

Introduction

Some Traits about This Handbook of Successful Aging

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The study of aging is considered to be a multidisciplinary scientific subject because it involves the concurrence of three broad scientific fields: biomedicine, psychology, and socio-demography (among others). Individual aging is a non-linear process expressed in a given contextual environment, the long process of aging being the product of multiple transactions between the organism, his/her individual behaviors, and environmental conditions. Thus, a problematic issue is that across life, when we study a cross-sectional marker of aging (i.e., age) it is particularly difficult to disentangle the bio-psycho-socio-environmental bases of particular aging condition; in other words, these disciplines are transversal to the life-long process of aging (Baars, 2010).

Furthermore, aging is necessarily subject to influences which are contextually multi-level (e.g., from family to society as a whole) and multi-systemic, that is, expressed from micro (e.g., the cell) to macro level (e.g., the most abstract human expression). In other words, at the individual level it is possible to examine complex behaviors from the cell to the organism, while at a contextual level, we can investigate from the social group to society.

Throughout the history of the three groups of disciplines, aging has been linked to a “deficit paradigm,” which sees aging in terms of functional decline, impairment, illness, and loss of social ties and social roles. As described in Chapter 1, recent decades have seen a shift in the study of aging, focusing not only on its dynamic aspects (such as wisdom or resilience), but also emphasizing that throughout the process of aging there is not only decline in some functions, but also growth and improvement in certain others.

This paradigmatic perspective has emerged from scientific results at both micro and macro levels – from the individual to the population. As pointed out by Gould (1977, 1981), although from a genetic perspective human beings do not differ from our Neolithic ancestors, our species has developed the most sophisticated products from art to technology and in communications. Phylogenies developing over millennia are consolidated through ontogenesis; in his/her first years every newborn manages to capitalize on previous human beings’ experiences, developing the most sophisticated capacities accumulated over centuries.

This new paradigm, which in lay vocabulary can be called “aging well,” has been expressed in different constructs: *healthy*, *successful*, *optimal*, *productive*, and *active* aging. This paradigmatic shift occurred because the history of human development is driven by social and environmental improvements of life

conditions, thus giving rise to the title of this handbook. It is interesting to note that the shift to a more positive view of aging concerns all of our disciplines, even if it has taken different routes in our different domains, which will be clearly illustrated in this handbook (e.g., Martin et al., 2015). For instance, aging variability as a key aspect or plasticity as a general characteristic of human beings are investigated by biology, psychology, and social sciences. For similar reasons, demographers are moving from the study of mortality at the population level to the study of the distribution of individual life spans and, at the same time, psychologists are considering both human behaviors and psychological traits as determinants for longevity (Batty et al., 2007).

This handbook deals with this positive approach toward aging and examines and assesses the various ways of aging with some valuable outputs at least for some people and some segments of society: aging with health, aging with well-being, aging with autonomy, and being a respected and valuable social group.

About This Handbook

Part I: Biomedical Aspects

This handbook aims to present some of the biomedical concepts and approaches that have shown their interest in aging populations. The biomedical part of this book is composed of 12 chapters, written by international opinion leaders in their scientific domains.

The first three chapters of this part deal with some major biological mechanisms of the ageing process: the connection between cellular senescence and age-related diseases (Chapter 4); the relationship between inflamm-aging and immunosenescence (Chapter 5); and the role of telomere dynamics in age-related diseases (Chapter 6) represent mechanistic concepts that have been largely developed these last years. Chapter 7 develops the “Gene-Lifestyle Interactions in Longevity” which is a major issue in the understanding of the respective roles of genetic and environmental factors in the ageing process, whereas Chapter 8 deals with a major issue of the successful aging, the plasticity of the brain, and the cognitive functions in older adults. Chapter 9 describes the “arterial stiffness and blood pressure changes” which are typical expressions of the arterial aging and contribute to the development of cardiovascular and non-cardiovascular age-related diseases. Chapter 10 discusses the possibilities for preventing frailty, which has recently become a major aspect of preventive geriatrics; the effects of physical activity (Chapter 11) and of nutrition on cognition (Chapter 12) and on muscle function (Chapter 13) provide documented information about the influence of lifestyle in slowing down the age-related functional alterations and diseases. Chapter 14 deals with the growing thematic of the contribution of gerontechnologies on successful aging. Finally, Chapter 15 develops one of the major medical and public health issues in the older adults: the optimization of drug therapy.

The aim of the biomedical part of this handbook is not the exhaustive coverage of the biomedical aspects of the aging process. Our objective is to show that the aging process and its functional consequences are the result of multiple conditions and mechanisms, and that the actions to increase the probability for successful aging go through a comprehensive assessment and a holistic approach of the older individual.

Part II: Psychosocial Factors

As has been discussed in Chapter 1 (see Table 1.2), the important components of successful aging, both as *outcomes* and as *predictors* or *determinants*, are behavioral (e.g., activity, lifestyles), psychological (e.g., life satisfaction, socio-emotional selectivity), or psychosocial (e.g., social productivity, optimizing opportunities) conditions. Therefore, this part contains the most relevant of those psychosocial conditions for successful aging. In this section, 14 chapters written by experts from several countries in the world are integrated.

As emphasized at the very beginning of Chapter 2, it is difficult to disentangle the bio-psycho-social dimensions of aging; thus, the first and second chapters of this part deal with the *bio-psycho-social bridge* (Chapter 16) and the psycho-neuroimmune system in successful aging with the adaptive mechanisms of the successful aging process (Chapter 17).

The central chapters of this section deal with the most general behavioral and psychological aspects of successful aging; thus, Chapter 18 deals with behavioral health.

Regarding cognition, Chapter 19 is devoted to environmental enrichment and training across life optimizing and/or compensating cognitive functioning, and, linking cognition and personality, Chapter 20 deals with “Wisdom: The Royal Road to Personality Growth.”

Chapters 21–23 are devoted to affect and control as important ingredients of successful aging; thus, Chapter 21 deals with *emotions and successful aging*; Chapter 22 is devoted to the exercise of control, entitled “Personal Control and Successful Aging”; and Chapter 23 exposes the coping mechanisms through successful aging.

Although most of the definitions of successful aging do not take into consideration non-scientific aspects, this has been highly criticized; thus, Chapter 24 is devoted to successful aging, spirituality, and sense of transcendence.

Chapters 25 and 26 are devoted to psychosocial components of successful aging.

Before dealing with more practical and applied matters, it has been considered that the very old is an important issue for successful aging; thus, we are dealing with this subject in Chapter 27.

The final portion of this part is devoted to the promotion of successful aging at the individual level in Chapter 28, promoting active aging through psychosocial *programs* and at the community level in Chapter 29, promoting successful aging in the community.

Part III: Socio-Demographic Issues

The socio-demographic part of this book is composed of four chapters, also written by international opinion leaders in their domains.

The first three chapters discuss the concept of active and healthy aging. While the concept of “successful aging” is older, more American, and dealing more with individual issues and behaviors, the concept of “active and healthy aging” is more European and more public policy-oriented. Chapter 30 defines and introduces the potential of active aging. In particular, it lists many kinds of barriers preventing active aging that can be removed. Chapter 31 illustrates the key role of the environment to maintain or improve well-being while aging. As listed in Chapter 30, many policies can facilitate active aging, in particular, environmental policies. Chapter 31, introducing the field of environmental gerontology, presents in details the two dimensions of the environment that which can be hardly separated, the physical and the social dimensions. Chapter 32 presents a monitoring framework aiming to support policies that can improve active aging in four domains: employment and labor force participation, voluntary activities, such as caring for others and political participation, living conditions, such as financial security and physical safety, and the capacity for aging well. It is of interest to note that if three domains concern the actual experience of active aging, the fourth domain concerns the coming years through the capacity to actively age.

Finally, Chapter 33 underlines new challenges that “successful aging” and “active aging” are facing as models and shared objectives. These concepts have been largely developed in the 1980s and 1990s in relation to the existing models of health, disability, and quality of life. Since that time, new models have been developed and have gained in social importance. Chapter 33 introduces the concept of capabilities and defines it by comparison with the concepts of International Classification of Functioning (ICF), the concepts of quality of life and the concepts of life satisfaction. Is this approach through capabilities compatible with our approach of successful and active aging?

These chapters, like the handbook as a whole, illustrate the different challenges that models of successful aging have encountered since their first proposal with the accumulation of new knowledge in the different disciplines involved and, to begin, better understanding of the biological mechanisms that accompany the life course, the roles of environmental factors in the broad sense, the new possibilities for responding to and managing the medical problems associated with this same life course, and all the social and psychosocial transformations that have crossed our societies during the last 30 years. No doubt that the future imposes at least as important challenges on these models in the coming decades.

References

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1 The Concept of Successful Aging and Related Terms

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Antecedents

In the history of human thought there have been two traditions in the study of aging: a positive view arising from Platonic thinking and a negative perspective as a result of an Aristotelian heritage. When, at the beginning of the twentieth century, the multidisciplinary field of gerontology began, the two most important consolidated social theories of aging developed by social gerontologists were “disengagement” and “activity” theories; the former positing that aging is the process of unavoidable separation between individual and society, while the activity theory states that a human being’s life is directly related to his/her degree of social interaction and level of activity. Authors agree that during many decades of the century, gerontology, perhaps due to the influence of geriatrics, has been interested more in pathological aging than in other aspects or conditions of aging. As Johnson and Mutchler (2014) emphasize, it was during the final decades of the century when a new *positive gerontology* emerged considering successful aging to be an important key concept in this new vision of aging.

But it must be remembered that these two views or, perhaps better, two sides of aging, have an objective basis, given that aging is a natural lifelong process, associated with illness, which unavoidably terminates with death and dying. Making this process longer and healthier, more positive, optimal, active, or successful could be considered a key issue at individual and population level from a scientific and socio-political perspective.

From a scientific point of view, this new paradigm in gerontology is based on the results from large longitudinal studies on aging, initiated at about the middle of the past century (e.g. Baltimore Longitudinal Study of Aging in United States began in 1958 and Bonn Gerontological Longitudinal Study of Aging started in 1965, initiated by James Birren and Hans Thoma, respectively, two pioneers in the study of aging). These and other studies yielded extremely high variability in the way people aged, showing different profiles in all the multidimensions assessed throughout the process of aging. Based both on this variability and the profiles discovered, the results support John W. Rowe and Robert L. Khan in their seminal paper published in *Science* in 1987, in which they distinguish between pathological aging on the one hand, and normal and

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successful aging as non-pathological states on the other, justifying this classification “with the purpose to counteract the longstanding tendency of gerontology to emphasize only the distinction between the pathologic and non-pathologic, that is, between older people with diseases or disabilities and those suffering from neither” (p. 433). Finally, this view has been empirically supported by the MacArthur Foundation Research Network on Successful Aging.

This view is not only supported by longitudinal studies of aging but also by biomedical, demographic, and epidemiological professionals who share the same positive assumptions. Among them, at the very beginning of positive gerontology we must place James Fries (see Fries, 1980). Based on the evolution of survival curves and their differences by age, the starting point of chronic disease and the plasticity and potential (reserve, Lerner) of human beings, Dr. Fries predicted a society in which “aging well,” that is, the active and vital years during a life span would increase, the onset of morbidity would be postponed, and the total amount of lifetime disability would decrease. Very importantly, at the heart of his vision is an emphasis on improvements in preventive medicine and the untapped potential of health promotion and prevention.

Nowadays, Christensen et al. (2009) consider that in those countries with *good practices*, aging has been postponed by ten years and the human life span ceiling is unknown. Thus, along the same lines of other gerontologists, a positive view of aging is also urged.

Finally, given a globally aging society, it must be remembered that the most important threat is not aging *per se* but rather what it represents at societal and at individual levels because pathological aging is highly expensive to society and/or to individuals, and because of the stereotypical over-generalizations of pathological aging. Thus, the promotion of successful aging is without doubt the most important public policy because, at the same time, it is one of the ways of preventing pathological aging and disability.

The Meaning of Successful Aging

From a semantic point of view, the word “successful” is an adjective with a variety of following synonyms in *Webster’s Thesaurus and Dictionary* (1990): prosperous, fortunate, lucky, victorious, triumphant, auspicious, happy, unbeaten, favorable, strong, propitious, advantageous, encouraging, contented, satisfied, thriving, flourishing, and wealthy, among others. But, as Baltes and Carstensen (1996) have emphasized, any utilitarian conceptualization of success refers to favorable attainments without considering the process of reaching these positive outcomes, which depend on the individual’s efforts in, and therefore on his/her behavior and actions. Thus, success refers to the attainment of personal goals of all types, ranging from the maintenance of physical functioning and good health to other psychosocial outcomes (p. 400). In sum, “successful” could be considered a cross-culturally and highly positive value. But the first issue to consider is that this positive adjective is attributed to the word “aging.”

From a grammatical point of view, aging is the *gerund* of the verb *age*, referring to the human/life process bringing stability and change, growth and decline across a life span (e.g., Baltes, 1987). Moreover, aging is also considered as a *noun*, the external signs of aging as a process of change in the properties of material occurring over a period of time, either spontaneously or deliberately. Finally, aging is also an *adjective*, describing the process of growing old, with broadly negative synonyms such as decrepit, tired, fossilized, broken-down, debilitated, enfeebled, and exhausted, among others (see *Merriam-Webster's Thesaurus and Dictionary*). In sum, although the process of aging (as verb or noun) is scientifically tested as a process with broad inter-individual variability yielding heterogeneous trajectories, aging has a mainly negative meaning. If “successful” is interpreted as “no aging,” then “successful aging” could be considered an oxymoron.

An oxymoron is a rhetorical device that paradoxical or contradictory adjacent words, in our case juxtaposing positive (successful) and negative (aging) terms (Torres & Hammarstrom, 2009). The concept “successful aging” involves a noun (that is the process of aging) and an adjective (successful); Baltes and Carstensen (1996: p. 400) alluded to the fact that “some critics argue that successful aging is an oxymoron only when ‘successful aging’ means not aging at all ... however a conceptualization of successful ageing founded on denial is ultimately an untenable position.” This argument implies that aging is radically negative, but this is not in agreement with data from two different perspectives: (1) the process of aging can carry positive outcomes such as a lower frequency of negative affect, higher affect balance, global understanding, etc., and (2) when research considers not only negative but also positive stereotypes, older adults can be characterized with positive labels (such as “friendly”). Therefore, in our opinion, the juxtaposition of successful-positive and aging-negative is a *subtle* one because aging implies both growth and decline throughout a life span. Thus, both negative and positive events are associated with aging to a greater or lesser probability; similarly, when considering cultural views and stereotypes, aging has not have a totally negative connotation when not only negative views but also positive evaluative images are introduced. In sum, successful aging could be considered only a *subtle oxymoron*.

Semantic Network of Successful Aging

Successful aging belongs to a set of conceptual labels that emerged during the last decades of the twentieth century characterizing the so-called new paradigm in gerontology: successful, healthy, optimal, active, productive are positive labels characterizing “aging well” as a common or pop verbal expression.

Table 1.1 shows the evolution (1996–2015) of these labels in three scientific databases (MEDLINE, PsycINFO, and SocioFile) by searching in keywords and abstracts. The evolution over 20 years has been exponential, with the exception of “optimal aging.” The most-used term is “healthy aging” followed by “successful aging.”

Table 1.1 *Successful aging and related terms in scientific databases (1996–2015)*

MEDLINE, PsycINFO, SocioFile	1996–2000	2001–5	2006–10	2011–15	Total
Successful	110	260	466	611	1,447
Active	12	34	86	207	339
Healthy	81	268	708	1,466	2,523
Optimal	10	12	29	57	108
Productive	6	12	37	60	115
Total	219	586	1,326	2,401	4,532

The first consideration must be whether the term is developed from a *population* or an *individual* perspective; for example, “active aging” emerged from the World Health Organization (WHO, 2002) attempts to overcome “healthy aging” as a population term (see Table 1.3). It is defined as a process that includes outcomes such as “health” and “participation,” as well as determinants of active aging such as “security.” This mixture of dependent and independent variables in the definition of a concept seems to be rooted in the purpose of such a definition, that is, the promotion of policies at a population level. Conversely, from an individual perspective, “successful aging” is defined through three domain outcomes (health and functionality, physical and cognitive competence, and life involvement; see Table 1.3), and it has been criticized because it does not consider intersecting social issues (Katz & Calasanti, 2016).

Moreover, the second relevant factor focuses on the *multidimensionality* of the components included. Carver and Buchanan (2016) examine in *Ovid Medline* to what extent successful aging articles are reduced to non-biomedical components. In this search they rejected 37 (48 percent), which, although dealing with successful aging, they exclusively refer to phenotype/genotype, physiological process, a particular disease, or a single component. This is in line with the core contents of the European Innovation Partnership of Active and Healthy Aging (EIP AHA) set up by the European Union.¹ All action groups are devoted to biomedical conditions and the key concept is not active aging, but frailty. Finally, WHO defined the key term “active aging” in 2002, transformed it 13 years later into “healthy aging” (Table 1.3), and reduced it to *biomedical components* (see Table 1.2; WHO, 2015; Fernández-Ballesteros, 2017).

The third issue refers to whether these terms are synonymous. Martin et al. (2015) tried to establish an *equivalence* between “successful aging” and others such as “healthy aging,” “active aging,” or “productive aging” – all of which are technical terms integrating bio-psycho-social domains, while trying to specify with technical/scientific terms the simple and pop concept of *aging well*.

¹ See https://ec.europa.eu/eip/ageing/home_en

Table 1.2 *Summary of successful aging (and related terms) outcomes and predictors or determinants (modified from Fernández-Ballesteros, 2008)*

Component	Outcomes	Predictors or determinants
Biomedical	✓ Longevity	✓ Long-life ancestors
	✓ Biological health	✓ Maximizing health across life span
	✓ Cardiovascular and pulmonary functioning	✓ Socioeconomic conditions
	✓ Mental health	✓ Social/health services
	✓ Functional abilities	✓ Environmental conditions
	✓ Physical strength	
	✓ Vital capacity	
	✓ Absence of disability	
	✓ Autonomy	
Psychological	✓ Subjective health	✓ Selective Optimization with Compensation (SOC)
	✓ Activity	✓ Development and maintenance of primary control
	✓ Competence (motor and cognitive)	✓ Socio-emotional selectivity
	✓ Mental and physical positive functioning	✓ Adaptive process developing capacities for solving difficulties and minimizing the effects of deficits
	✓ Life and social engagement	✓ Coping strategies across life cycle
	✓ Behave according to own values and beliefs	✓ Behavioral lifestyles
	✓ Coping	
	✓ Purpose in life	
	✓ Personal growth	
	✓ Psychological well-being	
	✓ Life satisfaction	
	✓ Perceived quality of life	
	✓ Adaptation capabilities	
	✓ Mature defense mechanism	
	✓ Family relationships	
	✓ Affective states	
✓ Meaning in life		
✓ Maintenance of valued activities and relationships		
Social	✓ Social productivity	✓ Optimizing opportunities for security
	✓ Social networks	✓ Education
	✓ Material security	
	✓ Environmental mastery	