principle of “linked lives” over time. The life course perspective allows policymakers to view individuals as nested within families and broader social institutions that present opportunities and constraints. It further emphasizes the importance of historical analysis and the understanding that cohorts differ in the way they experience aging.

While the aged population on average may be better off financially when compared to other age-groups (see chapters 29 and 34), the proponents of critical gerontology (see chapters 32 and 33) argue that the interaction between the state and the economy in the social construction of old age creates inequalities in the experience of growing old. Kail, Quadagno, and Keene (chapter 30) theorize economic disparities among the aged population. They present a unique integrative theoretical approach to explain how economic inequalities accumulate over the life course of individuals and even further as they are transmitted across generations. Driven by the political economy of aging theory, the chapter presents a unique integration among several other theories—the cumulative disadvantage approach, feminist theories, and the concept of moral economy. Their approach leads to the proposition that economic disparities among the aged population are a result of systematic inequalities based on gender, race, ethnicity, minority status, and marital status across the life course. Moreover, even the policies that are designed to support the aged population—old-age policies—are socially constructed within a generational debate of the young versus the old, leading to a probable reduction of current distributional policies.

Taken together, these chapters provide a unique view of the various complexities of the continually changing interdependent relationships between individuals as they exercise agency and construct their own aging experience, the social institutions that provide constraining context to such individual choice, the state that facilitates and shapes these interactions, and larger social forces such as globalization, that affect all these factors.

Translating Theories of Aging

In part 7, authors discuss theories in four distinct applications of gerontology: application of theories to elder law (chapter 35); critique of the relationship between spirituality, finitude, and theories of the life span (chapter 36); applications of theories of aging to psychological interventions to enhance well-being in old age (chapters 37 and 38); and a proposal of a new interdisciplinary gerontological education framework that strives at blending research and practice (chapter 39).

Doron (chapter 35) presents a multidimensional approach to the study of elder law. Despite the implied importance of aging theories in the formation of elder law, Doron claims that elder law has received little attention in the gerontological literature. He calls the attention of gerontologists to the theoretical basis of elder law and terms this area of study “jurisprudential gerontology.” His multidimensional approach goes beyond consideration of the core legal principles of human and civil rights protection to other dimensions, including, for

example, the familial and informal supportive dimension, discussing the role of the state in forming a legal environment that supports those caring for the aged. Using his model, he encourages researchers to think in terms of several dualisms that underlie the field of elder law: paternalism versus autonomy and individual versus society. By discussing elder law within the framework of these underlying values, Doron connects the field of elder law to the policy arena as discussed by others (see chapters 32, 33, and 34).

In chapter 36, Johnson presents a unique perspective on theories of aging and specifically the life span or life course theories. Johnson criticizes these theories for neglecting to give adequate attention to a uniquely important aspect of the life course—death and dying. Johnson suggests that while some attention was given to the topics of finitude—the “awareness of the imminence” of one’s death—and to spirituality, which encompasses “transcendental, religious, and self-explorations,” these areas of research have been isolated from the traditional research on the life course. Johnson makes a passionate plea to integrate these topics in the study of the life course, suggesting that it is mortality that creates the very culture we live in, or, as he says, “without death, there would be no culture.”

Chapters 37 and 38 present two approaches to understand well-being in old age and to design interventions that aim to promote personal growth toward enhancing one’s individual aging experience. In chapter 37, Zarit opens with a paradox. While late life is typically accompanied by losses and challenges, older adults as a group seem to fare better in terms of their mental health compared to other age-groups. With the exception of dementia, most mental illnesses are less prevalent in old age, and Zarit therefore raises the question. With all the losses and challenges, why are older people happy? He utilizes several psychological theories of aging to explain this paradox, including Rowe and Kahn’s successful aging; Baltes’s selection, optimization, and compensation model; Carstensen’s socioemotional selectivity theory; various dimensions of emotional control; and the concept of wisdom. Finally, drawing on Erikson’s theory, Zarit discusses the need to find a sense of integrity in old age and examines life review as a method of achieving such sense. Zarit concludes that a good old age is certainly possible and that individuals can make their added years meaningful and productive. While he recognizes and acknowledges the existence of disease and other hardships, Zarit proposes a theory-driven intervention plan at the primary prevention level that may allow individuals to overcome challenges and compensate for losses, allowing them to be meaningfully involved in a good old age. These set of skills include good health habits, skills for managing chronic illness, good social skills, skills for managing emotions, good cognitive skills, leisure skills, good economic skills, and, finally, development of a sense of self-efficacy for the ability to change one’s life.

Knight and Laidlaw (chapter 38) provide a fascinating description of theory formation that is a product of a fruitful collaboration between two applied researchers. By merging their two individually developed parallel models, Knight and Laidlaw illustrate the role of good theory in promoting knowledge and progressing the field of the study of aging. Advocating a broad and inclusive pantheoretical approach, Knight developed a contextual, cohort-based maturity/specific challenge model for psychotherapy with older people. More recently, Knight developed the contextual adult life span theory for adapting

psychotherapy (CALTAP). At the same time, Laidlaw and colleagues developed a comprehensive conceptualization framework (CCF) that was designed to adapt cognitive-behavioral therapy. While these approaches differ in emphasis, both the CALTAP and the CCF model share many similarities that are also emphasized by the life course perspective, including an emphasis on cohort membership and social context.

In this chapter, Knight and Laidlaw merge their theories and create a new theory that benefits from both of their individual theories and adds a unique component—an emphasis on the achievement of wisdom, or, as they define it, “knowing how.” Like Zarit (chapter 37), Knight and Laidlaw recognize the possible barriers to wisdom attainment in the form of disease as well as societal barriers. However, much like Zarit, they believe that individual change through psychological intervention may prove to be an effective mechanism enhancing well-being in old age. Their theory-based intervention model provides a useful illustration for putting theories of aging into action.

Lowenstein and Carmel (chapter 39) discuss the need to find a systematic venue to create a more harmonious collaboration between researchers and practitioners as well as a closer integration between research and practice in educating future gerontologists. Lowenstein and Carmel view the educational system and, more specifically, graduate and undergraduate gerontology programs as the natural agents of such creation. They propose an interdisciplinary gerontological education paradigm that aims at enhancing theory-driven study and research at the graduate level, leading to the production of highly trained gerontologists who are equipped in relevant applicable knowledge. In order to be successful, such an educational framework should address the complex needs of the heterogeneous and diverse aging populations. The programs should present with a flexible modular geared to the individual training needs of the students, depending on the specific subgroup they will be serving, including specific ethnic groups, immigrants, or the chronically disabled. The programs should be interdisciplinary and draw on collaborations with other school and departments.

Conclusion

As will be seen in the remainder of this volume, there has been a resurgence in the explicit use of theory to develop explanations and understandings of the aging process. More and more, investigators are choosing to grapple with the *why* and *how* questions of aging rather than simply describe the *what*. Among the most promising developments recently is the noticeable increase in efforts to advance interdisciplinary theories of aging and a greater willingness to intersect traditional disciplines of biology, psychology, and the social and policy sciences. This trend has opened up avenues for more inclusive explanations of why and how health, mortality, and quality of life change with aging. In particular, attempts to bridge micro- and macro-environments of aging have yielded more comprehensive understandings of senescence and the aging process. From the widest analytic focus on population dynamics to the tightest focus on molecular biology, seemingly disparate and disciplinary-specific theories of aging are increasingly juxtaposed, linked, and, sometimes, integrated, in spite of

institutional structures (in the academy and the research community) that tend to keep them apart.

There has also been a rise in attempts to incorporate social and physical environments in theories of aging, reflecting awareness that differing contexts can explain variation in the aging process across human groups and species. Recognition that aging includes internal and external processes that interact with each other has enriched theories of aging and inspired the use of multilevel approaches. There is growing awareness that agency (individual interpretations and actions), social constraints (class, race, gender, and culture), and societal institutions (health care and state pension systems) must be acknowledged in any analysis of the causes and consequences of aging. Further, humans are purposeful, reflexive actors who accommodate or reduce the impact of aging by personally modifying their behaviors and collectively modifying the policy environments that determine the resources available for older adults.

Rapid expansion of aging research over the last several decades has made theory more, not less, important. An inductive approach of sifting through voluminous amounts of data is useful for unearthing patterns and making important serendipitous discoveries, but it is no substitute for the rigorous refinement and synthesis of theory, without which scientific explanations and epistemological understandings of aging cannot be readily achieved. The future of aging research, as we discuss in chapter 40, will likely see even greater attention to theory, particularly interdisciplinary theories. Although difficult to orchestrate and expensive to develop, theory-driven interdisciplinary investigations of aging are nevertheless the wave of the future.

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