HEALTH, ILLNESS, and OPTIMAL AGING
Third Edition
Biological and Psychosocial Perspectives

Carolyn M. Aldwin, PhD | Heidi Igarashi, PhD
Diane Fox Gilmer, PhD | Michael R. Levenson, PhD

Praise for This Edition:
“Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives, Third Edition shows the continuity and advancements in our understanding of human life-span development.... It offers a solid foundation for exploring the art and science of successful aging.”
—Robert M. Kaplan, Stanford University

Praise for the Second Edition:
“Aldwin and Gilmer have supplied an interesting textual model for examining health, illness, and aging. Their homogenized approach to aging research is refreshing and insightful.”
—Anthropology and Aging Quarterly

“Clearly written at a level for college students, this is an excellent resource on aging...Highly recommended.”
—Choice: Current Reviews for Academic Libraries

“This text, which primarily focuses on biological and physiological aspects of aging, is ideal for graduate students or upper-level undergraduate students, yet is comprehensive enough to be effective in both discipline-specific social work classes, as well as multidisciplinary settings.”
—Journal of Gerontological Social Work

Uniquely bridging a gap in the gerontology literature between the biological and psychosocial aspects of aging, this interdisciplinary text provides key updates on an abundance of cutting-edge research; expands information on diversity issues in aging; and examines in great depth the physiology of aging, theories of biological aging, and methodological issues. Instructors will also welcome the availability of an Instructor’s Manual and PowerPoint slides.

Written for upper-level undergraduate and graduate students, and invigorated by the addition of new coauthors, the third edition integrates findings in biology, psychology, and the social sciences to provide comprehensive, multidisciplinary coverage of the aging process. Included is key information on age-related changes and disease-related processes, the demography of the aging population worldwide, theories of aging, and ways to promote optimal aging. From a psychosocial perspective, the book examines mental health, stress and coping, spirituality, and caregiving in later years. Also included is crucial information on longitudinal design and statistics as they relate to research on aging, promising new trends in gerontechnology and Green Houses, and information on health promotion programs. Real-life examples throughout the text help students to understand practical applications of the material.

New to the Third Edition:
• Abundant new cutting-edge research on biological and psychosocial aspects of aging
• Expands information on diversity issues
• Updated theories of biological aging: microRNA, proteasomes, and gut microsomes
• Psychology of aging: How variability in responses to stress affects health and mortality
• Aging and public policy: How the recent recession has affected poverty rates resulting in increases in mortality among poor, middle-aged Whites
• Gerontechnology: The "Internet of things," assistive devices, and the potential of robots
• Instructor’s Manual and PowerPoint slides

Key Features:
• Examines age-related changes, disease-related processes, theories of aging, and ways to promote optimal aging
• Encompasses mental health, stress and coping, spirituality, and caregiving in later years
• Provides information on aging-related longitudinal design and statistics
• Covers promising new trends such as gerontechnology and Green Houses


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Health, Illness, and Optimal Aging
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Heidi Igarashi, PhD, recently received her doctorate in human development and family studies from Oregon State University, Corvallis. Her work focuses on the intersection of resilience, optimal aging, and wisdom; specifically, how individuals navigate and negotiate their social environments during everyday life, as well as critical life events. This research interest emerges from 26 years as a mental health counselor. She received her master’s of arts in psychology and counseling from Northern Arizona University, Flagstaff. Dr. Igarashi has authored and coauthored professional journal articles and book chapters on stress, coping, resilience, optimal aging, and intergenerational relationships in adulthood. She also serves on the board of directors of an adult day service in an effort to support community-based approaches that facilitate resilient aging in both caregivers and care recipients.

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Michael R. Levenson, PhD, was an associate professor (now retired) in the Department of Human Development and Family Sciences, School of Social and Behavioral Health Sciences, Oregon State University. He received his PhD in personality and social psychology from the University of California, Irvine. He studies exceptional adult development, both positive (e.g., wisdom and spirituality) and negative (e.g., psychopathy). He has also studied age, cohort, and period effects in the use of alcohol, as well as the effects of personality and health. He has more than 60 publications.
CMA: To my mother, from whom I learned a lot about optimal aging.

HI: To Rick, for his love and patience, and to my sons, Conor and Ian, who expand my thinking by sharing their world with me.

DFG: To Dave, for his unending support, and our dogs, for companionably sleeping nearby while we wrote.

MRL: To my wife, Carolyn, for her loving patience.

We would all like to dedicate this to the aging population, their care providers, and to those who might be able to influence this time in life through policy and research.
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It is an honor to provide the foreword for the third edition of *Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives*. The forewords for the previous editions were written by the late James Birren, a past president of the Gerontological Society of America and founding dean, University of Southern California, Davis, School of Gerontology. Late in his life, Birren was my UCLA colleague. But I knew him best as a close friend of my father, Oscar Kaplan. As a young person, I enjoyed hearing the two old friends reminisce about the early days of aging research. They talked about founding the Western Gerontological Association in 1954 by gathering the few attendees from western states at the American Gerontological Association meeting into a hotel room. The organization evolved into the current American Society on Aging. In the early days, only a small number of committed scholars studied human aging. That small group of early advocates persuaded President Harry Truman to hold a White House Conference on Aging in 1950 and that tradition has persisted in various forms as a decennial event. Over the next few decades, gerontology grew from a specialty niche to one of the most respected areas of applied science. The field has become so large and so diverse that it is difficult to summarize the entire discipline in a single volume. That is why this textbook plays such an important role in the education of interested students.

This third edition of *Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives* shows the continuity and advancements in our understanding of human life-span development. Looking back over older documents is a reminder of the remarkable progress in our understanding of the aging process. The application of this knowledge is truly impressive. Since 1900, life expectancy in the United States has increased by more than 30 years. A young boy born today can expect to live 76.4 years and a baby girl can expect to live 81.2 years. In contrast, White males born in 1900 could expect to live 47 years and White females had a life expectancy of 49 years. The life expectancies of Black men and women were much lower (33 and 34 years, respectively). Since 1990, we have gained about 1 year of life expectancy every 6 years. But there are disturbing differences in life expectancies across American counties and these discrepancies are getting larger with time. Socioeconomic status, race/ethnicity, metabolic factors, and differential access to health care may all play a contributory
role (Dwyer-Lindgren et al., 2017). Understanding why we age at different rates
requires a broad multidisciplinary perspective.

Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives helps us
understand the many reasons people are aging more successfully. Early textbooks
focused almost exclusively on the biology of aging. But life expectancy gains question
whether biology is the entire explanation. For example, life expectancy gains were
significantly greater during the first half of the 20th century in comparison to the sec-
ond 50 years. However, there is very little evidence that many medical interventions
were effective prior to about 1960. Even by the mid-1940s it was clear that a wide range
of factors affected the aging process (Kaplan, 1956) and we are only now beginning
to understand these social determinants of health.

Life expectancy and physical and psychological functioning are affected by genes,
environment, and social circumstances. Health, Illness, and Optimal Aging: Biological
and Psychosocial Perspectives provides the vocabulary to understand the aging process
and how it affects our sensory, endocrine, central nervous system, and other physio-
logical systems. It also describes effects on quality of life, memory, mental health, and
personality. Successful aging depends not only on medical care, but is also influenced
by successful coping with stress, social support, and adherence to a healthy lifestyle.
Finally, Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives helps
us interpret contemporary research and guides us to consider future research direc-
tions. It offers a solid foundation for exploring the art and science of successful aging.

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References


It seems like only a short time has passed since we published the second edition of Health, Illness, and Optimal Aging, but in the ensuing 4 years many things have changed. The “silver tsunami” is in full swing, with thousands of baby boomers retiring every day. Skilled nursing facilities now are starting to house the oldest members of this cohort, and relatively few of the World War II generation remain. The world economy is recovering from the Great Recession, but issues of how to fund programs for older adults are coming to the forefront.

As economic disparities increase, so too do health disparities. On the one hand, rates of disability are falling in most high-income countries, although this is countered by a disturbing trend: an increase in chronic illnesses (Chatterji, Byles, Cutler, Seeman, & Verdes, 2015). In the United States, the rates of Alzheimer’s disease appear to be decreasing (Langa et al., 2017); however, Case and Deaton (2015) showed that the mortality rates have risen for White, working-class Americans—mainly because of preventable deaths such as suicides, car accidents, and drug overdoses. Clearly, recovery from the economic recession was not evenly distributed. However, this cannot be the whole story behind this change, as mortality rates among Blacks continued to decrease, even though they arguably suffered more during the last recession, with higher unemployment rates. Thus, our hope for general increases in the health of current older cohorts is not as yet substantiated, as there are both hopeful and worrisome trends.

Even more surprising was the Centers for Disease Control and Prevention’s (CDC, 2016) dramatic changes in the predictions of ethnic differences in life expectancies. The past four decades have seen tremendous increases in life expectancy, and Asian Americans were usually the group with the greatest predicted life span, followed by Whites, Hispanics, Blacks, and then Native Americans. However, the latest projections suggest that Mexican Americans will enjoy the greatest longevity. Why this shift has occurred is not clear. Some of this change may be due to the “healthy immigrant” effect, but subsequent generations of Mexican Americans typically have mortality rates more similar to those of other Americans. Asian Americans’ rates may become lower because of new cohorts of Southeast Asians, many of whom came as refugees from Vietnam, Cambodia, and Laos, and who might be expected to have
higher mortality rates. However, the good news is that mortality rates continue to decrease among Blacks and Native Americans.

There are many bright spots in the field of aging. Our technology is advancing by leaps and bounds. Medical treatments for many chronic illnesses have really progressed, and technology designed for older adults and those with disabilities has grown tremendously, often propelled by research on new prosthetics and exoskeletons spearheaded by the Department of Veterans Affairs’ need to treat the many veterans from recent wars with disabling injuries. The number of older adults in skilled nursing facilities continues to fall, and there are new movements to develop self-run co-housing for older adults. However, with new times come new challenges, and the current political push to privatize Medicare and Social Security will spur vigorous debate and undoubtedly political protests.

NEW TO THIS EDITION

The biggest change to this edition is undoubtedly authorship. Dr. Gilmer, the second author on previous editions, has been retired for some time and is happily pursuing other projects (including a winery that she and her husband developed as a retirement project) and taking care of grandchildren. We were fortunate that she agreed to keep her hand in on this edition, albeit at a somewhat reduced level. Thus, Drs. Heidi Igarashi and Michael R. (Rick) Levenson have stepped in. Heidi is a former counselor who returned to graduate school for a degree in aging with Rick and me. We have written several articles and chapters together, especially on optimal aging, and this experience translated well in preparing the update of this book. As you will see, she is a superb writer and has taken on the revision of some of the more challenging chapters, including most of those dealing with demographic and psychosocial aging factors. Rick updated one of the longest chapters (The Interface Between Physical and Mental Health), and contributed to several others as well. We really enjoy working with each other.

Most of the content changes are detailed in Chapter 1, so I will not repeat them here. Suffice it to say, we updated nearly all of the tables and figures with more recent data. This was not as easy a task as it might seem. The CDC and the World Health Organization (WHO) are superb institutions that publish reams of data relevant to aging. However, new and updated releases by these institutions do not necessarily follow the same format as earlier publications, which often left us scrambling to find the most relevant data. For example, much of the new data on health disparities is broken down by racial/ethnic groups and age, but not always by gender, which was a hallmark of earlier publications. Counterbalancing this, we were fortunate to be able to draw on new material provided in several new handbooks of aging. So much exciting new research has been published that we ended up doing more extensive revisions than we had planned. We hope the users of this book will enjoy learning this new material as much as we did!

Another major change is the shift from a comprehensive reference list at the back of the book to references at the end of each chapter. We hope this will encourage the users of this book to pursue further the original research publications that we used and also will facilitate the use of individual chapters.

The other major new change in this book is the addition of an instructor’s manual. This supplement includes basic constructs and definitions, problems for additional classroom discussion, PowerPoints for use by the instructor, and examination
questions. **Qualified instructors can request these ancillaries by email: textbook@springerpub.com.**

We were assisted in this edition by Dylan Lee, who created these new reference lists and managed all of the updates to the references. We are indebted to her for her careful work!

*Carolyn M. Aldwin, PhD*

**References**


Share

Health, Illness, and Optimal Aging: Biological and Psychosocial Perspectives, Third Edition
From time immemorial, there have been two markedly different views of late life, illustrated nicely by the contrasting images provided by Shakespeare. Although the first, more negative quotation is widely cited, the second is less well known but still apropos of a major focus of this book, namely optimal aging. What is surprising about the quotation is that it presages the modern recognition that aging processes are plastic. To a large extent, how we age and the rate at which we age are balanced between resources to which we have access and our exposure to various toxins, both of which are, in part, reflections of the choices we make.

Psychosocial gerontologists have focused more on describing what happens cognitively, emotionally, and socially as we age, with a view toward identifying factors that promote positive aging or increase the risk of negative aging. The emerging models reflect a dialectic between cumulative resources and vulnerabilities across the life span and the idea of plasticity—that there are turning points through which people can change the trajectories of their life course. Although biogerontologists have focused on describing what happens at the molecular, cellular, and organ system
levels, the models emerging in that field emphasize factors that affect the rate of aging. For example, free radicals can accelerate deterioration, but antioxidants may decelerate it. At the same time, the fields of health psychology and behavioral medicine provide clear documentation that psychosocial factors can affect physical health, and we are beginning to understand the pathways through which this occurs. Although the focus has been on psychosocial risk factors, we are beginning to understand that there are protective factors at work as well. Thus, there appears to be an emerging consensus across these three areas of study, despite their differences in language and emphases. A major purpose of this book is to synthesize these views and perspectives under the rubric of optimal aging.

The past decade or so has seen a heightened interest in optimal aging. Scientifically, we are reaping the harvest of long-term longitudinal studies started many decades ago, which have traced individual lives for as long as 80 years. These prospective studies allow us to begin to understand predictors of the rate of change in physical health, cognitive ability, and mental health in late life. From a public policy perspective, nations around the world are graying. The baby boom generation has started to retire and collect pensions and health care benefits. This has forced us to seriously consider how to keep older adults healthy, if for no other reason than preventing them from bankrupting not only our national budget but also those of most other nations. Many of the current global financial battles are directly the result of underfunded pension programs, health programs with double-digit inflation, and other entitlement programs that threaten our financial health at the local, national, and international levels.

There is also overwhelming interest in staving off the ravages of old age from a personal perspective. It is not surprising that cholesterol-lowering agents and Viagra are among the most commonly prescribed medications in this country. In short, there is a growing interest in how the various aging processes respond to behavioral and environmental factors that are at least partially under our control.

Birren, Butler, Greenhouse, and Yarrow (1963) first differentiated between aging per se and disease. Using comprehensive medical examinations, they divided apparently healthy older men into two groups: those with subclinical disease and those who were completely healthy. They then compared members of both groups with younger men. Birren and his colleagues found that nearly all of the deficits generally associated with aging (such as memory problems, decrease in grip strength, and decline in cardiovascular output) were found in the older men with subclinical disease, but not in the optimally healthy men. The one exception was neuronal slowing, which even the healthiest older men manifested. This groundbreaking study opened the door to the recognition that aging is not necessarily associated with unmitigated pain and suffering, and that older adults can enjoy good physical and mental health and be cognitively intact.

The recognition that optimal aging is possible led to longitudinal studies such as the Normative Aging Study (Bossé & Spiro, 1995) and the MacArthur Study of Successful Aging (Rowe & Kahn, 1997), which were undertaken with the explicit goal of understanding healthy aging. Gerontology is unique among the scientific disciplines in that this field has recognized, since its inception, that interdisciplinary endeavors are required for understanding the aging process. Biogerontology has greatly increased our understanding of the genetic and cellular mechanisms of aging, but the disciplines of psychology, sociology, and anthropology are also essential for understanding both the processes and ramifications of aging. We are just beginning to comprehend the transactional nature of health and to detail the interplay among
mental, cognitive, and physical health, as well as sociocultural processes. This realization has led to hundreds of intervention studies demonstrating that many of the cognitive and physiological declines associated with normal aging can be reversed. Clinicians are now more successful at treating the chronic illnesses of late life, such as cardiovascular disease (CVD) and diabetes, leading to rapid demographic increases in the population older than 85 years of age.

This explosion in research is extremely exciting, but it is also frustrating because our understanding is increasingly fragmented. A complex array of different and competing theories has developed. Even more frustrating is that biogerontological findings about the mechanism of aging in one species (or even in one strain) often do not hold up in others. In epidemiology and the social sciences, findings may also vary across time, and accepted results that are true for one cohort may not hold for another. Not only are we fragmented within fields, but we are also becoming fragmented across them. The study of aging has traditionally been interdisciplinary in nature, but as the field becomes more complex, researchers are becoming more specialized, with fewer lines of communication across disciplines. This dual characteristic of the explosion of information and its increasing specialization is exemplified by the separation of the Journal of Gerontology into two series: Biological Sciences and Medical Sciences and Psychological Sciences and Social Sciences.

This disparity in perspectives plays out in the basic assumptions of different types of gerontologists. The first author, in an interview for a telecourse on aging, was asked, “What effect does culture have on the aging process?” The answer was, “Everything!” The producer was startled, because he had just interviewed a biologist whose answer had been an emphatic “Nothing!” When asked to account for the discrepancy, the author answered that although the biological processes underlying the aging process may be universal, the rate at which we age is largely a function of culture.

Gerontology is not yet at a stage in which a unified theory can be proposed, but we feel that similar themes are emerging in the various disciplines that comprise gerontology. A major purpose of this book is to create a bridge for understanding across disciplinary boundaries. To that end, we propose that many theories and studies of aging can be understood under the rubric of aging accelerators and decelerators—factors that increase and those that decrease the rate at which we age. This theme is central throughout the book and may help to integrate findings across disciplines with a view toward understanding successful aging. Before we explain the structure of the book, however, we feel that a brief section on basic terms is important, especially for those new to gerontology.

**BASIC DEFINITIONS**

Probably the most basic question in gerontology is, when does late life begin? There is often little consistency across studies. Some studies define older populations as 65 and older and others as 60 and older, but some start at ages as young as 50. A consensus is emerging that late life is not at all homogeneous and that one needs to distinguish between different age strata, such as “young–old” and “old–old” adults (see Neugarten, 1975). Different cutoff points have been used, but it is most common to define young–old persons as those between the ages of 65 and 79, old–old individuals as those between 80 and 99, and the oldest–old, or centenarians, as those who are age 100 or older.
Although some people experience age-related disability in their 50s or even 40s, young–old individuals are typically relatively healthy and quite functional. As we discuss later in the book, some of the stereotypes associated with impaired aging that have been proved false in the young–old may actually be characteristic of the old–old, who are more likely to be physically and cognitively frail and in need of support. Centenarians are a class unto themselves, and it is more difficult to make generalizations about them. Some are hardy and as sharp as tacks, but more are extraordinarily frail.

Another important distinction is that among age, cohort, and period. Age refers to the number of years a person has been alive, whereas cohort refers to a group of people who share the same birth year or sometimes those who shared historical events, such as the World War II generation. Period refers to the time at which the measurement or assessment occurred. If a particular phenomenon always changes with age, regardless of cohort or period, then it is an age effect. If the change is specific to a particular cohort but does not occur in any other group, then it is a cohort effect. If all cohorts or ages change at a particular point in time, then it is a period effect.

It is important to understand that a person who was 70 years old in 1950 belonged to a very different cohort from that of a 70-year-old in the year 2000. The 70-year-old in 1950 was born before the turn of the 20th century; witnessed the first cars, telephones, and electric lights; and experienced two world wars (but was too old for military service in them). The 70-year-old in 2000 was born at the beginning of the Depression but was too young to serve in World War II. This person may have served in a MASH (mobile army surgical hospital) unit in Korea, however, and certainly witnessed the civil rights and women’s movements and the tumultuous dissension over the Vietnam War. Thus, a cohort may well have experienced a life course that is historically unique, and this experience may not generalize to other cohorts. It is crucial to recognize that much of what we know about human aging stems from studies of the World War II and Korean War generations, and we do not know whether this will generalize to the baby boomers and other future cohorts of older adults.

Period effects are also extremely important. Sometimes general shifts in the whole culture, or even temporary shifts, may be confused with aging effects. For example, Bradburn and Caplovitz (1965) first demonstrated that historical events may affect the mood of an entire population. They happened to be conducting repeated measures of positive and negative affect when the Cuban missile crisis occurred, and they found that negative affect increased at this time. If they had not been sensitive to the particular events of this period, however, they might have thought that this increase reflected aging rather than a period effect.

Another important distinction is made between life span and life expectancy. Life span refers to the absolute length of time a member of a given species may live. In humans, that is currently about 120 years. In contrast, life expectancy refers to the length of time an average member of a particular cohort can expect to live. Life expectancy refers to the age at which half of a particular cohort will have died, and demographers estimate that about half of the women born in the year 2006 will survive until after their 80th birthdays, although the comparable figure for men is only 75 (Administration on Aging [AoA], 2011). Indeed, in nearly every country, women enjoy higher life expectancies than men. Age-specific life expectancy refers to the average number of years that members of a given cohort who have reached a specific age can expect to live. For example, people who survive to age 65 can expect to live another 18 or 20 years, even if the average life expectancy for their cohort is much lower. Remember that life expectancy is estimated starting at age 0 and includes individuals who will
die at all stages of the life span. Thus, people who survive to 65 are particularly hardy and can expect to live longer than the average member of their original cohorts.

Calculating life expectancy involves a number of assumptions and cannot take into account unforeseen historical circumstances. For example, life expectancy in Russia went down when the former USSR (Union of Soviet Socialist Republics) broke up. Furthermore, it may also be difficult to project accurately for immigrant groups, especially if information is lacking about their cohort in the country of origin. If older members of the group return to their native country, tracking mortality rates is also difficult.

As gerontology and geriatrics focus so much on health, it is important to understand the distinction among mortality, morbidity, and functional health. Mortality refers to death; morbidity refers to illness. Mortality rates refer to the number of people who die during a given period of time. Epidemiological and biomedical studies may attempt to predict all-cause mortality (the total number of deaths in a population), or they may try to predict specific causes of mortality, such as heart disease or cancer. Morbidity rate refers to the prevalence or total number of cases of a specific disease in a population, whereas the incidence of illness refers to the number of new cases in a year.

Epidemiologists further distinguish between acute and chronic illness. Acute illnesses are often self-limiting and/or can be successfully treated with medicines, but chronic diseases are often incurable, and treatment focus is on the management and the delay of disability rather than cure. Before the advent of antibiotics during World War II, most people died of acute illnesses such as pneumonia, influenza, scarlet fever, smallpox, or cholera, or from complications due to childbirth, and death was much more evenly distributed across the life span. With antibiotics, better sanitation, and better nutrition and food preservation, however, acute illnesses are less likely to be lethal, and most people develop chronic diseases such as CVD, cancer, arthritis, and diabetes in later life. Nearly 80% of people older than 65 years of age have at least one chronic disease; 50% have two or more (Centers for Disease Control and Prevention [CDC], 2011). Although some diseases such as CVD and cancer are the leading causes of death in late life, others such as arthritis are not fatal but can adversely affect quality of life.

In late life, however, the acute versus chronic distinction can become blurred. For example, people with chronic obstructive pulmonary disease are more susceptible to acute illnesses such as colds, pneumonia, and other viral infections of the lungs. Diabetics are susceptible to a variety of infections, including infections of the skin, bladder, and so on. The presence of a chronic illness may also reduce the ability to recover from an acute incident. Conversely, acute illnesses such as viral infections may give rise to chronic problems, such as viral-triggered hypersensitivity of the lungs and asthma, and it is possible that some forms of diabetes or multiple sclerosis may be triggered by viruses. Although chronic illnesses such as arthritis may not be fatal in and of themselves, they may give rise to a variety of health problems and functional limitations that can have very serious consequences. In other words, acute and chronic illnesses can intertwine to produce a cascade of health problems that can affect the ability to function in social roles and to care for oneself.

Thus, gerontologists and geriatricians often focus on functional health rather than specific illnesses. Functional health refers to the ability to perform daily tasks such as shopping, paying bills, preparing meals, or getting around, called instrumental activities of daily living (IADLs), and caring for oneself, such as bathing, dressing, and eating, which are called activities of daily life (ADLs). Many older adults have several chronic illnesses such as hypertension, arthritis, and diabetes but nonetheless are
quite capable of living in the community and taking care of themselves (and, very often, taking care of others as well). Once functional health declines, however, older adults are at greater risk for dependency and institutionalization. Most dread the possibility of institutionalization; indeed, it is the negative Shakespearean fate that we all seek to avoid.

When we think of successful aging, the image of the active senior emerges, an image often touted in advertisements for expensive retirement communities. It is tempting to define successful aging in terms of good physical function, cognitive abilities, and mental health. But such a definition also implies that there is only one way to age successfully and ignores the fact that the vast majority of older adults will develop illnesses and limitations (Aldwin & Igarashi, 2015). Furthermore, as one commentator put it, we appear to be the only culture on Earth that considers death as optional—doing our best to ignore the fact that, barring accidental death, we will all develop fatal illnesses, often involving pain and disability. Thus, we prefer to use the term optimal aging, which allows for the recognition that there may be different ways of aging well, that people begin with different configurations of vulnerabilities and resources that affect how they age, and that this is a process that continually unfolds over time. Understanding what constitutes and what promotes optimal aging is a primary function of this book, but, as we will see, such understanding is a difficult task, because it entails assumptions that reflect cultural and individual values. Nonetheless, we argue that optimal aging is a multidimensional construct that involves avoiding the accelerating agents that promote premature illness and disability, as well as developing protective factors that delay or decelerate the aging and disease processes to maintain good physical, cognitive, and mental health. At the heart of optimal aging, however, is the concept of wisdom. We propose that the development of wisdom in adulthood allows individuals to assist others (especially those in younger generations), to optimize capacities despite illness and disability, to find meaning and purpose in life, and to face disability and even death with relative equanimity.

The purpose of this book is to provide an interdisciplinary understanding of the factors that affect aging. As mentioned earlier, we feel that the field is becoming increasingly fragmented, yet theories and models are emerging that can help tie together diverse perspectives. Our overall goal is to examine the biological and psychosocial aging literatures to determine whether they can be organized using the aging accelerators and decelerators model, in order to enhance understanding of the many facets of aging and to promote optimal aging.

**ORGANIZATION OF THE BOOK**

To that end, we have organized the book into four sections. Section I provides a general overview of demographic, theoretical, and methodological issues. Chapter 2 provides a detailed examination of various age-related population shifts and their causes and consequences. Much has been written about the graying of America, but the increasing age of the population is a phenomenon seen not only in the United States but in nearly all countries around the world. Drawing on U.S. Census and international data for this edition, we discovered some very surprising facts that challenge long-held assumptions about the demography of aging, especially vis-à-vis ethnic impacts on life expectancy. Chapter 2 also examines demographic factors that accelerate or decelerate the aging process, including marital status, ethnicity, and socioeconomic status.
Chapter 3 is an overview of theories of aging. The first half focuses on biological theories of aging in humans. Beginning with theories of the genetic regulation of aging, we also review cellular theories, including DNA repair mechanisms and antioxidants, as well as the effects of waste accumulation and dietary restriction. We added new materials on proteostasis, which is the importance of the structure of proteins for proper functioning of molecules, and how aging affects this. At the systems level, some theories of aging emphasize the effects of wear and tear; others focus on problems with interorgan communication. The second half of the chapter reviews psychosocial theories of aging, including classic stage theories as well as more modern approaches such as developmental systems theory and positive models of adaptation in late life. We explore whether the construct of aging accelerators and decelerators is broad enough to develop a common language between biological and psychosocial theories of aging and also discuss the interface between the dialectic of cumulative and plastic models, and additional models concerning how regulation changes with age.

An overview of methodological issues is presented in Chapter 4. We review different types of longitudinal designs, including cohort and cross- and time-sequential designs and provide a brief introduction to longitudinal statistics, especially health statistics. Much confusion exists concerning the uses and misuses of longitudinal statistics, and differences in preferred analytical strategies across fields may render interdisciplinary comparisons problematic. By providing a literate, nontechnical review, we hope to increase general understanding of longitudinal designs and statistics that will increase the uniformity of their use across disciplines. Although longitudinal statistics are difficult, understanding them is absolutely crucial for gerontology, given its inherent focus on examining the rate of change in a variety of phenomena. We add new materials on mixed models as well as latent growth curve trajectories.

Section II examines the aging of select biological systems. Much of the book focuses on biological systems, because these tend to be less well understood. For each system, we provide a brief overview of the anatomy and physiology. Following Rowe and Kahn (1998), we describe normal age-related changes, then we focus on diseases and the factors that accelerate the rate at which they occur. Finally, we describe ways of maintaining optimal aging in each system, with an emphasis on aging decelerators.

Chapter 5 reviews changes in the musculoskeletal and integumentary systems. With age, there are systematic changes in overall body composition, including bones and muscles. Skeletal problems also increase with age. Most older adults have some form of arthritis, and osteoporosis is often one of the most painful diseases of later life. Muscle mass also declines with age, although weight-bearing exercise can attenuate that loss. Although not usually life-threatening, aging and disease processes in the musculoskeletal system can be extremely painful and debilitating and may be one of the greatest influences on quality of life in late life. For this chapter, we update information on the prevalence of various diseases, and also add some surprising new information on the protective effects of alcohol for bone health in later life.

Chapter 6 focuses on the internal organ systems, including the cardiovascular, respiratory, gastrointestinal, renal/urinary, and reproductive systems. In many ways, the functioning of the heart and lungs regulates the rate at which we age. Both systems are crucial in carrying oxygen and other nutrients to every cell in the body as well as in carrying away waste products. Failure or deficiencies in these systems often underlie damage to other systems. Our knowledge of both normal aging processes and disease processes in these systems has greatly increased in the past two decades.
Much of what we know about interventions to delay problems with aging emphasizes the maintenance of the cardiovascular and pulmonary systems. Again, we provide updated information on the prevalence of different types of illnesses that affect these systems. There is also some surprising new information on how age-related changes in things like blood pressure, which were once thought to be a herald of disease, may actually be protective.

Relatively few age-related changes occur in the gastrointestinal system, but this system is responsible for the overall nutrition needed to maintain the rest of the body, and disruptions can have serious systemic effects. Inadequate nutrition can also result in confusional states as well as a host of other problems. Weight loss in later life may result in serious risk of mortality. Because the renal system regulates fluids and electrolytes, complications in this area can also lead to a multitude of problems, including hypertension and difficulties in regulating the heart rate as well as transitory confusional states, often mistaken for dementia. Urinary incontinence in later life, although extremely common, is almost always treatable, but it constitutes one of the biggest barriers to freedom of movement and social interaction and thus quality of life. Finally, age-related changes in the reproductive system are considered.

Chapter 7 addresses two of the regulatory systems, the sensory and the nervous systems, while Chapter 8 reviews the endocrine and immune systems. In many ways, the functioning of any one system is of less importance than communication among systems in determining the rate at which we age. These four systems work in concert using a variety of electrochemical means of communication to fine tune coordination across systems. An explosion of knowledge has occurred in both biogerontology and in the cognitive neurosciences in the past 10 years. We are much better at understanding the mechanisms of brain aging and the factors that give rise to disorders such as Alzheimer’s disease. We are also much better at treating sensory problems such as glaucoma, cataracts, and hearing loss. The endocrine system is of such importance for aging that for many years the pituitary was considered the master gland that regulated all aging. Finally, we describe our growing understanding of the complexity of the immune system, which, contrary to general belief, does not necessarily decline with age (Miller, 2009), and add new information on the importance of inflammatory factors for Alzheimer’s and other neurocognitive diseases.

Chapter 9 reviews the ways in which functional health has been conceptualized and how this concept has generally evolved into a study of health-related quality of life in later years. We add a new section on frailty, as well as the promising research with intervention trials to reverse this syndrome.

Section III centers on the psychosocial factors that affect physical health, with a specific view toward understanding psychosocial accelerators and decelerators of the aging process. Chapter 10 addresses the interface between physical and mental health, and has been extensively updated. In it, we review the evidence for and the pathways through which personality processes can affect morbidity and mortality. Most reviews focus on psychological risk factors, but we discuss evidence for personality processes that can be protective of health, especially in late life. Health behavior habits also can affect the rate of aging. The impact of smoking, exercise, and diet as accelerators and decelerators is addressed in Section II, but the consumption of alcohol has important implications for mental, cognitive, and physical health, albeit in a complex, nonlinear fashion. Furthermore, symptoms of common illnesses may present differently in older adults. For example, in younger adults, the primary symptom of a urinary tract infection is burning pain on urination. But in older adults, the primary symptom may be a confusional state or delirium.
Olofsson, 2011). Thus, it may be very hard to distinguish between psychological and physical health problems in late life, as there are often overlapping symptoms. For example, if an older person is listless, is sleeping poorly, has little appetite, and appears somewhat confused, these symptoms may be due to a number of problems such as depression, hypothyroidism or hyperthyroidism, leukemia, congestive heart failure, pneumonia, alcoholism, or a bladder infection. Proper differentiation of symptoms and diagnoses may require both physical and psychological screening.

The next two chapters focus on other psychosocial processes that may affect health in later life. Chapter 11 addresses the evidence for the effects of stressors on health in late life. We know that older adults are more vulnerable to the physical stressors, but it is not clear whether they are also more vulnerable to the psychological stressors. How older adults cope with problems, especially chronic illness, may well differentiate between those individuals who are able to live in the community and those who become institutionalized. New information is also added on the ways in which different types of stress change with age and how these types relate to mortality.

Chapter 12 reviews social networks and the support they provide, which may be one of the most important predictors of health in late life. The relationship between social support and morbidity and mortality is discussed, as well as the risks associated with social isolation and loneliness. We present new information on the different characteristics of social support networks, the various types of support, and theories of age-related change and stability in the amount and type of support. Caregiving in later life, by the network of informal and formal members, is given special attention.

Section IV, “Practical and Clinical Aspects of Aging,” consists of two chapters. Chapter 13 examines the sociostructural contexts that influence aging. We look at the trend toward an extended transition to retirement that has been influenced by many factors including greater longevity, economic conditions, high costs of health care, and changes in the sources of retirement income. This chapter provides an overview of the economics of aging, such as Social Security and other types of income sources in retirement, and underscores the importance of programs such as Medicare and Medicaid on health care systems. Retirement financial security, access to affordable medical care through insurance, and housing are critical to the ability to comfortably navigate later life; however, people have significantly different resources. Poverty and homelessness in later life are critical issues. We also highlight exciting new trends in gerontechnology, which may help older adults to retain their independence and autonomy.

Finally, Chapter 14 reviews theories of optimal aging as a framework for integrating biological and psychosocial factors in aging, and argues for the centrality of wisdom.

We learned a great deal while researching material for the revision of this book. Knowledge in this field is changing rapidly, and we have done our best to present the most recent information available. More importantly, we hope that this book serves as a bridge between the biological and psychosocial gerontology communities and promotes a more holistic understanding of the aging process.

References


Defining optimal aging has been a challenge for both medicine and psychology. We are much better at identifying illness or pathological processes than health. There is increased interest in positive psychology (Seligman & Csikszentmihalyi, 2014; Snyder, Lopez, & Pedrotti, 2011), as well as constructs such as wisdom (Glück & Bluck, 2013; Staudinger & Glück, 2011; Weststrate, Ferrari, & Ardelt, 2016). Optimal aging is more than just good health; it must include notions of adult development as well (Golub & Langer, 2007).

This chapter reviews the current models of optimal aging, using them as a framework for summarizing and extending some findings discussed in previous chapters. We focus on factors that accelerate the aging process as well as those that decelerate it.

MODELS OF OPTIMAL AGING

The past 20 years have seen a strong interest in what has variously been called “successful aging” (Rowe & Cosco, 2016; Rowe & Kahn, 1998), “resilient aging” (Fry & Keyes, 2010; Hochhalter, Smith, & Ory, 2011; Reich, Zautra, & Hall, 2010), and “optimal aging” (Aldwin & Gilmer, 2004; Aldwin & Igarashi, 2015). The idea is that some individuals seem to age well (Vaillant, 2002) or particularly gracefully (Snowdon, 2001). We chose to use “optimal aging” rather than “successful aging,” primarily to avoid the connotations of competition that the word “success” may bring, and also because too literal an interpretation may lead one to believe that there is only one way to age successfully. Furthermore, Erikson (1950) cautioned against attributing success to his stages of psychosocial development in adulthood because he felt that the developmental issues underlying each stage were never totally resolved but rather continually revisited. Thus, one is not either integrated or despairing in late life; instead, the struggle to resolve these issues begins anew with each challenge that emerges. The term optimal aging allows for the recognition that there may be different ways of aging well; that people start with different configurations of vulnerabilities and resources that affect how they age; and that this is a process that continually unfolds, depending in part on choices that individuals make.
Defining optimal aging is an extremely difficult task. The overwhelming majority of studies predicting health in late life use unidimensional outcome measures such as longevity, avoidance of particular illnesses (e.g., cardiovascular disease or depression), and self-reported health. Although these studies provide valuable information, most gerontologists feel that more complex models are needed. We all know individuals who live to advanced old age but are miserable and complaining, whereas others seem healthy and satisfied but somehow shallow and narcissistic. Still others have a zest for life and sense of purpose that may override any illnesses or disabilities they face. Thus, most models of optimal or successful aging are multidimensional.

Models of optimal aging are also teleological in that they specify a desirable outcome or telos (goal). By definition, a telos reflects the assumptions of the dominant paradigm, as well as cultural values. For example, in all of the models in the scientific literature, longevity is considered desirable, in large part because our culture values it very highly. In some villages in ancient Japan, however, it was considered disgraceful to live too long. Once a great-grandchild was born, an elder was expected to go to the mountains to die of exposure. The problem was simple—if old people consumed too many resources, the survival of future generations might be threatened. Thus, it is not surprising that some 20% of cultures in the world practiced some form of geronticide, either active or passive (Glascock, 1997). Therefore, all models reflect assumptions and values, and it is necessary to clearly specify what those assumptions are and acknowledge their limitations.

Models of Successful, Resilient, and Optimal Aging

Successful Aging

Rowe and Kahn (1998, 2016) identified three components of successful aging: avoidance of disease, maintenance of high cognitive and physical function, and an active engagement with life. The model is hierarchical—good health is thought to enable the other two. Avoiding disease is defined not only as the absence of overt disease but avoidance of other risk factors as well. Absence of disease allows for the maintenance of good cognitive and physical function. In turn, good cognitive and physical function is necessary (but not sufficient) for active engagement with life. Rowe and Kahn defined active engagement as relationships with other people and productive behavior.

However, this model has been severely criticized along a number of dimensions. Lawton (1999) argued that, as such, the model simply assumes that maintenance of middle-aged psychological, physical, and social function indicates successful aging, and ignores positive attributes that may be unique to late life. Vahia, Thompson, Depp, Allison, and Jeste (2012) suggest, at a minimum, that this model should include psychosocial resilience resources, and self-attributes of successful aging. Others have found large discrepancies between “objective” ratings and self-attributes of aging successfully (Strawbridge, Wallhagen, & Cohen) and estimates of how many older adults in the United States age successful vary widely, from a low of 12% (McLaughlin, Connell, Heeringa, Li, & Roberts 2010) to 60% (Morack, Ram, Fauth, & Gerstorf, 2013) to 90% (Montross et al., 2006). Fiocco and Yaffe (2013), particularly troubled by the heavy reliance on physical functioning, argued that it discriminated against disabled individuals, many of whom may age into late life but nonetheless have very satisfying lives. The World Health Organization (WHO, 2002) argued against reducing successful aging just to physical functioning, and focused instead on the maintenance
of autonomy and independence. WHO defined successful aging as “the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age” (2002, p. 12).

**Resilient Aging**

The construct of resilience initially grew out of child development literature, which recognized some time ago that children growing up in adverse circumstances were not necessarily doomed to repeat cycles of poverty, violence, or mental illness; actually, about two thirds of such children grow up to be reasonably successful, happy adults (Werner & Smith, 2001). Early researchers described resilience as a trait, and then later as an outcome, but most currently describe it as a process (for a review, see Masten, 2015). Masten defined resilience as “the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development” (Masten, 2015, p. 494). Luthar, Cicchetti, and Becker (2000, p. 543) defined it more simply as a “dynamic process encompassing positive adaptation within the context of significant adversity.”

Not surprisingly, aging researchers were quick to understand that aging also involves facing many adversities, such as loss of loved ones, chronic health problems, and so on, and thus the construct of resilience is also applicable. Some definitions are relatively simple. Zautra, Arewasikpom, and Davis (2010) defined resilience simply as the maintenance of positive affect in face of stress. Fry and Keyes (2010) have a broader definition that “includes facets such as recovery, plasticity, regenerative capacity, maintenance of health function (e.g., mobility) in the face of disability or disease, and access to psychosocial and technological-ecological resources that may facilitate maintenance of improvement of physical and emotional health with age.” Others have even more complex definitions (for a review, see Resnick, Gwyther, & Roberto, 2011) that stray even further from resilience as positive development in the face of adversity. These definitions often are highly complex in their bid for inclusivity, but their scope makes operationalization and thus empirical investigation difficult.

**Optimal Aging**

Friedman and Ryff (2012) argued that both hedonic and eudaimonic factors are important in maintaining positive functioning in the face of multiple comorbidities. Aldwin and Igarashi (2015) argued that successful aging focuses more on hedonic factors (e.g., happiness and well-being), but optimal aging includes a focus on eudaimonic, or meaningfulness (Ryan & Deci, 2001). Aldwin and Igarashi (2016, p. 551) argued that resilient or optimal aging was defined as “the ability to recognize, utilize, and develop or modify resources at the individual, community, and sociocultural levels in the service of three goal-related processes: maintenance of optimal functioning, given current limitations; development of a comfortable life structure; and development of a sense of purpose in life.” In this ecological model, optimal aging is not just a matter of individual characteristics or efforts, but is embedded in a contextual matrix (see Figure 14.1).

The Coping, Appraisal, Resilience, and Aging (CARA) model is a systems-based, ecological conception of the process through which optimal aging develops. Through the process of coping with stress, individuals can develop what Antonovsky (1979) termed generalized resilience resources, such as mastery. Developing a good coping repertory and generalized resilience resources leads to the development of optimal aging, that is, functional health, life satisfaction, and purpose or meaning in life. In
turn, this development is influenced by individual strengths and vulnerabilities, and resources and barriers at the family, contextual, and sociocultural levels. Note that individual resources can also help others in the immediate and larger sociocultural contexts.

The following section summarizes the major findings from this book, organized by these three dimensions of optimal aging.

**Functional Health**

The greatest threat to functional health is the development of chronic illnesses, such as cardiovascular disease, cancer, and diabetes, especially if they are not carefully managed. As reviewed extensively in this book, there are three critical elements in the prevention of chronic illnesses in late life, all of which are related to health behavior habits. These are avoidance of toxins such as cigarette smoke, good nutrition, and exercise. The absence of genetic endowment in this definition may be surprising, but it would appear that genetic defects play a role primarily in premature death from conditions such as Huntington’s disease and hypercholesterolemia—the abnormally high production of cholesterol, which often leads to heart disease in midlife. Once individuals have survived into later life, their own behavior plays a much greater role in future longevity.

Exposure to toxins accelerates the aging process. Toxins that can be regulated by individuals include smoking, excessive alcohol consumption and other substance abuse, and ultraviolet (UV) radiation. Chronic methamphetamine users and those who abuse alcohol often look two or three decades older than they really are; heavy smokers, even if they avoid early deaths due to cancer, usually have deep furrows and wrinkles in their skin and very poor cardiopulmonary function. Excessive exposure to sun also promotes cancer and wrinkles and may promote cataracts and blindness. Unfortunately, many are exposed to toxins in their work environments—including agricultural pesticides, benzenes in cleaning solutions, coal dust, and asbestos—that constitute major risk factors for disease and can accelerate aging.
As is also shown throughout this book, nutrition is extremely important. Unfortunately, it is much easier to specify what is bad nutrition than what constitutes good nutrition. Bad nutrition is simple. It is generally agreed that diets too high in fats, simple sugars, and protein, without fresh fruits or vegetables, and with too many calories promote cardiovascular disease, diabetes, and cancer. (Some are now making the argument that the fare in fast food restaurants should come with health warnings as dire as those on packs of cigarettes.) The supersizing of portions, combined with increasing inactivity, is considered to be a factor in the obesity epidemic we are currently experiencing. If the baby boomers and Generation Xers do not improve their nutrition, we could see a reversal of the recent increase in longevity, as reviewed in Chapter 2.

But what constitutes good nutrition? Should one adhere to a Mediterranean diet, low in fats and proteins but high in carbohydrates? Or follow the glycemic index, which avoids carbohydrates and starches but allows moderate levels of fat and protein as a way of regulating insulin levels? Are vitamins and mineral supplements critical or just a way of generating expensive urine, as one prominent nutrition colleague of ours claims? Clearly, too much food is harmful, but is caloric restriction a panacea or a risk?

The answer is that what constitutes good nutrition for any particular individual depends on a variety of factors including age, gender, family history of illness, body type, and a host of other factors. For example, men whose fathers and uncles died of heart disease in their 50s would do well to severely restrict fat intake. Young, active people may flourish on Mediterranean diets, but those who are menopausal and prone to weight gain may do better avoiding pasta. People who are recovering from serious illnesses or injuries may need increased protein and calcium in their diets; those with dietary allergies may need to avoid lactose, peanuts, or glutens. Individuals prone to anemia may need to eat red meat (or to use iron and zinc supplements), and so on.

Caloric restriction clearly decelerates the aging process in lab animals (especially those that are cancer prone), and obesity equally clearly accelerates aging in humans. The benefits of severe caloric restriction in humans have yet to be demonstrated, however. An average weight seems to be most protective of good health in later years, and losing weight in late life has been associated with heightened risk of mortality. Nonetheless, those with chronic illnesses such as diabetes or hypertension, and those with other risk factors for heart disease, cancer, and arthritis, need to lose weight to help prevent and/or regulate illness.

The need for supplements may also depend on age, genetic endowment, and health behavior habits. Individuals with a family history of heart disease or dementia may benefit from folic acid. Women at risk of osteoporosis may need to supplement with calcium and vitamin D. Vitamin C and other antioxidants may help smokers and perhaps asthmatics; individuals who drink alcohol frequently may benefit from vitamin B supplements, as alcohol tends to block the uptake of vitamin B12. Hormone supplements should be viewed more cautiously due to their side effects. The important thing is to recognize individual differences in nutritional requirements and act accordingly.

Finally, the significance of moderate exercise as an aging decelerator cannot be overstated. Aerobic exercise maintains or improves cardiovascular function and regulates weight. Weight-bearing exercise maintains muscle and skeletal mass, preventing (or at least delaying) osteoporosis. Exercise may also regulate endocrine and immune function (although excessive exercise may have adverse effects). Older adults
with a regular exercise program have fewer respiratory illnesses and are less likely to suffer from cognitive impairment in later life.

At an international conference, a geriatrician from Peru was heard criticizing theories of successful aging for being too culture bound. He was particularly annoyed by the advice about exercise, arguing that the poor elderly in the villages in his country cannot afford to go to expensive gyms. Yet older adults in mountainous villages get a tremendous amount of exercise simply from walking up and down the hills where they live. In fact, enhanced cardiovascular function from such activities has been suggested as one reason why individuals in some mountainous areas appear to enjoy longevity. Daily exertion as part of normal routines is more beneficial than occasional strenuous exercise.

The same factors that maintain good cardiovascular function in late life also maintain good cognitive function—that is, good diet, exercise, and avoiding toxins. In this instance, exercise includes not only physical activity but cognitive activity as well. Older adults with active mental lives such as emeritus professors, champion Go players, and even those fond of bridge and crossword puzzles are much more likely to maintain cognitive function than less active individuals (Masunaga & Horn, 2001). Although older adults who use brain-training programs can improve in their cognitive skills, there is less evidence that specific skills generalize to others, and even less that they can generalize to everyday cognition (Simons et al., 2016). Physical exercise may be more important in maintaining cognitive health than even cognitive exercise (see Chapter 7).

Obviously, there is a fair amount of overlap between avoiding disease and maintenance of physical function. Tremendous advances have been made in the management of chronic illnesses and in recovery of function after injury. Exercise programs can improve cardiopulmonary and musculoskeletal function even in old–old and very frail elders. It may take older adults a little longer, but physical therapy can improve the function of the musculoskeletal system. Similarly, physical, speech, and occupational therapy can help with the sequelae of strokes and cancer treatment. Older adults recovering from even serious illnesses can regain high levels of physical functioning. It is also important to note that all five of the major indicators of frailty—exhaustion, slow walking speed, low grip strength, low levels of physical activity, and weight loss (Sarkisian, Gruenewald, John Boscardin, & Seeman, 2008)—can be avoided, delayed, and/or restored through exercise.

### Developing a Comfortable Life Structure

Rowe and Kahn (1998) define active engagement with life as a high level of social support as well as productive work. The benefits of social support, as reviewed in Chapter 12, include helping to maintain good mental and physical health, both directly and indirectly. Marital satisfaction tends to increase in late life; as noted in Chapter 2, marriage tends to promote longevity, especially for men. Being surrounded by family and friends can protect against depression, help people adhere to medical regimens and get medical treatment when needed, improve health behavior habits, and may decrease stress hormones. Caregiving from family and friends can help to mitigate disability and allow elders to remain in the community.

In elderly couples, it is often very difficult to tell who the caregiver is and who is the care recipient. Often, spouses help each other with tasks that may be beyond the other’s capabilities. For example, one couple known to the first author lived into their 80s. The woman had difficulty seeing; the man had difficulty hearing. The husband took over household tasks that required eyesight, including much of the cooking; the
wife dutifully repeated everything anyone said to them, shouting into his ear so he could hear. It was not until after her death that he could be persuaded to get a hearing aid; they died within a year of each other. Dixon (1999, 2011) has done some wonderful work showing that dyadic memory in older couples is often quite as good as that in younger people. In other words, an older couple, especially an older married couple, working together on a memory task can perform as well as a younger person. By collaborating, they can compensate for faulty memories and can also exhibit greater everyday competence as well.

Yet social support is not always beneficial. Not only do negative interactions take a toll on physical and mental health, but sometimes even well-meaning people provide poor or bad advice. In old–old dyads, we have observed something we term dysfunctional autonomy (Gilmer & Aldwin, 2002). When one member of such a couple is released from the hospital, it is generally assumed that the spouse will provide the primary caregiving. Yet often the other member of the dyad is nearly as disabled as the “patient” and simply may not be up to rigorous caregiving duties. We found that old–old couples would often “fake good” in order to avoid closer scrutiny from medical professionals. They were often very dependent on each other and terrified of being split up by one being institutionalized, so they would deny the existence of any problems. Unfortunately, this often meant that they did not seek the help that would allow them to remain in the community, increasing their risk of institutionalization and even death. When they did seek help, it was often from senior centers rather than medical professionals. Thus, home visits to frail elders may be essential in order to determine the level of services required.

Nonetheless, being well integrated into one’s family and community clearly has beneficial impacts on psychological well-being such as less depression, physiological well-being (e.g., lower inflammatory factors and better immune functioning), and even morbidity and mortality. Recent work by Hobbs, Burke, Christakis, and Fowler (2016) has shown that even being part of an Internet community can enhance longevity. Part of that well-being may be that social integration may lead to greater purpose of meaning in life.

Purpose or Meaning in Life

In adulthood, many people find purpose or meaning in life from their primary social roles centering around family and work. In late life, most adults are no longer actively parenting (although many still stay involved very closely with their children and grandchildren), and most adults retire, if not by age 65, then by age 70. Given this absence of primary social roles, from what sources do older adults find meaning and purpose?

Older adults do a great deal of the unpaid activities that sustain families and communities and, in doing so, sustain their own lives. Caregiving is one form of productive work engaged in by elders. Grandparents often provide childcare for grandchildren and sometimes great-grandchildren. They often continue to provide support for their own children and often help other seniors as well. Older adults who can still drive may take frailer elders to medical appointments or shopping. In retirement communities, they may keep tabs on each other in very simple ways. A common practice is a prearranged signal, such as raising the kitchen blinds in the morning. If someone has not opened the blinds by the requisite time, a neighbor will go and make sure that person has not fallen or does not need assistance in some way. Phone circles are also common; if someone does not call at a certain time, a member of the circle will go over to find out why.
Older adults also engage in organized volunteer work. They are often elders and deacons in churches; many work in food banks, orphanages, libraries, and hospitals. One older group arranged to be foster grandparents for babies with AIDS born in local hospitals. They set up a schedule of people who would simply hold and rock the infants, many of whom had been abandoned by their mothers. The Senior gleaners in the Sacramento area is a good example of a productive, charitable organization run by seniors. About 30 years ago, a group of 12 senior citizens noticed that farmers would often leave behind some crops after harvesting or sometimes would not harvest a particular crop at all if the prices were too low. They decided to approach the farmers and ask whether they could glean their fields and donate the produce to food banks. They now have trucks, their own printing press, and a few thousand volunteers, all over the age of 55. They provide thousands of meals each month through local food banks.

In rural areas, elders often are the lifeblood of the community. Through a combination of out-migration of young people going to cities for jobs and in-migration of retirees, many rural communities have disproportionate numbers of older people. The willingness of the elderly to maintain small businesses such as hardware or grocery stores, gas stations, and post offices allows the town to avoid their closure altogether (Norris-Baker & Scheidt, 1994). Thus, elders contribute not only to their families but to the larger community as well. By doing so, they maintain their own well-being.

Gruenewald, Karlamangla, Greendale, Singer, and Seeman (2009) found that older adults with persistent or declining feelings of usefulness were more likely to die during a 3-year follow-up, controlling for a variety of sociodemographic factors. This suggests that older adults who stay engaged and who feel useful are likely to live longer and may help to explain why some studies show that caregiving is associated with better longevity (see Chapter 12).

The notion of what is productive work in late life should not be restricted to paid or even volunteer positions. As discussed later in this chapter, the task of late life may be inner development, whether this is Erikson’s life review leading to ego integrity (1950; Erikson, Erikson, & Kivnick, 1986) or Tornstam’s (1994) notion of gerotranscendence. Most older adults engage in reminiscence, which is a way of understanding or developing meaning about one’s life, which may promote successful adaptation in late life (Pinquart & Forstmeier, 2012). Many adults in late life can once more be in the process of identity formation—if not a parent or a worker, then who am I? Reminiscence may be a way of maintaining self-continuity and meaning in life. Many also work through prior problematic situations, developing acceptance and reconciliation for previously unresolved problems, and perhaps regaining a sense of mastery by recalling how one coped with a particularly difficult problem (Bohlmeijer, Roemer, Cuijpers, & Smit, 2007). The first author was interviewing World War II soldiers in Britain about their wartime experiences, and was cautioned not to take people’s accounts too seriously—apparently exaggerating one’s feats on the battlefield was very common!

Dealing with current problems may also provide meaning. Most older adults will be caregivers at some point in their lives, whether to parents, spouses, or siblings. Surprisingly, health conditions may be one source of active problem-solving efforts. Far from being an uncontrollable stress, Aldwin (1991) found that older adults spent a great deal of time and effort in managing chronic illnesses. Thus, the challenge of coping with problems may give individuals a sense of purpose or meaning.

How one copes, though, may be crucial. Vaillant (2002) argued that the use of mature defenses including altruism, humor, suppression, and sublimation was an important component of successful aging (see Chapter 10). Nearly half (48%) of the men classified
as “happy-well” at 75 used mature defenses at age 50, as compared with 4% of the men who were classified as “sad-sick” at age 75. Vaillant described mature defenses not only as coping strategies but also as virtues. These strategies include altruism (concern for others), sublimation (also called transformational coping), suppression (patience), and humor (either self-deprecating or seeing the funny side of things).

In many ways, Vaillant’s (2002) conceptualization is very similar to what Aldwin (2007) called transformational coping—the ability to perceive benefit in stressful situations and to resolve them in a manner that maximizes whatever gain can be derived from the problem and that facilitates the growth of positive characteristics such as empathy, altruism, and an increase in mastery. Further, a recent study by Kahana, Kelley-Moore, and Kahana (2012) found that older adults who use proactive coping are more likely to “bounce back” from stressors, and thus are more likely to maintain successful aging.

Physical decline comes to all, yet Rowe and Kahn, as well as Vaillant, cited examples of extraordinary individuals who demonstrate major accomplishments despite disabilities, such as Franklin Delano Roosevelt, John F. Kennedy, Stephen Hawking, and Mother Teresa. The critical question is, what is qualitatively different about optimal aging in late life that distinguishes it from good functioning in midlife? Vaillant’s (2002) engaging clinical descriptions of those he considered to be successful agers provide a hint. Clearly, many of the people in his study demonstrated what can only be called wisdom. Vaillant concluded that wisdom could be equated with the use of mature defenses. Aldwin (2007) also linked transformational coping with wisdom but argued that this is just one path toward wisdom.

WISDOM AND OPTIMAL AGING

The past 20 years have seen a marked increase in the study of wisdom (Ardelt, 2011; Staudinger & Glück, 2011). The most common definition focuses on the cognitive aspects. Baltes and Smith (1990), for example, focus on what they call “fundamental life pragmatics,” which include a rich factual-knowledge base and the ability to think contextually and relativistically. When giving advice, for example, the wise person is able to listen to the nuances of a problem and help in thinking through the ramifications of any course of action rather than providing absolutist maxims. McKee and Barber (1999) focused on perspicacity (the ability to see through illusions), whereas Sternberg (1990) equated wisdom with reasoning ability and perspicacity.

The growing consensus, though, is that wisdom is more than just cognition but may include other dimensions as well (Baltes & Staudinger, 2000; Sternberg, 1998). For example, Labouvie-Vief (1990) defined wisdom as encompassing both cognitive and emotional complexity. Birren and Fisher (1990) identify three aspects: cognitive, affective, and conative, which refer to motivation. Orwoll and Perlmutter (1990) suggest a personological approach that encompasses the integration of cognition with affect, affiliation, and social concerns. Wisdom thus reflects an advanced development of personality. Holliday and Chandler (1986) asked individuals to describe people they thought were wise. Frequent descriptors included kindness, compassion, and fairness—suggesting that the personality characteristics of wise individuals may be as salient as their cognitive characteristics.

In Ardelt’s conceptualization, wisdom is a multidimensional construct, which includes three domains: cognition, affect, and reflection. The cognitive component can be loosely defined as perspicacity or insightfulness, which is based on both
knowledge and higher order cognitive processes. The affective aspects of wisdom may be best thought of in terms of compassion and positive feelings toward others. Reflection refers to the ability to take multiple perspectives and involves self-insight and self-awareness.

Glück and Bluck (2013) also developed a multidimensional theory of wisdom, called MORE. In this model, M stands for mastery, an essential component of wisdom; O stands for openness to experience, necessary for exposing oneself to experiences that allows one to take perspective on situations; R stands for reflection, also a necessary component of wisdom; and E stands for ethical concerns. Morality and ethics are the *sine qua non* of wisdom, as competence and knowledge of how the world works must be tempered by an acute understanding of ethical dilemmas one faces and choices that one must make.

Curnow (1999) identified four aspects of wisdom: self-knowledge, detachment, integration, and transcendence. Levenson and Aldwin (2013) proposed that these dimensions can be seen in terms of a developmental system. Self-knowledge involves understanding the positive and negative aspects of one’s self and includes bringing what is unconscious into awareness. Detachment, or rather, nonattachment, is not a lack of concern but rather reflects the ability to step back from a situation and not become “stuck” on any particular object or person. Thus, it requires an understanding of one’s self and (unconscious) biases and preferences. Integration refers to the harmonious synthesis of various aspects of the self, which also requires self-knowledge and nonattachment. Self-transcendence refers to the ability to put one’s own needs and preferences in perspective and to recognize that, at times, the needs of others may transcend one’s own needs. It requires the presence of the other three aspects of wisdom.

These four aspects are not separate but rather support and inform each other in the wise person. Thus, the ability to be calm and detached can facilitate both perspicacity and moral behavior. Similarly, adhering to a strong moral core can promote calmness and detachment. Thus, wisdom cannot be defined only in terms of cognition, affect, and reflection but must be seen as the integration of these domains, combined with compassion and moral development (Levenson, 2009).

Wisdom is not necessarily a stable personality characteristic, however, but may be contextual depending on the domain of knowledge. Also, it may be culturally specific in that different cultures may emphasize one or more domains and may vary in their construct of character. However, aspects of wisdom transcend cultural bounds either because there are core constructs within wisdom (e.g., insightfulness, generosity) or because wise people can detach from cultural constraints and assumptions.

Finally, wisdom has an action component that is not limited to advice giving. Rather, wise action is that which is focused on long-term goals rather than immediate gain or gratification. Furthermore, wise action is not self-serving or self-promoting but is based on a recognition of what would be most beneficial for the community, whether this consists of families, social organizations, humankind, or the ecosphere as a whole. Given the inherent ambiguities in situations and the focus on long-term or higher order goals, whether an action can be considered wise may sometimes only be determined long after the fact.

Levenson, Aldwin, and Cupertino (2001) argued that there is a much simpler process at the foundation of these changes, reflecting a more fundamental shift in the self, such as that proposed by Tornstam (1994) in his theory of “gerotranscendence.” Tornstam observed that aging can be associated with a metatheoretical shift toward “a picture of the world that a Zen Buddhist would probably have” (p. 207). In direct contrast to the social engagement models reviewed earlier, he noted that gerontologists
misinterpret older persons’ lack of interest in social busyness as a sign of patholog-
cial disengagement rather than an increased propensity for contemplation. Tornstam
also distinguished gerotranscendence from Erikson’s (1950) ego integrity. The latter
is concerned with integrating one’s life retrospectively and can really be achieved
only near life’s end. Gerotranscendence involves a forward-looking redefinition of
reality that treats one’s development as a work still in progress. It is a new opening
rather than a closing.
G erotranscendence does not necessarily involve withdrawal from the world, but
it does imply a certain level of detachment (see also Levenson & Aldwin, 2013). Pre-
liminary empirical studies suggest that elders high in gerotranscendence use more
problem-focused coping. With increasing gerotranscendence, one’s identity and
life satisfaction are less dependent on social activity, yet satisfaction with social activity
also increases. In other words, the source of one’s self and one’s satisfaction is less
dependent on external, material objects. Vaillant (2002) also noted something simi-
lar in how individuals in late life cope with disability in a way that allows them to
maintain their human dignity. Some individuals demonstrate a Buddhist-like accep-
tance of their disability, a characteristic also noted by Snowdon (2001).

As mentioned earlier, Levenson et al. (2001) argued that transcendence of self is the
sine qua non of adult development. Most theories characterize development in terms
of gains—the ego becomes more cognitively and emotionally complex (Labouvie-
Vief, 1990; Loewinger, 1977); one achieves integrity (Erikson, 1950) or develops the self
through goals (Brandtsätter, 1999). Brandtsätter, Rothermund, Kranz, and Kühn
(2010) have now adopted the self-transcendence perspective in their discussion of
decentering.
The problem with this perspective in late life is that there are arguably more losses
than gains. Baltes (1987) characterizes development as a balance of losses and gains,
but the implication is that gains compensate for losses. Loss can also be an integral
part of development, however. Just as brain development in early childhood neces-
sitates pruning of neurons, losses in adulthood allow for the transcendence of self
(Levenson et al., 2001).
People often define themselves in terms of their social roles. But with age, those
social roles tend to be lost. Who are we if we are no longer our work role, our parent-
ing role, or our spousal role? Certainly, our appearance changes—people who identify
themselves as having youthful bodies may not be able to recognize the “stranger” in
the mirror. Losses such as bereavement can present opportunities for self-observation
and self-knowledge (Aldwin, 2007; Aldwin & Levenson, 2001). Lieberman (1996) stud-
ied widows and widowers and found that people often grew and developed in new
ways after the death of a spouse. This increased self-knowledge can form the basis for
coping strategies that promote decreases in attachment and self-deception. In this
context, loss of self should not be confused with trauma-induced depersonalization;
rather, it refers to transcending the ego through such practices as nonattachment,
patience, and self-knowledge.
Vaillant (2002, p. 250) asked the men in the Harvard study to define wisdom. Their
answers were quite instructive and included a number of positive characteristics,
including empathy and patience. However, it also included taking perspective,
appreciating irony, and the tolerance of ambiguity. Again, some seemed like self-
transcendence: self-awareness without self-absorption; listening to others, and an
awareness of the interconnectedness of all things.
Vaillant (2002) observed that wisdom is the opposite of narcissism, which is char-
acterized by self-absorption and attachment to desires. The losses and problems that
one must cope with in late life can result in an increase in self-absorption and attachment, but that is a recipe for despair and social isolation in late life. Sad examples include the aging diva who cannot accept the loss of her looks or the widow who sees only her own grief and cannot attend to that of her children. Coping with loss can provide a sense of perspective, allowing one to be more tolerant of one’s own and others’ shortcomings. One can develop a sense of humility and willingness to listen and learn from others. For example, Vaillant found that his successful agers were able to detail what they had learned from their children but, apparently, it had never occurred to the sad-sick that this was even possible. Decreasing egocentricity also leads to increasing compassion and underlies the emotional balance thought by both Sternberg (1998) and Baltes and Staudinger (2000) to be essential to wisdom.

Perhaps most important, loss or transcendence of self allows one an intuitive grasp of the interconnectedness of all things. Narcissists believe that they are the focus of everything. In contrast, transcending the self loosens and blurs ego boundaries, which can lead to a recognition of interconnectedness and a lack of focus on the self. Understanding this interconnectedness is the foundation for empathy and fairness and allows for a humbling perspective on one’s own problems. Paradoxically, this loss of self may allow for productive activity in late life. Narcissistic attachment to previous work roles may not allow a switch to new ones that may be less prestigious in retirement. A focus on one’s own problems may not allow the more satisfying work of doing for others. Snowdon (2001) provided a humbling example from his nun study. He and a friend were visiting a convent. A number of sisters were happily putting together stuffed animals for a holiday crafts sale. One nun was so badly disabled from osteoporosis that she was in a wheelchair, bent nearly double. Nonetheless, she was stuffing cotton balls into a toy. Snowdon was stunned that this nun was functioning at all, but his friend simply walked over to her, and knelt down so she could be at the same eye level with the nun, and began conversing with her. The nun made a funny joke which had the whole room laughing. Snowdon recognized that he shouldn’t define someone by his/her disability. He recognized that the nuns’ deep spirituality was a key component not only of their extraordinary longevity but also of their positive adaptation to extreme old age.

On a final note, many studies have been done examining the relationship between age and wisdom. Although there is some indication of increases from adolescence to young adulthood, nearly all studies of adults find little or no association between age and wisdom (Ardelt, 2011), although some components of wisdom, such as reflective understanding and emotional empathy, may be higher in older adults (Takahashi & Overton, 2002). Glück and Bluck (2013) argue that wisdom does not necessarily increase with age, but the probability of experiencing events, usually stressful ones, that can increase the probability of wisdom does increase with age.

Thus, the development of wisdom in adulthood may not be normative. That is, simply growing old is no guarantee of growing wise. However, most studies of wisdom are cross-sectional, and thus confound age with cohort and period effects (see Chapter 4). One longitudinal study found that practical wisdom did increase from young adulthood to midlife among a sample of female college alumni (Wink & Helson, 1997). One caveat—a cross-sectional study did find that older college-educated adults were wiser than younger adults, although the same was not true for adults with less education (Ardelt, 2010). A handful of studies have found that some characteristics in earlier life do predict the development of wisdom in later life. Ardelt’s review found that socioeconomic status, educational status, and openness to experience were predictive of higher levels of wisdom in later life. In a 12-year prospective
study, Jennings, Aldwin, Levenson, Spiro, and Mrocezk (2006) found that combat exposure did not predict the development of wisdom but positive appraisals of military experience as well as positive coping strategies did.

Further, there is some indication that wisdom is related to well-being in later life. However, the cognitive components do not correlate very well with life satisfaction or happiness, but the compassionate and self-transcendent facets do, in part because these may also be associated with high levels of spirituality (Ardelt, 2011). Several recent studies have supported a relationship between religiosity, especially intrinsic religiosity, and well-being later in life.

RELIGIOUSNESS, SPIRITUALITY, AND OPTIMAL AGING

There is a complex relationship between well-being and religiosity, which includes religious beliefs and practices. Koenig, Smiley, and Gonzales (1988) argued that participation in religious practices, especially group practices, is negatively related to mental illness, including depression. Various types of religious practices may have different relations with health, however. In a study of religiosity, depression, social support, and health in a large sample of African American and White Southerners, Koenig et al. (1997) found that religious attendance was negatively related to depression; however, listening to or watching religious radio or television programs was positively related to depression, whereas private prayer and Bible reading were apparently unrelated. These relationships appeared to be independent of social support and physical health as well as age, gender, and race. Other studies, though, have shown that prayer tends to alleviate depressive symptoms caused by stress (Veroff, Douvan, & Kulka, 1981). People who are higher in intrinsic religiosity recover from depression more quickly (Koenig, George, & Peterson, 1998).

Kennedy, Kelman, Thomas, and Chen (1996) found that religious preference was also differentially associated with depressive symptoms. At baseline, elderly Catholics were less depressed than their elderly Jewish counterparts, and the latter were more likely to become depressed over time. Interestingly, though, religious attendees were less likely to be depressed in both religious groups, although this reached significance only among Catholics. Again, this was independent of health, disability, and social support. Among women, traditional gender roles and religious fundamentalism are significant risk factors for depression (Bridges & Spilka, 1992). In summary, religiosity in general may have a protective effect against depression, but some forms of religiosity may be associated with poorer mental health.

But what of positive mental health? The strongest relationship between religious behaviors and happiness is seen with the frequency of prayer, especially meditative prayer (Poloma & Pendleton, 1991). The intensity of religious experiences is also associated with happiness, although transcendental experiences showed a small negative relationship (Hills & Argyle, 1998). Interestingly, Ellison (1991) found that neither religious attendance nor a measure of divine interaction related to happiness, but existential certainty was significantly and positively related to happiness. As Argyle (2000) pointed out, social support in a religious context can include love as well as shared beliefs and emotions. Thus, the effect of religiosity on well-being may be mediated by social support (Moberg & Taves, 1965). In addition, prayer is strongly associated with forgiveness, which may also increase happiness (see Poloma & Gallup, 1991). Hood, Spilka, Hunsberger, and Gorsuch (1996) stated, “In most instances . . . faith buttresses people’s sense of control and self-esteem, offers meanings that oppose
anxiety, provides hope, sanctions socially facilitating behavior, enhances personal well-being, and promotes social integration” (pp. 436–437).

The relationship between religiosity and physical health is also complex. As Levin (1994) pointed out, a number of confounding factors should be taken into account. For example, religious service attendance is often correlated with good health in late life, but it may be that individuals who are well enough to travel outside of their homes may also be more likely to go to church, temple, or mosque. Many religions have restrictions that can promote good health behaviors such as the Seventh Day Adventists’ ban on smoking, alcohol, and eating meat. As noted earlier, participation in organized religion also provides a source of social support. Nonetheless, Levin (1994) found that religion had an effect on morbidity and mortality, independent of preexisting health, health behavior habits, and social support.

Some of the effects of religiosity on physical health may be mediated by affect and mental health. Strong religious belief was a predictor of positive affect among caregivers under chronic stress (Rabbins, Fitting, Eastham, & Fetting, 1990). Braan, Beekman, Deeg, Smit, and Tilburg (1997) also found that religiosity may function as a stress buffer, as it protects caregivers from depression in the presence of chronic stress or strain. Chronicity and incidence of depression were higher in the nonreligious groups, particularly those in poorer health and under greater stress. There may be direct effects as well. Hixson, Gruchow, and Morgan (1998) reported that religiosity has a direct effect on blood pressure not mediated by change in health behaviors and attitudes. Religiosity may be particularly protective for lower socioeconomic groups (Ljungquist & Sundstrom, 1996).

However, Park (2008), in a review of religion and health in older populations, cautioned that this relationship is very complex. Not all studies find significant results, in part because studies vary widely in exactly what they are assessing, and because people often turn to prayer and religion in very difficult circumstances when other coping strategies have not worked (Masters & Spielmans, 2007). There may be many mediators of the pathways between religion and health outcomes, which include better health behavior habits, feelings of connectedness to congregations, and self-worth (Krause, 2012). As mentioned earlier, the type of religiousness may be important. Intrinsic religiousness may be related to lower depression in the elderly and extrinsic religiousness to higher levels (Sun et al., 2012). Similarly, Masters, Hill, Kircher, Benson, and Fallon (2004) found that lower levels of cardiovascular reactivity were associated with intrinsic but not extrinsic religiousness. In part, the relationship between intrinsic religiousness and health may be mediated by compassion (Steffen & Masters, 2005).

Despite its many positive qualities, religiosity may not be an absolute requirement for optimal aging. Many of the most successful agers in Vaillant’s (2002) study found religion to be irrelevant to their lives. There is a difference between religiosity and spirituality, with the former more closely associated with organized religion. In contrast, spirituality is more intrinsic and tied to being centered, as well as to the experience of the numinous. Vaillant found that the most spiritual people in his study were often those who had had very difficult childhoods; their religious experiences allowed them contentment and a sense of purpose. These people were not necessarily among the most successful agers, however. This is not surprising, given that Vaillant’s definition of successful aging has a major focus on social activities and extraversion; those given to more introverted activities may not be identified in this model as successful agers.

If wisdom is a *sine qua non* for successful aging, one must ask whether religiosity is necessary for the development of wisdom. The answer is, not necessarily. As noted
earlier, there are different types of religious experiences and practices. A famous quote by Muhammad has him saying, “My back has been broken by pious fools.” If Tornstam (1994) is correct, spirituality may increase simply as a process of aging. With age, people may turn inward and focus on larger meanings, especially as they face death.

ARS MORIENDI—THE ART OF DYING

No book on health, illness, and optimal aging would be complete without discussion of death and dying. Certainly, death is a physiological process, but it is a psychological and spiritual process as well. Ars moriendi is a term dating from the Middle Ages, when it was understood that “how a patient dies will, in any case, reflect at least in part how that patient has lived a life and what kind of character is brought to the dying” (Callahan, 1997, p. 1035). A peaceful death is an ideal to which many people aspire, but it may be difficult to achieve. Although some might prefer to die “with their boots on,” as it were, certainly no one would desire a death with intractable pain such as that described in Tolstoy’s (1900) The Death of Ivan Ilych. How do people die in late life?

More than 20 years ago, Nuland (1994) wrote a fascinating book called How We Die: Reflections on Life’s Final Chapter. Every death requires a death certificate, and that certificate lists the primary, secondary, and tertiary causes of death. As noted in Chapter 2, the primary cause of death in late life is heart disease and the second is cancer. But as Nuland pointed out, assigning causes of death in very late life is often quite arbitrary because so often there is multiple organ system failure. Although cardiac arrest may be the official cause of death, in actuality the elderly person may have been suffering from pneumonia, emphysema, and kidney failure secondary to diabetes. The heart always stops with death, as do respiration, circulation, and kidney function—to say nothing of brain function. Thus, assigning the cause of death in very late life can be somewhat arbitrary. Cessation of brain function is generally the absolute marker of death because cardiopulmonary function can be sustained using a ventilator. As Nuland said, “The very old do not succumb to disease—they implode their way into eternity” (p. 83).

Deaths in midlife, especially those due to myocardial infarction, tend to be rapid. In late life, however, death is much more likely to be a slow and gradual process, often with chronic illnesses and functional decline. Although young people may prefer death to be sudden and quick, or at best, to die in their sleep, old people may express gratitude for the time left to them, so that they can prepare financially, emotionally, and spiritually. A local hospice director gave an interesting anecdote in one of our classes. Before undergoing hospice training, most volunteers say they want a quick and relatively painless death such as a sudden heart attack or a fatal car accident. After training, though, they expressed a preference for slower deaths, such as that due to cancer, precisely so they will have time to finish tasks, mend relationships, if necessary, and savor time with their loved ones.

In prior times, even until the early 20th century, death often came quickly and took place at home. For example, women often died in childbirth, children of smallpox, or farmers of tetanus from infected wounds. Family members cared for those who were dying. By the middle of the 20th century, however, nearly 50% of deaths occurred in hospitals, and family and friends no longer provided direct care (Gold, 2011). Even today, most people in the United States die in hospitals but prefer to die at home, particularly if faced with a life-ending illness (see Pivodic et al., 2016). Given the mismatch between a preference for dying at home and the continued high rates of
hospital deaths, the location of death has been proposed as a proxy measure of the quality of end-of-life care (Teno et al., 2013). It must be noted, however, that not everyone prefers home-based, end-of-life care. For example, just over half of older Blacks (61%) and Hispanics (55%) surveyed said they would ask their physicians to do everything possible to save their lives if they had an incurable disease and were experiencing a great deal of pain (Pew Research Center, 2013)—a request that would likely result in admission to an acute care hospital. Yet, in those same circumstances, more than half of older White adults (65%) said they would ask to stop treatments. The importance of an individualized approach to understanding a patient’s preferences for end-of-life care cannot be overstated.

To honor a person’s end-of-life care preferences is one component of “good death” (Meier et al., 2016). In a review of 36 studies of patients older than 60 years of age, their families, and health care providers (HCP), most considered a “good death” to respecting preferences for a particular dying process and freedom from pain and suffering (Meier et al., 2016). Pain control and patient comfort were identified as key to a “good death” for HCPs, and family members viewed quality of life and the patient’s dignity as important. Taken together, these viewpoints of what can help to achieve a good death are consistent with hospice and palliative care philosophies—to die pain-free and with dignity (National Hospice and Palliative Care Organization, 2016). The work of Dame Cecily Saunders in the United Kingdom and Florence Wald in the United States brought hospices and palliative care programs to the forefront (Dugan, 2004). Hospice and palliative care have had a positive impact on the way in which people die although barriers continue to exist in integrating this approach into care (Aldridge et al., 2016). Adequate pain management is still problematic for some physicians who fear to give “addicting” doses of morphine to terminally ill patients (Emanuel et al., 2000), but substantial pain relief can be achieved for most people. For example, one study of pain relief in hospice care found that nearly all patients were free of pain; only 9% said the pain was troublesome and annoying (Dobratz, 2001).

Changes in Medicare regulations regarding hospice funding have made it possible for more people to die at their homes, and with less distress (Chun & Morrison, 2009). In a random sample of Medicare patients 65 years and older, there was a decrease in deaths in hospital from 32.6% in 2000 to 24.6% in 2009, indicating that more individuals were dying at home (Teno et al., 2013). Hospice use also increased from 21.6% to 42.2%, during the same time period, although 28.4% had used hospice for 3 days or less in 2009. However, in spite of these promising trends, decedents also experienced an increase in intensive care unit (ICU) stays during the last month of life, an increase in hospitalization during the last 90 days of life, and an increase in the rate of transitions suggesting continued use of intensive and aggressive medical care at the end of life (Teno et al., 2013). Studies show that feeding tubes and intravenous fluid therapy in the last hours of life can cause undue distress to the person, for example, ascites (fluid in the peritoneal cavity), excess secretions, and nausea (Chun & Morrison, 2009). It can be distressing for family and friends to watch their loved one die, and some report they are disappointed at how the death took place (Kafetz, 2002). Dying is not always a peaceful process. Elderly people commonly have multiple chronic problems, which create distress. Alleviating one problem, such as giving medication for pain, can cause another, such as cognitive confusion. Friends and relatives are frequently not prepared for the delirium, anxiety, excess secretions, or “death rattle” that can take place with dying. Conversations about what can happen at death help toward decreasing this distress for both the dying and their relatives.
Fundamentally, a good death requires dialogue about death and dying. Elisabeth Kübler-Ross, a Swedish-trained psychiatrist and humanitarian, is best known for her efforts to open the conversation about death and dying (1969). As a young woman, she moved to the United States to work in a hospital in New York City. She was horrified to see dying patients being avoided and left to die on their own; doctors and nurses were caring primarily for those who could get well. During this era, doctors and nurses were commonly told not to talk about death with their terminally ill patients—lest doing so would deprive them of hope. Kübler-Ross realized that people needed to talk about their dying and the death process and to be asked about and counseled for their fears (Noble, 2004). But barriers to these conversations continue to exist and may reflect “America’s uneasy relationship with death and dying through the twentieth century and up to today” (Samuel, 2013, p. ix). As an example, only 37% of Americans say they have give a great deal of thought to issues of their end-of-life care despite the fact the nearly half of the general public has had an indirect experience with death and dying issues because of a friend or relative who faced a terminal illness (Pew Research Center, 2013). Samuel (2013) suggested that death and dying are an “un-American experience” (p. x), and perhaps an example of this bias is evidenced in policy issues such as the inability for physicians to be reimbursed (until just recently in 2016) for consultations with Medicare beneficiaries or a surrogate about advance care planning (ACP).

ACP alone does not guarantee a “good death” but it does increase a patient’s involvement in decision making that can impact the end-of-life experience. ACP includes formal advanced directives such as living wills and durable power of attorney for health care, as well as informal conversations with family and friends about health care preferences (see Carr & Luth, 2016). Living wills are a legal document that specify desired treatments in advance of life-threatening illness or accident, and are intended to allow a patient to let his or her life-sustaining preferences be known if, in the future, he or she cannot speak for himself or herself (Ditto et al., 2003). Living wills have been widely encouraged; however, critics have stated that living wills do not easily translate into actionable medical treatment because the statements may be too vague, not relevant to the current situation, or the document itself is not available to health care professionals when treatment decisions are required (Fagerlin & Schneider, 2004). The use of a durable power of attorney for health care (DPAHC), another type of ACP, may be a more effective way to have end-of-life care preferences honored, in part because asking family members to make decisions for an incompetent patient is similar to the current medical practice (Fagerlin & Schneider, 2004). DPAHCs are used to identify surrogates to make health care decisions on the patients’ behalf if they are unable to do so, consequently, when paired with conversations, that knowledge could be applied to a future, unknowable situation. As mentioned earlier, dialogue with others is key to articulating medical care preferences in order for others to advocate for care that is consistent with the patient’s desires.

In response to the limitations of existing advanced directives, the physician’s order for life-sustaining treatment (POLST) was developed in Oregon in 1991 and first used in 1995 (see National POLST Paradigm, 2017). A physician and his or her frail or terminally ill patient complete the standardized POLST through conversations and mutual decision making about values, goals of care, diagnosis, prognosis, and care options. The resulting document is a portable, standing medical order that can be used during a critical medical event and is recognized by all health care workers including emergency medical personnel. The POLST remains with the individual in their various settings (e.g., home, adult day service, home of relatives) and is honored.
at every level of the health care system. The key distinctions between a POLST and a living will is that the POLST translates a patient’s preferences into a medical order that specifies treatment decisions common to frail or very ill patients such as cardio-pulmonary resuscitation and the level of intervention (i.e., comfort only, limited treatment, full treatment). The POLST is only appropriate for patients whose physicians “would not be surprised” if they died in the next year, in contrast to a living will’s unrestricted time period. A designated surrogate cannot be named in a POLST, consequently, a DPAHC is also recommended. Currently, the POLST, on some level of maturity, is available in 42 states (see National POLST Paradigm, 2017, for state status).

The ultimate in seeking personal autonomy at the end of life is the choice to end one’s life. As described earlier, honoring an individual’s preferences with the dying process is a frequently mentioned condition of a good death. But decisions about how to die have become more complex in today’s medical context where advances in medical technology have made it less clear when to stop treatment, even when death is imminent—there is often something else that could be done (Campbell, 2017). Refusing or discontinuing treatment, suicide, physician-prescribed medication to hasten death, and physician-administered euthanasia have become potential choices for patients. Each of these actions involves complex ethical, moral, religious, and professional arguments that go beyond the scope of this chapter (see Campbell, 2017) but are important to consider since the successes of medicine have made dying more difficult (Gawande, 2014). According to a 2013 Pew Research Center survey, 62% of American adults felt that a person has the “moral right to commit suicide” if they are in great pain with no hope of improvement (Pew Research Center, 2013). Interestingly, although a majority (56%) of those surveyed believed in the “moral right” to commit suicide if diagnosed with an incurable disease, only 47% supported laws allowing physician-assisted suicide (physician-prescribed medications to hasten death) for the terminally ill (Pew Research Center, 2013).

Recent cases, such as that of Brittany Maynard, have brought physician-assisted suicide, in particular, to the forefront. In 2014, Maynard, a 27-year old woman with a terminal brain tumor, chose to move to Oregon after failed treatment in order to utilize the state’s Death With Dignity Act (DWDA). Millions followed her journey through YouTube videos, and Maynard became the public face of the physician-assisted suicide debate. The Oregon DWDA was initially approved as a ballot measure in 1994 and allows Oregon residents, 18 years old and older, to obtain a prescription for lethal medications from their physicians for self-administration (Oregon Public Health Division, 2016a). In 2016, five states (Oregon, Washington, California, Colorado, and Vermont) have aid-in-dying laws, and 17 states have introduced similar bills for 2017 (Death With Dignity National Center, 2017).

The patient requirements for Oregon’s DWDA include: (a) two verbal requests to their physician, separated by 15 days; (b) a written request to their physician signed in the presence of two witnesses; (c) prescribing and consulting physicians must confirm the terminal diagnosis and prognosis (i.e., death within 6 months); (d) prescribing and consulting physicians must agree that the patient is capable; and (e) the patient’s judgment must be unimpaired by a psychiatric or psychological disorder (Oregon Public Health Division, 2016a). Since DWDA was enacted in 1997, 1,545 patients have received prescriptions and 991 patients have ingested and died from the medication (Oregon Public Health Division, 2016b). During 2015, of the 132 DWDA deaths, the median age was 73 years old. Most were White, well educated, had cancer, and died at home. The “decreasing ability to participate in activities that made life enjoyable,” the “loss of autonomy,” and the “loss of dignity” were the three most reported end-of-life
concerns (Oregon Public Health Division, 2016b). These end-of-life losses can also be viewed as a statement on how these patients had lived: with joy, self-determination, and dignity. Thus, we have returned to concept of *ars moriendi* and the idea that how a person dies, will to some measure, reflect how they have approached life.

How do people from other cultures consider their lives as they near death? Engle, Fox-Hill, and Graney (1998) studied the interval between living and dying in a small multiethnic sample of nursing home residents who knew that death was imminent. This is obviously a difficult time; however, most of the residents interviewed focused more on the quality of living rather than the dying process per se. Most were appreciative of respectful and prompt care, valued caring for others, and welcomed religious activities.

As difficult as it may be for younger people to understand, death may be welcome in very late life. People who have outlived spouses, friends, and even children may feel that it is “their time to go.” They may be exhausted from fighting the infirmities of chronic disease. It is particularly sad when elders feel that they have lived too long. Seale and Addington-Hall (1995) studied the desirability of timing of death. They found that sometimes the old–old, especially women, felt that they had lived “past their time.” Sometimes, such people express concerns that “God has forgotten them.”

Most cultures have some concept of what constitutes a good death. In traditional Irish culture, for example, one often chooses one’s time to die (Scheper-Hughes, 1983). Elders who feel the time is right will announce this to their families, take to their beds, and stop eating and drinking. Family and friends come and visit; old quarrels are resolved, debts paid, and farewells taken. In many ways, this is a living wake, with plentiful libations in true Irish tradition. Celebrating the end of life with friends is certainly a good death.

Some Buddhist monks believe that one should die sitting up and meditating. This allows for a smooth transition to the *bardo*—the state after death in which one makes critical decisions that affect whether and how one is reborn (Rinpoche, 1996). Thus, meditation toward the end of life focuses on how to maintain conscious awareness through the death experience.

For some, witnessing the death of others can be a deeply spiritual experience. Collett (1996) described his experience at the Zen hospice in San Francisco, which often takes care of AIDS patients, the indigent, and the elderly. As a new hospice worker, he was, like most of us, afraid to witness the death of others. But he found that this was often a moving experience, and he was grateful that these people would share their deaths with him. Chah (1993) described death as “going home.” In our experience, elders who believe in an afterlife often speak of rejoining their loved ones, which helps to mitigate their fear of death. Even those without such beliefs, however, may feel that they are old enough, that they have done what they wanted to do, and therefore accepted their imminent deaths. Truly, wisdom helps us face death.

**SUMMARY**

The maintenance of good health is clearly a desirable state, but it is not the most critical component of optimal aging. Absent sudden death, we will all develop chronic illnesses, and a substantial proportion of us will become disabled. Theories of successful aging should include positive adaptation in the face of disability as the key element. Developing the equanimity to face the daunting adversity of disability in late life and the development of wisdom are the central components of optimal aging.
References


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