

## CHAPTER 9

# Images of Aging

## *Outside and Inside Perspectives*

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### ABSTRACT

Chronological age is but one, and not the most accurate, indicator of human aging. Multiple outside (i.e., objective) and inside (i.e., subjective) perspectives on aging need to be considered to do justice to the multidimensionality of human development and aging. Outside perspectives are, for example, biological, social, and psychological ages. A chronological age of 75 years, for instance, may be linked with a different biological as well as cognitive age. Human development and aging is not only a biological process but is interactive in nature. As a result, it is characterized by impressive plasticity which entails the relativity of the meaning of chronological age. Outside perspectives are closely linked with inside perspectives on aging such as societal stereotypes, images about one's own old age and metastereotypes, that is, what we think others might think about old age. These inside perspectives, even though "invisible," are very powerful and exert effects on biological, social, and psychological ages alike and are affected by them. Future research needs to focus on furthering our understanding of the interactions taking place between biological, psychological, and sociocultural influences on the aging process and on the mechanisms linking personal, societal, and meta-images of old age.

## INTRODUCTION

“What is my age and how many ages do I have?” is the first guiding question of this chapter, and it refers to the outside perspectives on aging. The second part of the chapter is concerned with the question, “What do *I think* about (my) old age and how does it influence my own aging?” and this represents the inside perspectives on aging.

The first question is meant to highlight the equivocality of the notion “age,” even though we think that the answer to the question, “What is your age?” is quite straightforward. When we talk about a person’s age, we usually rely on the definition of chronological age and refer to the difference between the current date and the person’s birth date. The straightforward metric and the simplicity of this definition is enticing, which may be one of the reasons why, all too often, chronological age, that is, the passage of time, is bestowed with a causal power and is used to explain observed age-related changes without being aware of the actual biological, psychological, and/or social influences underlying such changes. As is often the case, it is not the most obvious and most easily available explanation that is the right one or the only one. Research in the tradition of life span psychology (Baltes, Lindenberger, & Staudinger, 2006; Baltes, Reese, & Lipsitt, 1980) as well as life course sociology (Elder, 1975; Settersten & Mayer, 1997) has shown that the meaning of age must not be reduced to that of chronological age.

Life span psychology has demonstrated that chronological age per se has no explanatory power but that it is a cover variable for the age-related processes and influences to be uncovered and understood in terms of their causal effects (Baltes et al., 2006; Baltes et al., 1980; see also Neugarten, 1977). More specifically, human development and aging—two sides of one coin—are not determined by biology, that is, in this case the genome, such that development and aging are the emergent property of elapsing time. Rather, human development and aging are the result of the continuous interaction between biological influences, sociocultural influences, and the decisions and competencies as well as beliefs and attributions of the developing individual himself or herself. Thus, age (or aging) is multidimensional. The interactive nature of aging is at the heart of its plasticity and therefore historical relativity (Staudinger, Marsiske, & Baltes, 1995). Plasticity here is defined as the modifiability of age-related change. It is a constituent characteristic of human development and aging. It is maintained throughout life unless pathological processes interfere. With increasing age, however, the degree of modifiability is reduced. Across historical time, sociocultural changes imprint themselves on the unfolding of genetic information (through epigenetic mechanisms) as well as on the age-related trajectories of psychological functioning as, for example, cognitive skills (e.g., Flynn effect), such that, the

same chronological age stands for different levels of cognitive performance at different historical times and in different cultural settings. Sociocultural changes also affect images of aging and thereby also influence the inside perspectives on aging.

A comprehensive understanding of age encompasses: biological age, social age, and psychological age (e.g., Birren & Cunningham, 1985). To be clear, each of these “ages” again are multidimensional because they each encompass multiple domains and indicators. For instance, for decades, the debate about *the* indicator of biological age has been ongoing and is far from having yielded a conclusive result yet (e.g., López-Otín, Serrano, Partridge, Blasco, & Kroemer, 2013). Indicators under consideration range from muscle strength or lung capacity to telomere length. Similarly, the meaning of social and psychological age is manifold. A person’s functional/performance ages within and across domains of functioning can differ and most often will diverge from the person’s chronological age. Furthermore, we need to distinguish between objective and subjective indicators of domain-specific ages. The personality age of a given person (one facet of psychological age) assessed by using a test, for instance, may differ from the answer of that person when asked how old he or she feels. In this vein, I distinguish the inside from the outside perspectives on aging. Note that inside perspectives refer not only to different kinds of ages, such as felt age, but also to images of old age and aging, encompassing behaviors and characteristics that allegedly come with a person of a certain chronological age, which, in turn, influence subjective perceptions of age and subsequently expectations and behaviors.

### THE POWER OF CHRONOLOGICAL AGE

Every day, we rely on the informational value of chronological age without thinking much about it. Modern societies use chronological age as an important index or marker variable to assign social roles, privileges, and responsibilities. But when is it that knowing the chronological age of a person will actually tell us something about what this person is capable of or what his or her personality and motives are like? Given the interactive nature of human development and aging that was described earlier, human beings become more different from each other as they grow older. By midlife, the informational value of chronological age has become rather limited. For instance, an 80-year-old person can function at the level of cognitive performance of an average 50-year-old and vice versa (e.g., Baltes et al., 2006). Even though the interindividual variability is reduced again at very old age, that is, around age 90 or 95 years, the conviction that old (chronological) age is in general characterized by a highly constrained cognitive capacity because it forms the core of the negative old age stereotype, which

will be discussed in the second part of the chapter (e.g., Hummert, 1990), is an incorrect generalization. The performance differences between individuals during adulthood are significant and are even increasing during later life (cf. Baltes, 1987; Nelson & Dannefer, 1992). In other words, chronological age becomes less and less informative regarding the capabilities, attitudes, and typical behaviors characterizing a given older adult. Nevertheless, in many domains of life, in particular the work place, a deeply rooted belief in the unconstrained explanatory and informational value of chronological age still reigns supreme. Part of the success story of chronological age most likely lies in the ease with which it is measured. Certainly, obtaining a person's chronological age is more easily accomplished and is less intrusive than, for instance, measuring intellectual performance or telomere length. Also, it is less effortful to think in averages, for instance, the average 60-year-old, than it is to think in a differentiated way about the diversity of 60-year-olds of a given birth cohort.

### **BIOLOGICAL AGE: AN IMPRESSIVE EXAMPLE OF THE PLASTICITY OF HUMAN DEVELOPMENT AND AGING**

As mentioned earlier, it is much more difficult to measure biological than chronological age. A rather simple approximation of biological age, however, is a person's total length of life, if we accept the disadvantage that it can only be measured after the person's death. On a population level, average life expectancy is a personally less "cruel" and more readily available measure that lends itself perfectly as a proxy to the study of historical changes in biological aging. Demographers have been doing this and have found that the human species has managed to increase its maximal average life expectancy by 40 years since 1840 (e.g., Oeppen & Vaupel, 2002). This unprecedented expansion of the life span in human history again testifies to the interactive nature of human development and aging; that is, besides biological evolution, cultural evolution plays an important role (e.g., Durham, 1990). The cultural changes discussed regarding the expansion of average life expectancy are improved hygiene and nutrition, better accident prevention (especially during the early life span), development of medical knowledge and practice, healthier work place environments, and, last but not least, increased investment in prevention as highlighted in the public health philosophy.

Besides life expectancy, however, an even more important approximation of biological aging seems to be *healthy life expectancy*, even though it is much more difficult to measure than mortality (e.g., Robine & Ritchie, 1991). Available panel studies usually are confined to indicators such as activities of daily living (ADL) or instrumental activities of daily living (IADL) as measures of functional

health or self-reported number of diagnoses as an indicator of physical health. There is an ongoing debate in the fields of epidemiology and demography about whether the healthy life span has increased or not. Discrepancies in findings usually are linked with differences in the available health indicators and with actual differences between countries. It seems that within most of the industrialized world by and large, healthy life expectancy has been increasing over the last decades, such that the larger part of the added years are functionally healthy years, in the sense of active years (e.g., Christensen, Doblhammer, Rau, & Vaupel, 2009). As of recently, surprisingly the United States (and Russia) have been found to be an exception to this pattern because both average and healthy life expectancy have been declining (cf. Reither, Olshansky, & Yang, 2011). Acknowledging this exception, indeed, it seems to be the case that people not only live longer but also do so in good functional health until close to the very end of life. The health status of a 70-year-old 20 years ago is equivalent to the health status of an 80-year-old today (Vaupel, 2010).

Although the extension of healthy life expectancy is, in general, good news for aging individuals, it is also important to acknowledge that to gain more specific knowledge about the historical change in the associated biological processes, it will be necessary to conduct systematic cohort sequential comparisons on several different biological indicators. Life expectancy is only a rough proxy of biological age because it also reflects sociocultural and behavioral influences and changes. “Purer” measures of biological age, such as telomere length or average age of menarche, most likely have changed as well. No cohort comparative data on telomere length yet exist to my knowledge. But we do know that the average age of menarche has continuously decreased over the last 100 years. However, no signs have yet been observed for a postponement of the average age of onset of menopause (e.g., Te Velde & Pearson, 2002). The lack of evidence for the latter may be an indication of the limits of biological plasticity in the human species. It is also noteworthy that in contrast to the earlier onset of sexual maturity, the average age at the birth of the first child, one type of social age, has continuously increased since World War II. This phenomenon is an indication for the power of social institutions, such as educational opportunities or changed gender roles, as discussed next under the heading “Social age: A Human Necessity.”

Coming full circle in terms of the focus of this section, there is more and more evidence demonstrating that the biology of the human condition is in crucial ways changed by sociocultural influences. Epigenetic research on the facilitative rather than debilitating age-related contextual influences, such as nutrition or education, may in the future help to better understand the mediating mechanisms underlying this powerful connection (Fraga & Esteller, 2007).

### SOCIAL AGE: A HUMAN NECESSITY

Humans are inherently social beings. Without social support and embeddedness into relationships, a human individual could not survive. Thus, the *social age* of an individual plays a crucial role for outside and inside perspectives on aging. Within a given community, the temporal sequence of life phases is linked with a sequence of tasks and challenges as well as competences. The age-related distribution of roles serves the function to link rights as well as obligations with certain life phases which support the survival of the community. For instance, both entry into (i.e., begin of labor force participation) and exit from (i.e., retirement) adult life in the sense of being economically productive form important transitions in a person's life, which influence life planning as well as self-representations and the way a person is perceived and valued in the larger social community. However, only modern societies have assigned chronological age the importance that seems so natural nowadays (e.g., Settersten & Mayer, 1997). There are age markers and normative age expectations for entering school, entering the labor market, first marriage, birth of first child, or retirement. Despite the fact that since the 1990s the—in sociology heavily debated—*destandardization of the life course* (Kohli, 1994; Mayer & Müller, 1994) has led to a certain weakening of age norms,<sup>1</sup> the almost magical importance bestowed onto age markers for guiding life planning and the evaluation of one's life seems uncompromised (e.g., Heckhausen, 1989).

The sheer fact of having more years of life available without doubt contributes to the transformation of the socially defined life course structure (e.g., Wink & James, 2013). Individuals have more personal lifetime at their disposal and this, in turn, very likely results in greater interindividual variability in the ways in which developmental tasks and role expectations are encountered (e.g., Moen & Altobelli, 2006; Riley, 1986).

### PSYCHOLOGICAL AGE FROM THE OUTSIDE: THE SAMPLE CASES OF COGNITION AND PERSONALITY

In the following text, the increasing discrepancy between chronological and functional age, as just discussed for biological age, will be examined for psychological dimensions of aging, such as cognitive and personality age.

#### Cognitive Age Deviates From Chronological Age

Several different types of evidence need to be considered here. First, the evidence on tremendous cohort improvements in cognitive functioning, for instance, from the seminal Seattle Longitudinal Study (e.g., Schaie, 1996) can be provided as evidence. Schaie (1986) showed that across 50 years of historical time (birth

years 1890–1940), the level of cognitive functioning in several cognitive tests improved by 1.5 standard deviation. This indication of the impressive plasticity of cognitive performance caused by sociocultural advances, such as improved health and nutrition, more and different schooling, smaller family size, modern parenting, the rise of a visual culture, more jobs that require on-the-spot problem solving, and more leisure devoted to cognitively demanding pursuits has also been called the Flynn effect (Flynn, 1987, 2009). Evidence that seems to indicate that the Flynn effect recently may have come to a halt needs to be interpreted with care because the reference populations used to assess the effect have changed across historical time (e.g., discontinued mandatory military service or increasing migrant populations with lower language skills; Skirbekk, Stonawski, Bonsang, & Staudinger, 2013). Originally, the Flynn effect was referring to the improvement of cognitive performance levels in early adulthood, but since then, it has also been documented that it continues into middle and later adulthood (e.g., Gerstorf, Ram, Hoppmann, Willis, & Schaie, 2011; Rönnlund & Nilsson, 2008; Skirbekk et al., 2013). Moreover, we can expect the cognitive improvements across cohorts in later life to continue even after the Flynn effect in young adulthood may have stopped because the sociocultural changes linked with a “Society of Longer Lives” (Staudinger, 2012) are only starting to unfold and exert their effects on current cohorts of middle-aged and older adults. It is an interesting exercise to simulate what these cohort changes in cognitive aging might entail on a population level. When doing so, it turns out that, for instance, the United Kingdom will be cognitively younger in the year 2040 than today even though chronologically it will be older (Skirbekk et al., 2013).

Second, there is evidence from country comparisons of age-related levels of cognitive functioning. These analyses have shown that the same chronological age stands for different cognitive ages in different countries (Skirbekk, Loichinger, & Weber, 2012). Today, the average cognitive performance level of a 70-year-old in the United States is higher than the average level of a 50-year-old in India or China. This study illustrates once more how far-reaching the implications of such a perspective on chronological age are if we are to judge the productivity of an aging population.

Third and last, there is a large amount of evidence about the effects of training as well as of an active lifestyle on cognitive functioning in later adulthood (e.g., Hertzog, Kramer, Wilson, & Lindenberger, 2009). In short, this evidence is to be interpreted such that after a training intervention aiming at the improvement of cognitive functioning, be it a physical activity intervention or a cognitive training intervention, a 65-year-old can display the cognitive level of functioning that he or she has had at age 55 years. Currently, the intervention with the most generalizable effects seems to be aerobic exercise. After only 6 months of training

(3 × 45 min per week), for instance, increases in the speed of information processing have been observed and also reactivation in brain areas usually characterized by age-related decline (e.g., Voelcker-Rehage, Godde, & Staudinger, 2011; for a review of that literature, see Colcombe & Kramer, 2003). The specific contribution of the study by Voelcker-Rehage et al. (2011), for example, was to show that maintaining the physical activity regime across 12 months showed a leveling off of performance increases on the behavioral level of measurement but not on the neurophysiological level. In addition, this study highlighted the fact that different kinds of physical activity, such as aerobic exercise and coordinative training have highly differential neurophysiological effects, but after 12 months, their effects are indistinguishable in terms of performance increases.

Based on such evidence testifying to the plasticity of cognitive aging, one may ask “What are the consequences of such findings for everyday life?” Thus, it may be useful to investigate under which circumstances which kinds of working or leisure time environments are conducive to continuously challenge and support brain development across the life span. In that vein, the cumulative effect of cognitive stimulation at work and during leisure time (or the lack thereof) is currently under intensive study in different groups (e.g., Oltmanns, Godde & Staudinger, 2014; Park & Reuter-Lorenz, 2009; Stine-Morrow, Parisi, Morrow, & Park, 2008). For instance, one study currently under way examines whether many as compared to few work-task changes across a period of 16 years will make a difference to cognitive and personality outcomes. The specific strength of this study is that the number of task changes is not confounded with the level of complexity of the job or the level of qualification necessary for the position. If hypotheses are confirmed and results show that more work-task changes are related with higher levels of cognitive flexibility 16 years later, this would suggest that work biographies in a Society of Longer Lives need to provide for and incentivize regular task changes also for less complex jobs (cf. Staudinger & Kocka, 2010). Of course, the temporal pattern of work task or job changes has to match the level of complexity of a given occupation: More complex jobs may require less frequent changes than simple, physically and/or mentally exerting types of jobs.

### **Personality Age Is Not Set Like Plaster**

Research on the plasticity of personality aging is still in its infancy compared to that on the plasticity of cognitive functioning. There seems to be less of a reason to study the plasticity of personality as rather few negative age-related changes with dysfunctional consequences for everyday life have been observed in this domain. In the realm of personality functioning, there is only one major trait that has been of concern in terms of age-related decline. In particular, data from

longitudinal studies around the world (e.g., McCrae et al., 2000) have shown that after midlife, the trait of openness to new experience is on average declining (for review, see Staudinger, 2005). Because openness to new experience is a crucial personality characteristic supportive of learning as well as of staying in touch with an ever-changing world, it may be useful to find out whether the level of openness observed in a 65-year-old can be changed to reflect, for instance, this person's level of openness at age 55 years—in other words, whether it is possible to reduce a person's personality age.

And indeed, in a recently published study, it was found that exposure to preparatory training and to new activities in later life increased levels of openness to new experiences in people older than 55 years old. The study was a longitudinal field experiment that allowed the comparison of one group of volunteers, who participated in a 9-day competence training to support mastery in the volunteering context, with a group of matched volunteers on the waiting list for the training. After the three 3-day trainings, the volunteers returned to their respective volunteering settings and continued with their volunteering activities. A broad range of volunteering activities was covered in the study sample and controlling for type of volunteering activity did not compromise the finding. Across 15 months, and over and above the observed cognitive change, a significant increase in openness to new experience in the amount of about one standard deviation was found in the group of trained volunteers (Mühlig-Versen, Bowen, & Staudinger, 2012). This effect was observed in those volunteers with above median levels of internal control beliefs, suggesting that the new experiences in combination with the internal control attribution resulted in greater openness to new experience. This finding also demonstrates that the inside perspective, in this context the attributional style, played an important role regarding the efficiency of the training intervention and points to the fact that exploiting the plasticity of aging may require a personalized approach. In this particular study, the personalization concerned the attributional style. In other settings, it may be personalization according to preceding biographical experiences or to genetic polymorphisms.

As the findings from this study show, within a bit more than a year, personality age was decreased significantly if persons who believed that they can influence their life were exposed to new tasks and to task-relevant training. Personality age is indexed by the level of a given personality characteristic. Similarly as it is done when establishing the IQ, the reference for determining whether someone is younger or older in terms of personality than his or her chronological age would suggest, is the average longitudinal trajectory of the given personality dimension, in the case of the just cited study, of openness to new experiences. The average longitudinal trajectory shows the level of openness that is typical for a given chronological age at a given historical time and in a given cultural

setting. Thus, when compared with this average longitudinal trajectory, a given person can be categorized as being younger or older than suggested by the average trajectory.

### PSYCHOLOGICAL AGE FROM THE INSIDE: FEELING OLD MAKES OLD?

Before some of the evidence on subjective age and images of old age are discussed, it may be useful to highlight some of the sources from which these inside perspectives emerge. How do we learn about our own age-related changes? How do we learn about what it is like to be old? The following major sources need to be considered: (a) self-perceptions of physical and behavioral changes, (b) observation of and comparison with others (e.g., peers, older and younger generations), (c) feedback from and treatment by others, and (d) perception of age-related societal norms and images (e.g., media, work place). The constellations of these sources differ between people, across time and place, and depending on whether we form our own old-age image or whether we mostly adhere to a general image of old age.

#### Subjective Age

Subjective conceptions of age refer to the competencies, attitudes, motives, and so forth which allegedly characterize people of a given chronological age. Population-based studies can ascertain the chronological ages at which, on average, such constellations are observed at a given historical time and in a given society. A given person will be in synchrony with, exceed, or fall below these chronological age norms. A person's subjective, perceived, or felt age is among other things a reflection of this discrepancy. It is assessed using a range of different questions such as, "How old do you feel?" or "How would you describe your age when looking into the mirror?"

Research on subjective age has been conducted since the 1950s and has consistently demonstrated across many studies that adults after age 25 years subjectively feel younger than their chronological age (e.g., Westerhof & Barrett, 2005). This negative discrepancy increases until around age 40 years and subsequently stabilizes at a level of 20% underestimation (for a Danish sample, see Rubin & Berntsen, 2006). This leveling off suggests that the discrepancy is not just simply based on a denial of chronological age or elapsed time for that matter but rather than depending on chronological age as the primary informational source, the judgment of subjective age seems to incorporate information from different behavioral sources which inform the final judgment in different ways. Sociodemographic characteristics, such as gender, income, or level of education,

only explain a small proportion of the variance in subjective age. An important source is a person's perception and awareness of his or her own aging process—a domain of aging research which only recently has received the systematic attention that it deserves (cf. Diehl & Wahl, 2010). In particular, the leveling off of the underestimation effect after age 40 years supports the hypothesis that subjective age judgments are grounded in individuals' real-life experiences. In this vein, it was demonstrated in a recent study that on 50% of the assessed days, the participating older adults reported experiences relevant to the perception of their own aging (Miche et al., 2014).

Interesting questions emerge in this field of study, such as how often do we update our subjective age estimate? Or what are the triggers for such updates? Or is the updating a continuous process rather than one happening in jumps? Of course, besides these processes of self-awareness, the self-enhancement effect (Sedikides & Strube, 1995) also has to be taken into consideration, which supports the underestimation of one's age as compared to the norm.

Finally, societal value orientations, such as the degree of youth centeredness of a society, most likely influence individuals' subjective age judgments. The result of a country comparison between the United States and Germany supports this hypothesis. The amount of underestimation observed in subjective age ratings as compared to chronological age was more pronounced in the United States than in Germany (Westerhof & Barrett, 2005). The U.S. sample also underestimated more strongly than a Finnish and a Japanese sample (Ota, Harwood, Williams, & Takai, 2000; Uotinen, 1998). Such country differences may partially also be related to differences in the political system of the respective countries, that is, the difference between a neoliberal market orientation (United States) and a social welfare state (Finland, Germany, Japan) and their related value patterns and social security policies. This interpretation is further supported by the finding that the association between subjective age and subjective health explained part of the country differences. Health is more highly valued in the United States than in Germany (Shweder, 1998). Accordingly, U.S. participants reported higher values of subjective health than participants in Germany. This finding is interesting because if objective indicators of health are used, just the opposite is the case. For example, the average life expectancy in the United States is lower than in Germany or Japan. Finally, the self-enhancement effect is also more strongly pronounced in the United States than in the other three countries and contributed to the greater difference between chronological and subjective age in the United States (Markus & Kitayama, 1991).

The subjective age judgment is most likely related to self-perceptions of physical changes. In that vein, the historical improvement in healthy life expectancy might be reflected in an increase of the underestimation of subjective as compared to chronological age. Initial evidence to support that suggestion comes

from the last three waves of the German Aging Survey in 1996, 2002, and 2008. The cohort-sequential design of the study allows to tease apart age and cohort effects, and findings show that since 1996, the difference between chronological and subjective age has slightly increased in individuals age 55 years and older (Wurm & Huxhold, 2009). It remains to be seen whether this trend continues.

**Images of Old Age**

Images of old age refer to the expectations about the competencies, characteristics, and physical conditions of old age. Most often, the images of old age reflect prototypical societal conceptions of this last phase in life and as such are often called *old-age stereotype*. However, the image can also concern conceptions of one’s own old age(ing) and should then be called *own old-age image* or *self-perceptions of old age* to avoid confusion. Finally, there are images of how we think other people might view old age. This kind of image has been called *metastereotype of old age* (cf. Bowen, Noack, & Staudinger, 2011). These three types of old-age images are closely related. Figure 9.1 presents a working model describing the interrelations between the different types of images.

Research about the old-age stereotype has shown that even though there are several positive characteristics of old age, such as agreeableness, reliability and loyalty, or experience, the negative associations, such as lack of flexibility, loss of ability to learn, dementia, sickness, or loss of autonomy, still prevail (Gordon & Arvey, 2004; Nelson, 2002). Table 9.1 lists some of the persevering stereotypes about old age and compares them against existing research evidence. Part of the perseverance of such stereotypes is grounded in the fact that they are

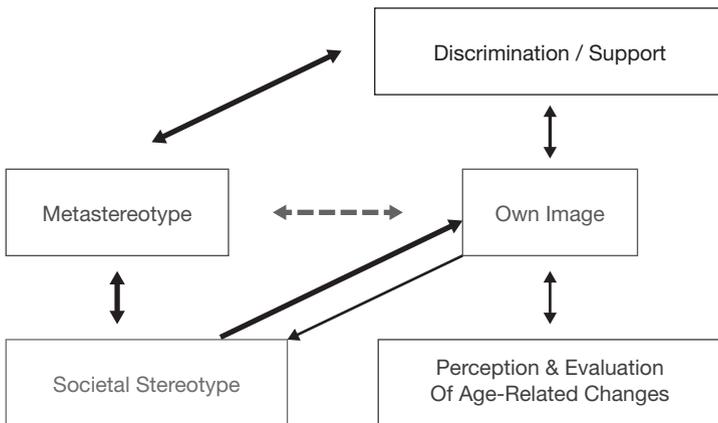


FIGURE 9.1 A working model of relationships between different images of old age.

communicated in the larger society through, for example, the mass media. For instance, a systematic study of the images of old age depicted in German TV prime time soap operas demonstrated that older adults were severely under-represented compared to other age groups and were portrayed in an one-sided fashion such that old men were either rich physicians or janitors and old women were cleaning ladies (Kessler, Rakoczy, & Staudinger, 2004).

Part of the perseverance of old-age stereotypes is also linked to the fact that we learn about old age from watching previous generations growing old. Thus, based on this source, our images of aging are doomed to lag behind one or even two generations. However, old-age stereotypes are also based on the observation of concurrent old age. This can be inferred from a finding based on data from the European Social Survey which compared data from 28 countries. Older people were indeed perceived as more competent in countries in which a greater proportion of older people participated in paid work or volunteer activities. This effect remained significant after controlling for country-specific life expectancies and educational level, as well as gender composition, and average cognitive abilities of the older population in the respective countries (Bowen & Skirbekk, 2013). Thus, even though slowly, as societal reality for old age changes, so will the old-age stereotype. In this vein, it was found in a cohort-sequential longitudinal study that between 1991 and 1999, the old-age stereotype became more

**TABLE 9.1**

*Illustration of Old-Age Stereotypes That Lag Behind the Reality of Old Age  
(Based on Results of the Berlin Aging Study; Baltes et al., 1998)*

<b>Old Age Myth</b>	<b>Research Evidence</b>
Most older people feel sick.	No
Most blood parameters change with age.	No
Depression is more likely in old age.	No
Most people older than 70 years have severe cognitive constraints.	No
Older adults do have clear life goals.	Yes
Older adults primarily live in the past.	No
Most older people are not able to learn something new.	No
Most people older than 95 years live in institutions for older adults.	No

positive—in particular, when respondents older than age 70 years were considered (Rothermund & Brandtstädter, 2003).

The own old-age image seems to be more strongly influenced by the general old-age stereotype than the other way around as demonstrated in a longitudinal study (Rothermund, 2005; Rothermund & Brandtstädter, 2003; see also Figure 9.1). It is interesting to note that the own old-age image and general old-age stereotype show independent predictive relations with depressive symptoms. And there seems to be an additive effect of both images on depressive symptoms, which also implies that a rather positive general old-age image can buffer against the effect of a negative own old-age image (Rothermund, 2005).

An example for an old-age metastereotype is the old-age climate of a company; that is, how positive or negative the characteristics of older workers are perceived in a given company (cf. Noack, Bowen, & Staudinger, 2009). Of course, the older worker metastereotype is not independent of the prevailing old-age stereotype. These two concepts seem to be overlapping, but they are not synonymous (Bowen & Staudinger, 2013). Two examples may illustrate the unique qualities of the older worker metastereotype: The older worker metastereotype applies to younger age ranges than the typical old-age stereotype. Usually, employees older than 45 years are considered older workers. Second, there are major company differences implying that older worker metastereotypes are also strongly embedded in the respective company culture.

### **Effects of Positive and Negative Images of Old Age**

Why should we even bother about images of old age? Decades of research have shown that it is more than worthwhile to reflect on one's own age. Old-age stereotypes and own old-age images strongly influence a person's self-concept as well as expectations about the person's future (e.g., Ryff, 1991; Thomae, 1970). It is this "invisible" power that makes it pivotal for "Societies of Longer Lives" (cf. Staudinger, 2012) to learn in more detail about the influences of images of old age. The more a person is convinced that aging is an inevitable process of physical decline and loss of autonomy, the less this person will believe that she or he can exert influence on his or her aging process. Convictions turn into self-fulfilling prophecies (Merton, 1948; Rosenthal & Jacobson, 1968). Thus, older adults showed less effective health behavior if they explained their physical symptoms with chronological age rather than with illness (e.g., Leventhal & Prohaska, 1986; Wurm, Warner, Ziegelmann, Wolff, & Schüz, 2013). Research on social cognition has demonstrated that the activation of negative old-age stereotypes leads to behavior matching the stereotype (assimilation affect), if the old-age category is self-relevant (e.g., Wentura & Rothermund, 2005; Wheeler & Petty, 2001). In this vein, when confronting older adults with the senility stereotype

through words, such as decline, Alzheimer's disease, death, and so forth, their memory performance dropped as did their memory self-efficacy, and their attitudes toward aging became more negative (e.g., Hess, Auman, Colcombe, & Rahhal, 2003; Levy, 1996). The assimilation effect was also demonstrated regarding ideomotoric reactions (walking speed; Hausdorff, Levy, & Wei, 1999), physiological reactions (skin conductance, cardiovascular reactions to stress; see Levy, Hausdorff, Hencke, & Wei, 2000), and in terms of the will to live (Levy, 2003). These effects exist despite the fact that we feel subjectively younger than we are chronologically and despite the fact that we perceive our own aging as more positive than that of the generalized other (Heckhausen & Krueger, 1993; Montepare & Lachman, 1989; Westerhof & Barrett, 2005). Internalized negative images of old age also seem to affect performance levels and health via the stress and the anxiety they invoke (threat hypothesis; Steele & Aronson, 1995; Wurm, Tesch-Römer, & Tomasik, 2007). Stress, in turn, is linked to a worsening of the immune reaction and hence increases a person's risk for infection (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002). Most likely, it is via such mechanisms that a negative own old-age image is associated with a significant reduction in survival probability. Findings supporting this notion are maintained when controlling for socioeconomic status, objective health, and subjective well-being (Kotter-Grühn, Kleinspehn-Ammerlahn, Gerstorf, & Smith, 2009; Levy & Myers, 2004; Levy, Slade, Kunkel, & Kasl, 2002; Maier & Smith, 1999). Similarly, Wurm et al. (2007) showed that own old-age images that related aging to increased morbidity were predictive of a higher number of illnesses 6 years later. Addressing the question of the directionality of effects, findings from another study showed that the influence of old-age images on health was significantly stronger than the other way around (e.g., Spuling, Miche, Wurm, & Wahl, 2013).

The activation of a positive or negative old-age image can also play a role in the context of age-heterogeneous social interactions. When matching an older and a younger person (who do not know each other) in a situation where they are asked to discuss either a difficult life problem or a modern technology problem and to provide advice after 30 min of discussion, the activation of images of old age may play a role (Kessler & Staudinger, 2007). And indeed, it was found that the older adults who had discussed a difficult life problem with a younger person showed higher cognitive performance than the older adults who had discussed the technology problem. Consistent with the hypotheses of the study, the older persons discussing the difficult life problem felt valued by their adolescent counterpart because of their life experience which boosted their self-esteem. Accordingly, such motivational effects on cognitive age are likely to wear off after some time. It is unclear, however, whether settings that would continuously support older adults' self-esteem might yield longer lasting effects.

Aside from mortality, health, and cognitive functioning, there is also initial evidence on the effect of images of aging on job-related outcomes (Bowen et al., 2011). Through mechanisms of self-stereotyping and stereotype threat, older workers become convinced that they are less productive, more forgetful, and inflexible than they actually are. Thus, it has been demonstrated that older workers underestimate their competencies and skills. Also, older workers' self-perceptions have been found to be more similar to the negative old-age stereotype than their own actual performance (Filipp & Mayer, 1999). Furthermore, experimental evidence demonstrated that adults confronted with the fear to confirm a negative (old-age) stereotype switched from a promotion orientation, which was oriented toward success, achievement, and facilitation of performance, to an avoidance orientation, which was oriented toward avoiding failure and losses (Bowen & Staudinger, 2013; Crowe & Higgins, 1997). The regulatory focus on avoiding failure precipitates selective attention on minimizing mistakes rather than maximizing outcomes, which eventually leads to lower levels of actual performance (Hess et al., 2003; Seibt & Förster, 2004). In companies with a positive old-age climate, however, the usual age-related increase in avoidance orientation was buffered and employees reported less turnover intentions (Bowen & Staudinger, 2013).

Given what has been presented so far, the presence of a negative older worker stereotype in a company, that is, that older workers in general are less valued than younger workers, most likely has negative effects on the productivity of older workers (Bowen et al., 2011). As a result, negative relations with job satisfaction and job commitment have been ascertained (von Hippel, Kalokerinos, & Henry, 2013). Given this evidence, companies should be aware of their older worker climate.

## CONCLUSION AND OUTLOOK

In summary, chronological age is often used as a convenient placeholder for many biological, psychological, and societal influences as well as their interactions which are exerted as people grow older. Chronological age has no explanatory and little informational value after young adulthood. The speed and nature of age-related processes differ greatly between people. It would therefore be much more important to know the biological, social, and psychological ages rather than the chronological age of a person. Nevertheless, modern societies heavily rely on chronological age, for instance, to determine their economic productivity in the sense of the dependency ratio. Ongoing historical changes increase the discrepancy between chronological age on the one hand and biological, cognitive, or personality age on the other hand. The same chronological age stands for better health now than 20 years ago, which entails more degrees

of freedom to create new dimensions of social age yet to be implemented. These multidimensional outside perspectives on aging are complemented by a network of inside perspectives. Research has shown how powerful internalized images of old age can be. They feed back into performance and behavior which are at the basis of the outside perspectives. Future research needs to focus on furthering our understanding of the mediating mechanisms which bring about not only the historical changes of the aging process but also the mediating mechanisms linking personal, societal, and meta-images of old age.

### NOTE

1. Age norms are defined as the statistical average in a given population for a certain behavior, but they can also be prescriptive in the sense that a certain behavior is expected at a given age (e.g., Hagestad, 1990).

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