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# PROMOTING CONSCIOUS AND ACTIVE LEARNING AND AGING

HOW TO FACE CURRENT  
AND FUTURE CHALLENGES?

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(COORD.)

## POSSIBILITIES AND LIMITATIONS OF AGE

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### Abstract

This chapter deals with both sides of the aging process which carries losses and gains, growth and decline. First, the biology of aging is examined as a determinant of individual and psychosocial decline and impairment. Second, relationships and transactions between the individual and his/her socio-cultural context are going to be described in several psychological characteristics such as cognitive plasticity, positive and negative emotions and coping styles. Thirdly, the importance of the individual as an agent of his/her aging process is emphasized, and ends by positing a broad multidimensional-multilevel aging model. Finally, limitations of the aging process coming from images and beliefs about the aging process are described before introducing some conclusions and remarks.

**Keywords:** Active aging; Growth and decline; Aging threat; Aging stereotypes.

### Introduction

Age is the explanatory variable; the *leitmotiv* of this chapter is about older adults and the aging process. The age of an object, person, context or circumstance, implies the passage of physical time and is objectively

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measured (365 days, of 24 hours, and 60 seconds, etc.); thus, older adults are an age group and aging is a process in which we get older or, in other words, it implies the passage of time.

Nevertheless, to name this process, there is no word in the Spanish language derived from “la edad” (like in the Portuguese and English languages), something like «*edadmiento*» (aging). Although age is the concurrent variable in the explanation of aging and old age, as a process of aging, neither concept has a root in the word age in the Spanish language. In accordance with the Real Academia Española de la Lengua (RAE) [Royal Spanish Academy of Language], which presents old age with a negative connotation “the last period of physiological decadence in the life of the organisms”.

Notice that RAE seems to reduce old age to a biological condition that implies «decadency». For some authors like Pankow and Solotorov (2007) biological aging represents a loss in the efficiency of our different biological systems. Nevertheless, both the aging process and old age, as a state or period, should be considered not only in a biological perspective but also in a *bio-psycho-social perspective*. All considerations about aging, old age or the elderly should also consider the bio-psycho-social aspects of the aging process and not only biological conditions. The negativity of the semantic component «old age» extends to the physiological (or biological) component of age to the other conditions of the human aging process. This mechanism not only impregnates all the semantic derivations of old age but also maximizes and positively values its antonym «youth», «youthfulness». Ultimately, «young» and «old» are two periods, stages or ages of life that are at the same time compared to two poles of a same evaluative dimension, respectively «good» and «bad». These evaluative categories impregnate so profoundly the terminology related to age that a person of 70 can say «I feel young» to express that he is simply «feeling well».

This evaluative component attributed to old age explains why the expression has fallen into disuse to refer to a particular age group while some expressions appeared with a less evaluative component. In the 70s and 80s the expression «third age» was used to refer to persons over sixty-five years old and after the 90s a comparative denomination began to be

used «personas mayores» (older/bigger people), which in other countries and languages turned into «older adults» or «aged persons».

In any case, the period or state of older age, as we will see in this chapter, has a very long duration and an enormous variability and even if we consider 65 years old (more common age of retirement in Spain) the beginning of old age (but not of the aging process that begins much earlier) and «older person» the people that have passed that age frontier, there are several classifications that cluster and sometimes agglutinate distinct ways of aging (for example, «young-old», «oldest-old», «pathological aging», «normal aging», «successful aging», etc.) and which may or may not be coincident with distinct ages.

In short, if we consider that life expectancy is around 80 years old and that the longevity of our species is around 115, from 65 onwards we could still count on living more or less 50 years of the potential period of old age. So we have to admit that the larger age period would be the old age in comparison with infancy, adolescence or adulthood. Although *life expectancy* at birth is increasing, unfortunately the social markers of «bigger», «aged», «old», retirement age remain constant although we have doubled life expectancy at birth (Fernández-Ballesteros & Díez-Nicolás, 2008).

Taking all this into consideration and that inter-individual variability increment throughout life, there is nothing unusual that the large period that we are considering contains a maximum diversity at the end of life. We can observe this, as we will see later – concerning the different ways of aging and distinct subgroups of age categories.

In conclusion, the process of aging (the life cycle) necessarily implies change. Once the highest level of bio-psycho-social development is reached – and considering that this process reaches its maximum bio-psycho-social development (in its distinct subsystems) at distinct moments of life, and therefore, at different ages – it would be natural to ask: what is the balance between change and stability in the life cycle? To what extent do we find negative changes? Is it possible to observe positive changes at the entrance to old age? What are the limitative or negative conditions that happen with age and what also are the possibilities of growth and positive change with age?

As we will emphasize later we can say that the limitations related to the aging process (and, in the same manner, its potentialities and resources) are due to the fact that it is a living organism which, after reaching its maximum biological development (around twenty years of chronological age), starts to be gradually less effective in its somatic and sensorial subsystems, creating a progressive decline in its physical characteristics like cutaneous elasticity, muscular strength, visual and auditory acuity, etc. All of them, as signaled by Fries (1989), are non-changeable characteristics specific to the aging process, all of them being a product of age and part of what authors have considered primary aging.

Nevertheless, aging is a multidimensional *bio-psycho-social* phenomenon, and therefore it is pertinent to ask if the biological decline occurs, in parallel and isomorphically with the decline in the psycho-social functioning of the individual. *In part*, biophysical aging is the basis of psycho-social aging, and therefore they run parallel with each other; so the fluid cognitive functioning that we measure through tests of visual-motor coordination or work memory runs in a thin parallelism with the neurobiological functioning, while the functioning of personality, affectivity or of interpersonal relationships doesn't have the same profile, and inclusively can show tendencies of positive change associated with age. In figure 1 we can observe from a cross-sectional study of Europeans between 30 and 85 years old, patterns of decline and stability; while physical measures as strength, speed, pulmonary capacity, working memory, psychomotor coordination are associated with age patterns of decline, variables of personality, affectivity, social and family networks present a notable pattern of stability (Fernández-Ballesteros, Zamarrón, Rudinger et al., 2004).

Nevertheless, we still have to understand if age has a positive influence on some of the characteristics of the individual and their functioning. The study realized by Heckhausen and Schultz (1995, see also, Heckhausen et al., 2005) is already considered a classic that explored the human characteristics that show development, stability or decline since the age of 20 (theoretical age of maxim development) until 90 years old. These authors defend that we find profits, losses and stability along the whole

lifecycle with profiles of more development in the early years of adult life, stability during this period and more decline in the last decades of life. In short, as Baltes, Freund and Li (2005) signalize the study of aging and old age has evolved from a conception of aging in terms of decline and deterioration to the consideration of aging as a dynamic between development (earnings), stability and decline (losses).

But what is the weight of genetics and environment in the process of aging? In the opinion of Kirkwood (2005), longevity seems to be explained by 25% genetic factors as opposed to 75% socio-behavioural conditions. In this way although the limitations of aging and old age proceed from our biology, there is also a wide margin for change and environmental intervention and they explain an important part of the forms of aging from active and positive aging to a pathological aging with dependency and suffering.

There are three sources of knowledge concerning the importance of the socio-environmental and behavioural factors in aging and old age. A) First, we know that throughout the aging process – both historically and at the intraindividual level – millions of interactions are produced between the organism (in the biological sense) and the *environment*, in such a way that the organism is *penetrated* by it and gradually assumes a growing importance in the individuals' life (Baltes et al., 2005). B) This doesn't only happen on an individual level but also to the species as we have proof of this in human history and even, as Schaie (2005 a, b) points out, we have empirical evidence of this across the 20<sup>th</sup> century, where we have observed that younger generations have always obtained higher results than the older ones. C) Finally, as Bandura (1986) emphasizes, the individual is not a passive entity governed by a limitative biology and a tyrannical socio-cultural context, but he is an *agent of his own evolutionary and aging process*.

Till now we have emphasized the balance between limitations – which are due to our condition of biological beings – and the possibilities that seem to emerge from the thousands of interactions between organisms and socio-cultural contexts that – both at a phylogenetic and at an ontogenetic level – seem to have generated extraordinary levels of

development of the species (doubling life expectancy in a century) and in the individual (making it possible for many individuals to attain old age in good physical, social and psychological conditions). What is the explicative mechanism of the change described? The authors seem to be in accordance that it is plasticity (and the capacity of adaptation that it implies), the essential property of the human organism in that essential progress of adaptation.

There is no doubt that *plasticity* is an essential biological property of the human being which, in simple terms, postulates the capacity of our biological systems to regenerate. Nevertheless the biological plasticity counts on a correlated behaviour, in particular, the cognitive plasticity that resides, isomorphically, in our central nervous system, already established by Cajal (for a revision see: Fernández-Ballesteros, Zamarrón, Tárraga & Calero, 2007). In simple terms, cognitive plasticity can be defined as the individual's capacity to change, in other terms, his capacity of learning, of taking advantage of experience. From a methodological point of view research about plasticity and cognitive reserve is based on experimental designs that adopt a test-training-post-test format.

Later in this chapter we will present several studies concerning this subject; in summary, many research teams have worked under this paradigm, obtaining very consistent data among them (Baltes et al., 1988, 1989; Fernández-Ballesteros & Calero, 1995; for a revision see Fernández-Ballesteros, Zamarrón, Tárraga & Calero, 2007). As an example of these outcomes in figure 2 we present the learning curves of healthy people in different age categories: 55-64, 65-74, 75-89 and aged 90 years and older, obtained in several research projects concerning cognitive plasticity.

We can say that the *possibilities* of learning happen in the entire life although these possibilities *decline* as a limitation associated with age. This factor explains a minor part of the variance of the pathology in trying to explain the existing differences between healthy people and those suffering from Alzheimer's disease.

It makes sense to question if there are also gains or positive changes or learning in the emotional and motivational domains of human functioning? In other terms, is there throughout the life span, proof of an

emotional/motivational plasticity beyond cognitive and physical plasticity? The answer is without doubt affirmative, as behavioural plasticity is not exhausted by cognitive plasticity and includes other emotional, motivational and personality dimensions.

Although the majority of gerontology manuals have given more attention to cognitive functioning in old age, in the last decades we have seen a growing concern with the positive changes in the emotional-motivational domain with age (Carstensen, Mikeles & Mather, 2006), or in other skills, such as coping with adversity, including some aspects of personality in the interplay of emotional and cognitive conditions.

The outcomes of this research program, which will be presented later, emphasize that in the lifespan we find more regulation and emotional control. Some authors define the *positive effect* (Carstensen et al., 2006) as an evolutionary pattern where the preference for a negative material in the information processed by the youth changes during the adult life span to a preference (excessive and/or unfounded?) for the positive in old age. This has been tested through multiple experimental tasks. How can we explain these positive resources that appear in old age? As we will detail later – and as many different theories have defended – across the lifecycle the emotional system changes facilitating *answers for a better adaptation* (including emotional regulation), in the direction of the individual's survival and adaptation to his environment and to his own changes (Fredrickson, 2001; Magai et al., 2006), which we can infer as coping mechanisms, in part, adaptive (Laboubie-Vief et al., 2005).

In summary, the limitations of the human organism along the aging process come from his biological structure that becomes less efficient with age. At the same time, due to the incompleteness of these structures and their plasticity, socio-cultural and environmental conditions, in the case of being optimizers or compensators of the individual resources', are precisely the conditions for positive change as plasticity is the key of bio-behavioural mechanism and variability in the psychological functioning in the older age as well as its own expression.

It has been said (and it is a postulate of this book) that aging is a process that happens during the entire lifespan. It has been also said

that there is an extraordinary variability of forms of aging; this means that human beings age in different ways depending on their interactions with the socio-cultural context where they live. Nevertheless, as it will be emphasized later, these forms of aging do not occur randomly and are not the exclusive responsibility of the organism in the biological sense, nor of the environment and its physical and social stimulation, but of the transactions that happen in all these factors as the individual is an active agent of his own aging process. In figure 7 we present an aging model that clusters distinct and relevant dimensions along the aging process and, therefore, explains distinct ways of aging (Fernández-Ballesteros, 2002, 2009). From this temporal scheme it is necessary to organize the hypothetical aging determinants along the life span that integrate possible determinant factors, transaction operators, which have as outcome, in a concrete moment, the specific way of aging of a particular individual. Later we will offer several examples with the aim of illustrating this complex model in all its constitutive elements.

Ultimately, it is a way to condense in a figure all the interactive elements that happen through the life span between the organism, the social-environment changing conditions, and the person itself with his behavioural repertoires. Further on we will signalize two derivations that emerge from this position that we can consider as mainly transactional between environment conditions and the individual as agent of his own aging process.

There is no doubt (as defended by OMS, 2002) that the physical, health, social, cultural and socio-economic conditions determine, with the bio-psycho-social aspects of individuals, the processes of aging. However, there is a frail analysis of a cluster of socio-cultural factors that bring limitations to active aging: the images about aging and old age.

The II International Action Plan about Aging (United Nations, 2002), in its Priority Direction 3, in topic 4 points out that a positive vision about aging is an essential part of the Plan and speaks in favour of the need to fight against stereotypes and negative images about old age. In the same direction, the World Health Organization (OMS, 1989, 2002) has defended the importance of stimulating non-ageist images, among

health professionals and formal and informal caregivers of older adults, assuming that these images have a causal pathogenic value that can be converted into self-fulfilling prophecies, going in a subtle way against the quality of life of the elderly that are congregated in services and centres (Fernández-Ballesteros, 2011).

In the corresponding section of this chapter we will revise distinct studies about stereotypes, attitudes and values about old age. The data gathered allows us to conclude that these images are mainly negative because they imply an overgeneralization of the negative conditions as elders are classified as «dependent», «sick», «sad» or «idle». In a lesser proportion positive classifications appear like «experienced» and «wisdom».

In summary, when we use different types of reactive stimuli (positive and negative) with different methodologies, the data about stereotypes and attitudes related to aged people can be explained from two different perspectives; conceptually, as in other countries, the image of older people produces mixed feelings, in other words, two sides (Cuddy, Nortony & Fiske, 2005). Against the image of dependency, disease and incompetency appears another of wisdom, good advice and experience. This dualist view can explain socially ambivalent behaviours: the positive view will enhance care programmes and protection; the other view can lead to social exclusion and discrimination. This polarized view can be dependent in part on the method applied: if the evaluation uses bipolar adjectives, a more negative view appears (in consonance with what people feel?) than if we use positive evaluative sentences of high social desirability.

In any case, the negative stereotypes express the cognitive value of elder people that would be also manifested in a prejudiced (emotional) condition of the aged and that – worse – could be manifested in social discriminatory behaviours. Later in this chapter, in the corresponding point, we will *emphasize* that the stereotypes and negative images suppose a *threat* to the individual as they are manifested in *ageist behaviours* in the elders themselves, in the people to whom they relate, caregivers, professionals, as well as in *the society* as a whole. Inevitably, the conclusion of this chapter is that much more research is needed to permit an untangling not only of the image that the Spanish society has about the

senior population but, especially, their emotional, behavioural and other (legislative, sanitary, social, etc.) effects.

### **Analysis about the possibilities and limitations of age**

Old age is considered an age of life while aging is understood as the process of getting older which happens very early (after childhood and adolescence) and takes place throughout the life cycle, as will be highlighted later.

The connotative aspects of the term «old age» and their derivations explain why trying to classify with a verbal label the different ages of life – in addition to childhood, adolescence and adult age – distinct terms have been used. The terms «old age» and «aging» are the verbal labels to refer to older people. The value given to distinct terms as «old», «elder», «third age», «aged person» can be different. According to studies developed in Spain, «old» is a pejorative term; «elder» is the name given to a very old and frail person; «third age» refers to people in a situation of needing care or in a state of inactivity, and finally «aged persons» seems to be more neutral and belongs to the politically correct vocabulary following the recommendations of the United Nations on the occasion of the International Year 'World for All Ages'.

In any way the opinion about whether age is or is not an important marker to nominate «older people» has changed over time: in a survey carried out by CIS (2009), after being questioned about when can we say that a person is old, 17.3% of the sample (representative of the Spanish population aged over 18 years) said it didn't depend on age; 13% said it refers to people older than 60; 25.3% older than 65; 28.7% older than 70; 9.3% older than 75; and 4.8% older than 80. Thus, the majority of the sample regarded age as the marker to consider a person as aged or in the higher segment of age. But there are other conditions of the person which may contribute to the designation «old», such as physical appearance (for example, wrinkles, lack of flexibility), the psychological state (for example, slowness, introversion) and also the social state (for example,

being retired). If we consider the bio-psycho-social scientific data, there is no defining characteristic of the entrance into the category of «older» unless we adopt socio-labour criteria such as the age of retirement.

In any case, even if we take a specific year as a marker to signalize the entrance into old age, there exists a huge variability in the different age groups of older people. Having in consideration the range of years covered by elder people between 60/65 years (cut off point for the entrance in the elder age group) and the mean age of longevity (for men and women), 78-83 years, more than two decades elapse, and if we consider the maximum life expectancy of the human species (100-115), we can say that the older group is composed by many subgroups that would comprise (at least theoretically) more than fifty years.

Researchers have grouped distinct subgroups of older people; Neugarten (1975) establishes two categories, young-old (from, more or less, 55 years to 75) and the old-old, over 75 years. Riley (1988) widens these age ranges with a third category, «very old» where we could find the people of more than 85 years old (it is interesting to notice that historically the authors use a bigger number of categories to comprise the complex phenomena of old age). Although these subclassifications are based on chronological age and have a cultural support, they do not express scientific criteria, except in relation to disease and dependency.

Beyond chronological age, gerontologists have proposed a functional age to work through the aging process through longevity *biomarkers* (Evans & Rosenberg, 1991). In the same direction, they have tried to find markers of psychological aging like learning capability, reaction time and motor speed as indicators of positive aging. There has also been an attempt to understand the risk of death through the abrupt change in the intellectual functioning («drop-out» phenomena; see Berg et al. 2007). Nevertheless, as McClearn (1996) refers, till the moment, no marker of aging has managed to meet the established requirements, for the simple reason, the author defends, that we have not yet defined what is actually old age and aging.

Parallel to the classifications around chronological age that we have mentioned, based on functional age, the distinction has been made be-

tween the third and the fourth age (Baltes & Smith, 2003). Third age refers to those older adults who maintain optimal functionality, meaning good health and functional autonomy, while the fourth age would refer to the group who have a functional age with high deterioration, bad health, low autonomy and high fragility. It is supposed that this functional categorization corresponds to a biological age overlap, because the probability of having good health and good physical functioning is greater between 65 and 75 years old than in the fourth age, after the 80s. An attempt has been made to overcome this overlap or matching between age and functionality by separating age and disease conceptually and nominating the decline or deficit produced by age as *primary aging* and the outcomes and wounds of disease as *secondary aging* (Hayflick, 1994).

Despite all these classifications, the variability in the ways of aging is incredible, and in this sense all dichotomous classification would excessively polarize this diversity of ways of aging. Thus, finally, functional age is serving to establish a bio-psycho-social classification which is very trendy nowadays as proposed by Fries and Carpo (1981), Fries (1989) Rowe and Khan (1987), OMS (2002), and Fernández-Ballesteros (1986). This classification distinguishes between *pathological* aging from *normal* and active or *positive* aging. The most important for our aims — and because there is a parallel text about pathological aging and dependency (Imsero, 2003) — is to signalize that this chapter focuses on normal (regular) and active longevity and does not comprise pathological aging.

In summary, in accordance with the wise advice of Voltaire when he recommended «define the terms you use», with this epigraph we had the aim of specifying the vocabulary that will be used here as well as to underline that there are different forms of aging (primary and secondary), different subgroups of elder people (based on chronological age and functional age) that expresses a wide diversity of interindividual variability, which always makes the possibilities of generalization difficult. Anyway, throughout this chapter we will focus mainly on normal and active aging and on the older adults group with well-preserved functionality.

## **A. Biology as a basis for individual decline and psychosocial deterioration**

From a biological perspective, aging is a process that occurs throughout the lifecycle (and not only in the last stage of adult age). Hayflick (1994) defines actuarial aging as «the sum of the biological changes or functional losses that increase the probability of death» (p. 63). It is clear that from birth we approach — day by day, minute by minute — our own death; so, as some authors stress, aging should be computed retrospectively existing previous changes before death that we will highlight later. It should be noted that death, like birth and aging, is a natural phenomenon and that adaptation to life also involves the acceptance of death through adaptive coping mechanisms.

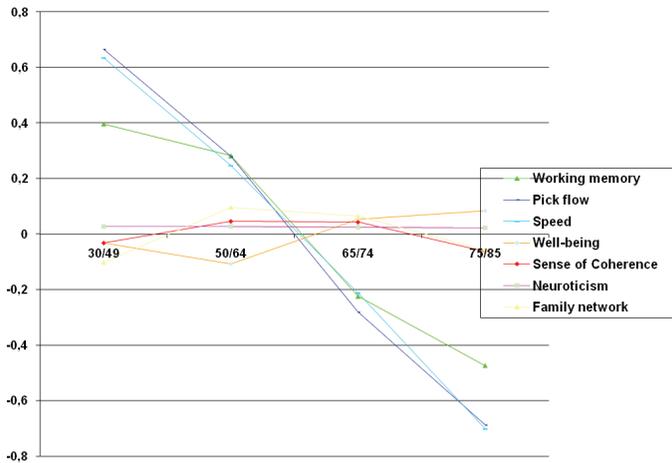
The most important thing here is necessarily to note that aging (like life) is linked to survival and death, and therefore to sickness. In this sense, as noted above, the distinction, as defended by Hayflick (1994), should be specified between primary aging (normal aging) and secondary aging linked to disease. We wish to emphasize primary aging and that secondary aging is linked to disease, the “public enemy number one” of primary aging but often confused with the first. In other words, age carries with it an increased vulnerability to illness and therefore any negative feature throughout the aging process can be understood as a consequence of age when, in fact, it could be the consequence of the occurrence of disease and as such the result of secondary aging (Pankow & Solotorov, 2007).

From a biological population perspective, Gompertz (1825) established nearly two centuries ago by following multiple statistical calculations, that the mortality rate increases geometrically through the lifecycle, managing to demonstrate that the mortality rate of the has doubles every 8 years from 30 years on. Some interesting limits have been established to the proposals and statements of Gompertz; for example, Wickens (1998) shows that these calculations do not apply to people over 90 years old, perhaps because of the selection processes that necessarily occur in the very old. However, as is well known, there are actuarial tables with probabilistic intervals enabling us to specify the percentage

of survival through a time period linked to demographic indicators. As noted above, it can be argued that one of the *limitations* of aging is a greater vulnerability to disease. Our biological systems become less efficient with age. In fact, illness seems to be a defining element of the Spanish elder population, as is highlighted in the Imserso Report of elder people (2008), where about 40% of people over 65 consider that the entry into old age is determined by health deterioration. Therefore, any policy fostering health and preventing disease across the lifecycle would be a positive policy in favour of optimal and active aging and preventive of dependency and, ultimately, good for elder people of the generation targeted by these policies.

It should be noted that, once the maximum biological development is reached (around twenty years of chronological age) as our biological systems become less efficient, there is a decline in our physical characteristics, certainly at different rates – depending on each function, exercise and the different time period of the aging process – but not necessarily due to disease. Thus, for example, reduced skin elasticity, decreased muscle strength, longer reaction times, reduced visual and hearing acuity are characteristics of the aging process, all of them being age products and as such part of the primary aging process.

But we noted that aging is a multi-dimensional *bio-psycho-social* phenomenon and, therefore, there is the need to question whether biological aging, which we have been referring to as a slow process of decline in a number of physical characteristics, occurs in parallel and isomorphically to a decline in psychosocial functioning of the individual. In part, biophysical aging is the basis of psychosocial aging and therefore it runs parallel to it. For example, fluid cognitive functioning assessed by tests of visual-motor coordination or working memory, runs in close parallel to neurobiological functioning. However, the functioning of personality, affectivity, and interpersonal relationships do not present the same profile and even may show positive change trends associated with age.



**Figure 1:** Stability and decline in physical, psychological and social characteristics through age (Z-scores) (Fernández-Ballesteros et al., 2004).

The results we present are an example among hundreds of the different variables: physical (strength, speed and lung capacity), cognitive (work memory and psychomotor coordination), affective (welfare), personality (extraversion and coherence) and social (family relationships), from the Excelsa cross-sectional study (figure 1), carried out in seven European countries with samples selected by age, sex, education, and rural-urban context, which involved 672 people (96 per country) between 30 and 85 years old. As we can appreciate, while measures (presented in «z» scores and, therefore, comparable among themselves) of fluid intelligence (as working memory evaluated with digits and psychomotor coordination evaluated through symbol digit) show a pattern of decline similar to the physical measures of strength, speed, and lung capacity (assessed by peak flow), personality, affective and family variables show a pattern of remarkable stability.

The same also applies to other wider social characteristics, as long as they are governed by rules that depend on values and social structures that can be modified under the power of reason, knowledge and political will. However, the influence of biological aging on the social conception of old age is so strong that, as we shall see later, it determines the images on aging, and even on social structures such as retirement.

In summary, the patterns of biological decline suppose a handicap for all those human manifestations that are biologically supported, but this doesn't necessarily occur in other psychosocial characteristics that show a high stability throughout the life cycle (once maturity is arrived at, where, probably, the maximum development has been consolidated) or that can be optimized continuously (as with experience) or be compensated in case of decline.

## **B. Interactions of the individual with the sociocultural context: changes and stability across the lifespan**

During the last years we have seen important advancements in the understanding of the basis of aging and of its expression in the behaviour of the individuals. As Kirkwood (2005) stresses, we know to what extent genetic factors influence longevity, what cellular mechanisms underlie the aging process and what environmental, social and behavioral factors modulate (even determine) the distinct trajectories of the human individual from birth to advanced ages of life. Additionally, as this author points out, despite the fact that 25% of variance in longevity is explained by genetic factors, there is a large proportion for individual and social determination upon different ways of aging, estimated at 75%. We also noticed that throughout the aging process, considering the interaction between the organism (in the biologic sense) and the environment, this last factor gains an increasing importance. And, lastly, we know that the individual is not a passive entity being ruled by a limitative biology and by a tyrannical sociocultural context, but that he is an agent of his own evolutionary process and aging.

Advances in methodological research designs, time projections and the use of multimethod approaches have also been demonstrating that there are relevant changes in the majority of physical (height, speed, march, running) and psychological patterns (intelligence coefficient, reasoning, psychomotor coordination) of the individuals throughout history based on reliable data, at least since the last century. We have also perceived that younger generations get better results than older ones and that hu-

man and social development is producing generational changes which, in turn, have an impact on inter-individual changes (Schaie, 2005 a,b).

We know, definitively, that the socio-environmental and personal conditions modulate biological processes and that human and social developments have led to a renewal of the younger cohorts, so that stereotypes resulting from ageism discrimination should be updated in the light of the constant scientific evolution of knowledge.

All these developments justify the assertion that the science of aging and of aged people should be approached from a bio-psycho-socio-cultural and historical perspective, and that any single-disciplinary or transversal focus reduces the understanding and the analysis of the phenomenon under study: aging and the older population. Therefore, we have to keep in mind that if we consider as the age group those individuals over 65 years living at the end of the first decade of the 21st century in Spain, we have to draw or delimit its social history: precisely, all of them have lived through a civil war and a long period of isolation and deprivation. Many of them have suffered periods of hunger and food scarcity (dearth) and they have been educated in a sociocultural context in which food, education, social and political expression were scarce, at the same time that values of effort, tenacity and collective effectiveness were generated (e.g., Díez Nicolás, 1999; Montero, Fernández-Ballesteros, Zamarrón & Rodríguez, 2011). Thus, what has been said here only applies to older people currently residing in Spain (proceeding from a specific socio-historic context) and any generalization to other cohorts would be risky.

As Baltes, Freund and Li (2005) underline, the vision of aging and old age has evolved from a conception of aging as decline and deterioration to aging seen as a dynamic between gains and losses. In this sense it is important to stress that the known incomplete architecture of human ontogenesis increases with age, leading to a greater weight of culture, in the evolution of the individual, culture being defined as “psychological, social, material and symbolic resources (knowledge-based) that human beings have developed over the centuries, transmitted from generation to generation making possible its development” (p. 50). But, throughout the process of human development there is a locus of those resources

with distinct functions: while throughout adult life those resources are invested in maintenance and optimization, during old age the main challenge is the need to regulate and compensate the potential limitations and negative changes that occur in physical, cognitive and social conditions.

When we compare the current subjective evaluation, between the perception of the limitations and the perceived possibilities, to the past expectations about old age and other older people today, we find that more than 75% of older people feel “quite or very happy”: on a 10-point scale the results obtained are 7.3 and even when the present level of satisfaction is evaluated compared to life in general, the obtained score of older people is near 7 (see, Fernández-Ballesteros, 1992; Fernández-Ballesteros et al., 2009). These data point to the emotional self-regulation mechanisms used by the individual, leading to a positive balance in old age; these mechanisms are not only found in Spain but in almost all of the countries where these factors have been examined.

Summarizing, the great majority of the authors accept that aging (across the lifespan) is an adaptive process through which the individual manages his personal and psychosocial resources depending on the interaction between biological, psychological and sociocultural conditions. From a functionalist point of view, any sociocultural mechanisms that promote the maximization of individual possibilities may be considered as part of a laudable policy. Definitely, the potentiation of these physical, cognitive, affective and social resources throughout the aging process (i.e. lifelong) will be adaptive to the individual and the species.

The study realized by Heckhausen and collaborators, is already considered a classic (2005, Heckhausen and Schultz, 1995), in which people of different ages were asked to indicate what characteristics showed declines or growth from the age of 20 (theoretical maximum age development) to 90 years old. This study stressed that throughout life positive changes or gains may occur, but associated with age, an increase can also be expected in «losses» with a reduction in «gains». Thus, as we can see in figure 1, fluid intellectual functioning (even in the absence of dementia disease) declines with age; however, at the same time, stability is observed in the majority of personality functioning: internal coherence or social relationships.

Heckhausen and his collaborators have inquired about which are the mechanisms for positive change throughout life (including old age) as well as where to place its limits. The answer came from a powerful line of research: plasticity. As the experts of development underline and as has been highlighted previously, the extraordinary behavioural plasticity (not only cognitive) emerges from human incompleteness (as in other mammals). Comparative studies show that an extended period of maturation produces the possibility of redefining – throughout the lifecycle – physical, cognitive and socio-affective skills that allow survival (Geary & Bjorklund, 2000). Behavioural plasticity is not exhausted by cognitive plasticity but it also covers affective, motivational and personality dimensions. Actually, most treaties on gerontology have devoted a higher interest to cognitive plasticity during old age than to other aspects of the individual psychosocial functioning. It is in the recent decade that a greater interest has begun to specify the changes that also occur in the emotional-motivational area (e.g., Carstensen, Mikeles & Mather, 2006) or in other coping skills through stress situations or even some aspects of personality – in the interplay between cognitive and emotional conditions – which seem to increase throughout life and particularly in old age. Thus, the investigation program with the greatest impact about what is a positive change throughout the aging process deals with cognitive plasticity and other forms of plasticity such as socio-affective functioning.

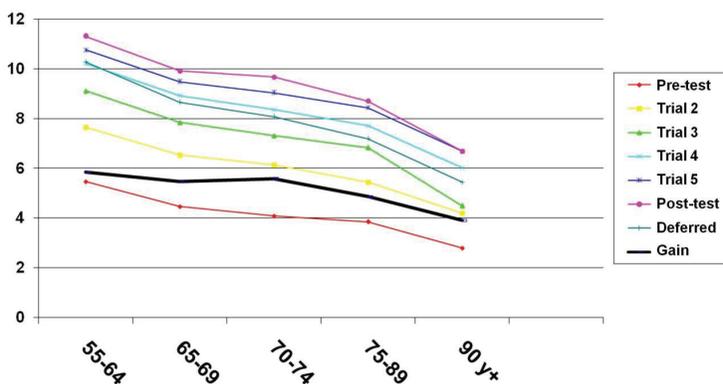
*Cognitive plasticity* (also called *learning potential* and *cognitive modifiability*) means the ability of the individual to benefit from a learning situation or, in other words, of modifying his cognitive functioning as a result of training. Cognitive plasticity is an expression of two psychological constructs: *neural plasticity* and *brain reserve*. Neuroplasticity is the basic principle of the capacity for brain reserve and for cognitive plasticity. Brain plasticity or neuroplasticity is considered to be a general property of the central nervous system (CNS) and is defined as the capacity of neurobiological change in response to experience or sensory stimulation throughout life. Social and physical stimulation, schooling, professional career, lifelong training and other environmental conditions are determinants of this reserve capacity (both as neural and cognitive

reserve). As we will see in the following epigraph, plasticity throughout life depends on meso- and macro-contextual factors. In addition, brain and cognitive reserve are both products of the individual transaction with socio-environmental conditions and at the same time *sources* of the positive effects of cognitive functioning produced by programs of intervention during old age. In other words, a high level of schooling and an intense and prolonged cultural stimulation will cause a broad brain reserve in individuals throughout life, and also their ability to benefit from programs of cognitive optimization or compensation at advanced ages of life.

From a methodological point of view, research on plasticity and cognitive reserve is based on experimental designs which adopt the format test-training-post-test.

As an example of this methodology, figure 2 presents the learning curves from various research projects (Study Elea, Imserso, I+D+I, 2006) of cognitive plasticity, in which healthy people with different age ranges have participated: 55-64, 65-74, 75-89 and over 90 years. In all of them a learning potential test (memory of words) has been used from the Battery Assessment of Learning Potential in Dementia (Bepad: *Batería de Evaluación de Potencial de Aprendizaje en Demencias*; Fernández-Ballesteros, Zamarron, Tarraga, Moya & Iñiguez, 2003).

As we can see, there is learning throughout old age or, in other words, there is a large capacity for cognitive modification through training.



**Figure 2:** Cognitive plasticity across aging. Learning curves through 6 trials in an auditory memory learning task (Fernández-Ballesteros et al., 2012).

Older adults are able to learn, during 4 training sessions, with an average score of approximately 6 (the group aged 55 to 64 years) to 4 words (the group aged 90 years and over). A remarkable finding is that gain (pretest-post-test) doesn't decline in the first three groups (from 55 to 74) while after 75 years old this score decreases significantly, which points out the limitations due to age even in healthy people.

It should also be highlighted that there are significant individual differences in all pretests of plasticity (ranging from an average of 5.46 in the youngest group to a 2.79 in the older group) which confirm that older age is associated with less capacity for verbal learning or, in other words, persons of younger age (55-64 years) depart from a greater memory than persons aged over 75. However, despite the results from the Baseline study (with people over 70 years old), several authors (Lindenberger & Baltes, 1997; Lindenberger & Reischies, 1999; Yang, Krampe & Baltes, 2006) establish important declines in plasticity in the oldest old.

According to our data, even those older than 90 are able to learn to a high percentage after training. Finally, it must be emphasized that there are wide differences in cognitive plasticity among healthy older adults aged from 55 to 100 and in those with Alzheimer's disease or diagnosed with Minor Cognitive Impairment (MCI). These differences also exist among healthy persons over 90 years and those with dementia pathologies.

In conclusion, we can say that learning possibilities exist throughout the entire lifespan although they decline as a limitation associated with age. However, we should insist that a high percentage of very old people are still able to learn. This is important because strategies of decline compensation should be administered throughout life and especially in older adults.

However, there is a conclusion with a broad consensus that the ability to learn doesn't carry with it a new capacity emerging in older age, as is assumed to occur, for instance, with wisdom. We can say this because sometimes it is considered that older people are necessarily wise, which is not validated by empirical data. In fact, it is usual to find the reasoning that if one of the components of wisdom is experience (which is true) and experience is associated with age, the person with more experience/

age, will, necessarily, be wiser. This claim is uncertain due to the fact that, in addition to experience, an intermediate resource is required: learning from it and being motivated to transmit that knowledge.

Wisdom has begun to be a scientific construct in the last two decades of the 20th century, which means that we still have an incomplete knowledge, but what we do know for sure is that age does not explain wisdom (this already has been said by Epicurus when he dared to point out «that both the young and the old may be wise...») as has also been highlighted by Baltes and Associates (Baltes & Schaie, 1976; Baltes & Kuzmann, 2003; Staudinger, 1999; for a review see Kunzman, 2007).

The ability to learn from experience and under instruction is a condition that lasts during the entire life. This is important because the plasticity of the human being is the basis of behavior modifiability and, therefore, it is the heart of any form of intervention and it is even present, although in a limited way, in dementia disease; these assumptions should be used to eradicate nihilistic visions about older persons that show cognitive impairment (Baltes et al., 1992, 1995, 1996; Fernández-Ballesteros et al., 2003; Lindenberger & Reischies, 1999).

But, is there behavioural plasticity beyond cognitive plasticity? We know that life is a long learning process in which, in addition to cognitive-linguistic repertoires (our capacity for abstraction and synthesis, the ability of calculation) and physical and sensory-motor ones (our motor skills, from bicycling to making bobbin lace or playing the piano), we learn emotional-motivational repertoires (our affections, valuations, our preferences, etc.).

These learning processes are not disrupted when reaching a point of optimal development, but will continue insofar as there is motivation and incentive in the environment. Thus, affect and motivation are essential aspects of human functioning throughout life. Moreover, today it is considered that teaching/learning is *a process that lasts a long time* and formal university studies have been re-designated as *«long-life learning»* as well as the Madrid Plan (II International Plan of Action on Aging of United Nations, 2002) sees it and promotes it that way as in its Priority Direction I.

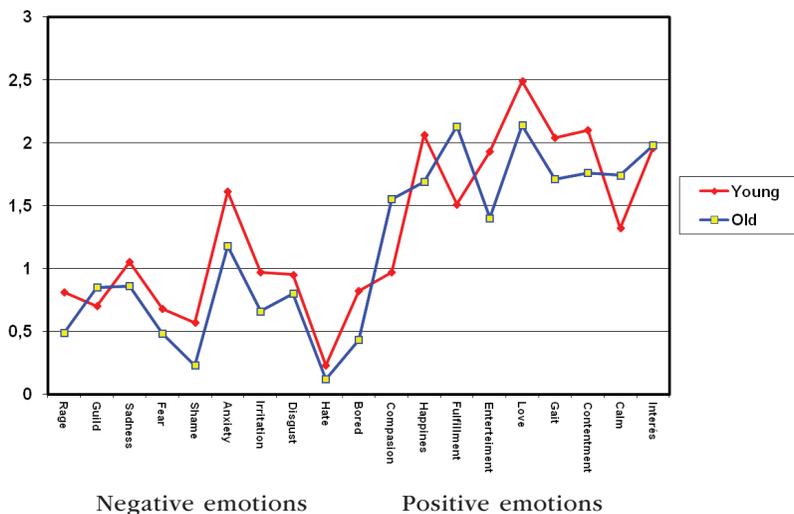
There is other question worth asking: Are there gains or positive changes or learning in emotional and motivational areas of human functioning? Or, in other words, throughout life, apart from the physical and cognitive plasticity, is there any evidence of an emotional-motivational plasticity?

The answer is undoubtedly affirmative because: how do we explain the results obtained in the study (90+) (Study Enreve. Imsero, I+D+I, 2006) of a high subjective appreciation concerning physical adjustment and satisfaction, despite the decline of all the objective conditions (strength, lung capacity or speed)? There seem to be adaptive mechanisms that are debugging, integrating throughout life, particularly in old age, in what refers to the emotional performance and the skills to deal with difficult life situations and stress situations. But, further, we know that the basic behavioral repertoires do not act independently but they interact strongly, and therefore affection is strongly linked to cognitive functioning.

Despite the interest throughout the history of Gerontology in the development of affectivity and emotion in the field of Psychology (e.g., Izard, 1991; Ackerman, Abe, Izard, 1998), a predominant attention to negative emotions has dominated, such as feelings of sadness, loneliness and depression. As multiple authors underline (for a review see Yanguas, 2008), we had to wait for the last decades to find extensive literature on emotional and motivational functioning throughout life and particularly during old age, as well as to know what relationships exist between the affective and cognitive functioning (for example, Labouvie-Vief, 1996): How is it developed? What changes occur in emotion and in personality (e.g., Magai, 1996, 2001)? What are their relationships with primary and secondary control (e.g., Schulz & Heckhausen, 1998)? Or, as Carstensen et al. (2005) highlighted, what happens at the intersection of cognition, affect, motivation and manifest behaviour and health?

Although meta-analysis, conducted by Pinquart, (2001) on this subject shows inconsistent results, most authors agree that in normal aging no changes concerning positive affect occur and, moreover, that negative affect decreases during adulthood and emotional self-regulation increases. Thus, for example, in what refers to emotional functioning, after extensive reviews on the subject, Carstensen et al. (2000) concluded that older

adults report positive emotions with the same frequency as youngsters, while they express lower frequency and intensity of negative emotions than the young. Those same results were confirmed in research in 2009: the seniors group expresses more often negative feelings than the youth group, while it does not differ in positive affect (figure 3) (Fernández-Ballesteros, Fernandez, Cobo, Caprara & Botella, 2009). In addition, older groups are more stable than younger groups in positive emotions, while they are less stable in negative emotions, and it was also found that older adults have a higher emotional complexity and a greater differentiation than the youngsters. In summary, emotional functioning improves throughout life, at least in normal and optimal aging.



**Figure 3:** Frequency of positive and negative emotions in both young and older students (Fernández-Ballesteros et al., 2009).

Results that imply a greater emotional regulation associated with age have been examined in the light of research on the effects of preference of positive conditions in the functioning of older people. Thus, Carstensen et al. (2005) define the *positivity effect* as an evolutionary pattern whereby the preference for a negative material on the information processed by young people changes throughout adult life into a preference (excessive or unfounded?) for the positive in old age, this effect being assessed through

the balance between positive and negative material. This positivity effect has been contrasted in remembrance and recognition of images, in tasks of work memory (using positive and negative materials), in discrimination of positive and negative visual materials or in performance in memory tasks that emphasize positive or negative aspects.

There are several theories that try to explain these relationships between affect and cognition. On one hand, it could be understood that age affects the use of a higher proportion of cognitive resources in all relevant emotional information. On the other hand, emotional and affective self-regulation would result in the selection of positive elements in order to improve the emotional state. In any case, it seems much more likely that these changes associated with age are ruled by adaptive mechanisms of emotional self-regulation which leads to processes of positive assessments in daily life (concerning the self and other persons), as well as with positive comparisons established by the individual with his/her past and with other people becoming older.

Of course, this positivity doesn't apply to those people who experience suffering and dependence associated with disease and disability.

The question is much more complex than it is presented here and requires much more empirical research and theoretical elaboration. What we have tried to present here is some positive aspects of human aging such as *resources* and *possibilities* that still require a deeper consideration.

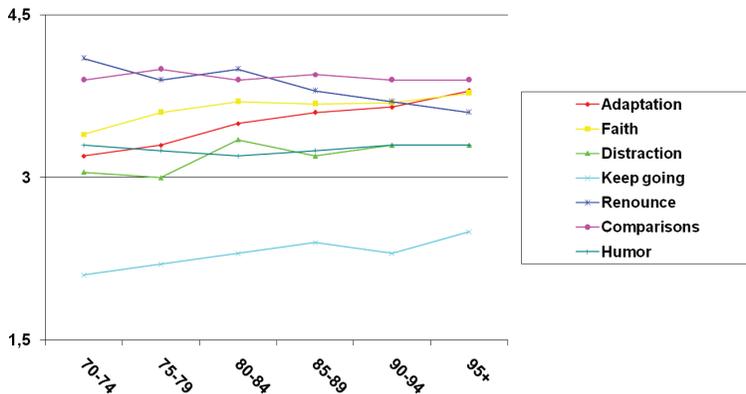
Strategies to cope with difficult situations constitute a set of behavioral repertoires (motor, emotional-motivational, and/or cognitive-linguistic) that come into play and that are understood as adaptive mechanisms of self-regulation which aim to overcome complex and threatening biological, environmental, and social situations that would exceed the resources of the individual. As Moos (1986) stated, coping with problems can be located in the interrelation between environmental conditions and personal resources and in its impact on the way people face life transitions and crises. The skills to cope with negative situations constitute a new line of investigation under the assumption that they are learnt throughout life.

Different authors have stressed that there are mechanisms to cope with the stress which change during old age. The most comprehensive

study on aging has been done by Baltes and his collaborators in Berlin (BASE) with seniors between 70 and 102 years old. Based on this study, Staudinger et al. (1999) describe 13 ways of coping: «comparison to the past», «desire of information», «comparing yourself with others», «to keep going», «to be able to adapt to the situation», «have ups and downs», «faith», «humour», «distraction», «social support», «someone takes care of us /another will pay», «life as loss» and «resignation».

The results presented in figure 4 show that 6 ways of coping (such as, for example, «humour», «desire information», «keep going») are positive in relation to resilience evaluated through the score of satisfaction with one's own aging, while 7 ways of coping (as, for example, «life as loss» or «other persons take care») are negative. There are also positive ways of coping that remain stable (like for example «comparison with others», «humour», «comparison with the past», «social support» and, even, others that increase from 70 to 100 years, as, for example, «faith», «adaptation to the situation», «distraction» or «keep going». At the same time, there are negative styles of coping that decrease such as, for example, «renunciation». Definitely, these results seem to support the existence of *adaptation possibilities* and of a positive change or a better fit in the face of adversity during old age.

Similarly, with regard to the strategies used in *emotional self-regulation* and in coping skills, Lavouvie-Vief (2005) distinguishes between the affective experience and the affective-cognitive complexity: the first would have to do with the emotional experience and the second with the understanding of this experience. Both aspects would be separable, and this distinction would make it possible to discriminate what is happening throughout the aging process. Thus, this author and her collaborators postulate two forms of emotional self-regulation: optimization and differentiation of affect. The high optimizers minimize negative feelings and do not involve them in its exploration, ignoring unpleasant situations. The high differentiators would tend to analyze their emotions, being capable of high tolerance to ambiguity and not prone to emotional repression (low repressors).



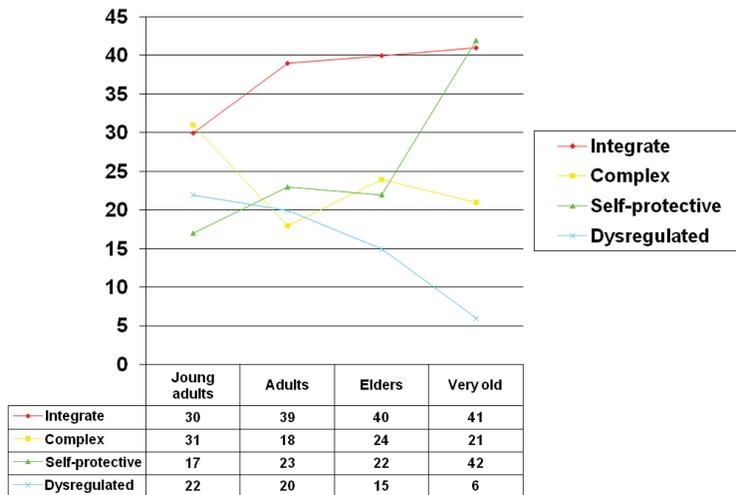
**Figure 4:** Coping styles in older adults (Staudinger et al., 1999).

In the interplay of both mechanisms, these authors propose four types of emotional styles: 1) those high optimizers and differentiators called integrated, since they show the more positive emotional development, scoring high in positive affect and low in negative affect, and also high on welfare, empathy, and in health self-report; (2) those low in both variables considered dysregulated that would score high in negative affect; (3) the self-protectors that would be low in differentiation, high in optimization and also low in negative affect, and that would be high in positive affect, but would not be so interested in personal growth as in environment control and, finally, 4) the complexes that would be high in differentiation and low in optimization and would show cross coherent patterns.

As can be seen in figure 5, the comparison of different types of styles between four age groups stresses that with increasing age the dysregulated emotional style of coping decreases, while the integrated and self-protecting styles increase. Two paths would exist: one highly positive (integrated) and one relatively negative (self-protective) coming from those people who tend towards irrational optimism and whose adaptive mechanisms do not allow them to examine stressful situations or unpleasant events (internal and external).

Definitely, there is a wide range of differential profiles that express the diversity of adaptive mechanisms in the face of adversity. In this

context, Forstmeier and Maercker (2008) have developed the concept of "motivation reserve" which implies a set of emotional skills that act against neuropathological damage while preserving cognitive functioning and psychological well-being.



**Figure 5:** Emotional regulation styles and age (Labouvie-Vief, 2005).

How to explain those positive resources that appear in old age? As already mentioned, different theories assume as key points on aging that the emotional system contains a set of resources that prompt *responses for a better adaptation* (including emotional regulation), improving the survival and adjustment of the individual to the environment (for example: Fredrickson, 2001; Magai et al., 2006), which determine a series of positive judgments and mechanisms of coping, in part, adaptive (Labouvie-Vief et al., 1987, 2005).

In summary, the limitations of human beings come from their biological structure that loses effectiveness throughout the life cycle process, but at the same time, given the incompleteness of these structures and their plasticity, sociocultural and environmental conditions are, precisely, powerful tools for positive changes, optimization and individual development (unless the environmental conditions pervert that possibility and turn in new limitations to a person's maximum development). Later we

will see how stereotypes and social prejudices about aging can be limiting conditions for an optimal human evolution. Ultimately, without any doubt there are gains and losses across the entire aging process, plasticity being the bio-behavioral key mechanism and variability in psychological functioning in old age its reflection.

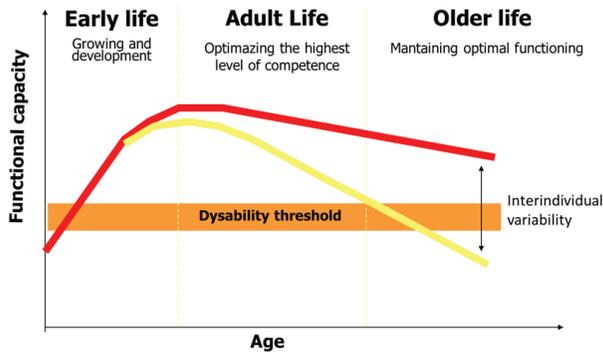
### **C. The individual as the agent of his own development**

According to what has been discussed previously (and it is the premise of this book), aging is a process concomitant with the life cycle. Also, there is an enormous variability in the ways of getting older; in fact, human beings experience the process of getting older in distinct forms according to the interactions between their personal features and the socio-cultural contexts in which they live. So, taking this conclusion into consideration, we have to emphasize that these different ways of getting older do not occur by chance, nor are they the exclusive responsibility of the organism, in its biological sense, nor of the environment with all its physical and social stimuli. They are a product of the transactions that occur between all these factors, because the individual is an active agent of his own development process.

Along the lifespan, taking into account social learning theories (Bandura, 1986; Staats, 1975), there are millions of transactions between the context, the individual in his biological and psychological dimensions, and his own behavior. In other words, across the lifespan, individuals develop adaptive repertoires (cognitive-linguistic; emotional-motivational; sensory-motor), which influence and establish the selection and creation of environments and situations. The intellectual, emotional and social functioning of an individual, his health and also his longevity along the process of aging are largely dependent on the individual's habits and behaviors.

According to Kalache and Kickbush (1997), and being after recognized by the World Health Organization (2002) in its document about active aging (figure 6), the ways of getting older and the extraordinary interindividual variability are dependent on the process of aging in its

broad sense: optimization of individual resources during infancy and childhood; maximization of these resources across the lifespan; finally, preservation of an optimal level of functioning in old age and, we would say, compensating possible declines in capacities. If we are able to reach the maximum level of our resources across the lifespan, potential declines observed in old age will not reach the disability threshold.



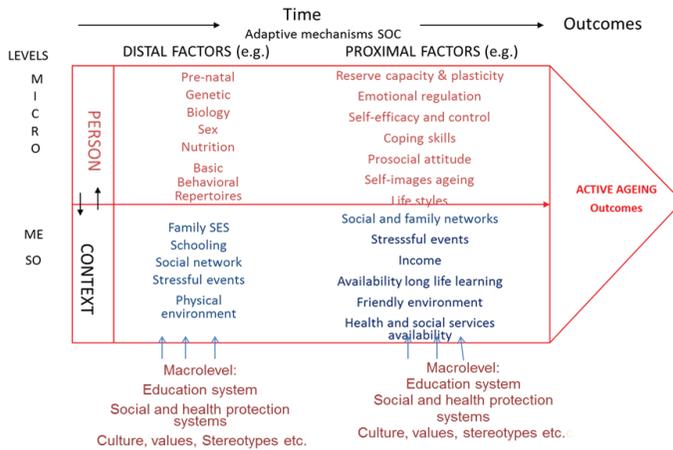
**Figure 6:** Active aging in the perspective of the lifespan according to the World Health Organization (WHO, 2002; Kalache & Kickbusch, 1977).

According to this perspective, Baltes and Baltes (1990) offered a conceptualization of positive aging conceiving a meta-model which involves three mechanisms that regulate the process of adaptive aging: Selection, Optimization and Compensation (SOC). These three mechanisms are seen as universal conditions of development regulation, which can vary in its expressions depending on the personal and socio-historical circumstances of the individual, the context and the domains examined. *Selection* is a mechanism presented across the lifespan, which is required by the great amount of context stimuli and the limitation of personal resources to deal with them. This mechanism can be considered as a requirement for the specialization of the individual and its manifestations. So, when individual resources decrease, the process of selection has special importance as an adaptive mechanism. The major efforts that occur during individual growth and development, as well as across later stages of adult life, consist of the *Optimization* of knowledge resources, abilities, competencies and all the other positive human characteristics.

The optimization of our potentialities in old age is one of the reasons for investing time and energy in learning programs that could be developed across the lifespan, being a request for the person to get older successfully in an active way. Finally, *Compensation* is a mechanism to counter losses and impairments, and despite their inevitability, to help the individual maintain a good level of functioning. Both compensation and optimization require individual efforts and imply a careful selective process before the decision about what should be optimized and what should be compensated. This complex process requires individual decision-making and involves problem-solving strategies, and can also be considered as a basic strategy for successful get older. The model of Selection, Optimization and Compensation (SOC) has been considered as a system for motivation within the life course perspective, which helps the individual to reach the highest level of functioning. Selection, Optimizations and Compensation can also be seen as mechanisms of facing problems, or strategies of life management, with protective functions and because of that as determinants of active aging and well-being. These three mechanisms can be considered sources of individual differences in the process of getting older in different moments of life. At the same time, intervention programs can be seen as tools for promoting the selection by each individual, the optimization of his personal resources and the compensation of his deficits.

But this is not the end of the story: these individual behaviors are also dependent on the contextual and social conditions, ta a micro-level (family, school, friends), meso-level (the community around), and macro-level (socioeconomic, socio-educational and sociocultural conditions of the region or the country). In another words, there are sociocultural conditions which promote the election of individual resources, their optimization and when needed the compensation of abilities that are suffering deficits.

In figure 7 is shown a model of aging that integrates relevant distinct dimensions and levels of the aging process, which may explain the different ways of getting older (Fernández-Ballesteros, 2002, 2008).



**Figure 7:** Multidimensional and multilevel model for active aging (adapted from Fernández-Ballesteros, 2002, 2008).

Considering the organization of hypothetical determinants of aging across the lifespan, which includes potential deciding factors and operators of transactions, the outcome at a specific moment of life is a particular form of aging by an individual. It is important to point out that all the relevant theoretical factors proposed in the model have been empirically tested. Some examples of these factors are described below.

At a micro level it is possible to find those dimensions that persons have generated across their histories of learning which are dependent in some way on their biological and genetic conditions and their sex, and which are composed by all the basic cognitive-linguistic and emotional-motivational repertoires, are expressed by healthy and unhealthy behavioral habits. These individual factors have been historically generated as the product of millions of interactions of the individual (in the biological sense) with the factors that proceed from the meso-context level, such as, for example, family and group socialization norms, from the school context, the sanitary attention received, the socio-familiar position, social support, stress factors, the physical, familiar and communitarian environment, etc. All these historical factors are supported by other macroscopic contextual factors like, for example, the educative system, the sanitarian and social organization of the country, religious and cultural factors, etc.

On the other hand, in the real situation of the person, we can find his internal conditions (for example, cognitive and mnesic abilities, self-control and self-efficacy beliefs, emotional balance, copying strategies, prosocial behavior, etc.) which interact with immediate contextual conditions (for example: familiar and social support, the stressing or potentially stressing events, economic conditions, self-disposition for learning, a favorable environment, the available sanitarian and social services, etc. At the macroscopic level there are also important environmental, social, economic and cultural factors (like the available systems of protection, sanitarian, social and educative structures and their investment from GDP, the policies and programs about the aging process, a system of continuous training, cultural and religious values, etc.) which constitute the support to promote or to constrain personal conditions that shape each person's way of getting older.

The SOC adaptive mechanisms defined by Baltes and Baltes tend to act across the life cycle of each person and at specific moments, and logically take meso and macro contextual conditions into consideration. In other words, an environment that offers multiple opportunities promotes selection by an individual, who could adopt conduits that optimize his capabilities across the lifespan. In line with this, policies that encourage the older person to enter college programs are promoting basic cognitive-linguistic, emotional-motivational and sensory-motor repertoires and, at the same time, social interaction and participation. Programs designed to prevent cognitive impairments will offer opportunities for compensating the possible deterioration of mnesic, cognitive or sensory-motor abilities. Also parks with resources for recreational and physical activities contribute to the optimization of sensory-motor repertoires and to the compensation of some deficits. The results obtained in population data are unequivocal. For example, countries with a high earning per capita, with a high investment of GDP in organizations of social protection and in sanitarian and educational systems have a higher life expectancy and lower rates of dependency. We can see that across the life cycle, through the interaction between the individual and the context, there are millions of possibilities of promoting mechanisms that help the adaptation of the

individual to aging processes. As a result of all of this, after numerous transactions between the person, his conduct and the multilevel environmental factors historical (distal) or recent (proximal), it is possible to come to a state in old age that we can describe through four multidimensional scopes: good health and physical condition, optimal cognitive and emotional-motivational functioning, a high level of functioning and social participation (Fernández-Ballesteros, 2008; OMS, 2002).

Although the justification of the assumption that the individual is an essential agent of his own aging process, this is something easily forgotten. In fact, there are few people that consider old age as a phase of opportunities and development and because of that they do not see themselves as agents of their own aging process. There is no doubt about the idea that the exercise of control is an essential aspect for a good aging process, and is also a predictor of health and longevity (Rodin, 1980; Rodin & Langer, 1977). In the same line, some very specific researches corroborate that the experience of control is an explaining factor of cognitive and physical competencies of old age.

When old people are asked about the behaviors of society towards them, two thirds agree that other people are fair or bad (IMERSO, 2008). When they are asked about who should have the responsibility for taking care of older people, having the possibility to choose between alternative answers (“the State”, “the family”, “individuals”), a great number of them say “the State”, more often than they choose “the family” or “the individual” (Díez Nicolás, 1997). Two conclusions came from this position that we would consider as passive: 1) there is a need for a better consciousness of the individual, across the lifespan, about the importance of his acts for the future, which entails the election of specific channels of action that open the way to active aging; and 2) a higher belligerence against social perceptions of old age – a passive person in the arms of an extremely protective and paternalistic State – which are associated with discrimination that inhibits individuals from being an active agent (according to his optimized capacities) and responsible for much across the lifespan.

## D. Limitations of aging and old age

### 1. *Negative stereotypes and self-stereotypes about the aging process*

The study of stereotypes or images about old age and the process of aging, as well as the preconceptions and discriminations based on chronological age has received little attention in Spain, in comparison with other countries and scientific contexts (this is true in comparison with other types of negative images and preconceptions as those related to race or gender). According to data from Lilly Foundation<sup>5</sup>, when we do a search using words like “stereotypes, old age”, it is possible to find 39 references, 3 of them being related to the process of getting older, which is not the case when the same search is done on the basis of international data: at the same time as the previous search for references, we found 26.000 references in Google Scholar, 2.499 in Psychlit, and 1.386 in PubMed.

The minor importance that aging seems to have for researchers in Spain becomes more evident if we consider that the Second Plan for Action on Aging (United Nations, 2002) establishes in its Priority Directive no. 3 the combat against stereotypes and negative images about getting older and aging as an objective to promote healthy environments as people get older. Also, the World Health Organization (WHO, 1989, 2002) highlights the importance of promoting non-ageist images among health professionals and formal and informal careers of old persons, in order to avoid these images helping to maintain the idea of pathology associated with old age. In fact, these preconceptions can become self-fulfilling prophecies, which may affect even in subtle ways the quality of life of the old persons who are being supervised by or living in institutions for seniors.

*Stereotypes* are simplified images about a specific social group, being strongly stabilized and serving as the basis for *preconceptions* and *discriminations* towards that group. In recent works, it has been found that the content of stereotypes related to some social groups is linked

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<sup>5</sup> ([www.fundacionlilly.com/nitro/foundation/templates/medes-earch.isp?page=30100](http://www.fundacionlilly.com/nitro/foundation/templates/medes-earch.isp?page=30100)).

with prejudiced emotions and trends towards action, most of them with discriminatory meanings. For this reason, it is necessary to know the stereotypes about the group of older people, because these misconceptions can serve to promote prejudice and discrimination based on age, or “ageism”.

Although these social images and perceptions can have positive information about the group they refer to, the study of stereotypes – generally linked to prejudice and attitudes towards stigmatized groups – tends to emphasize their negative aspects. In other words, when we talk about stereotypes we have a tendency to refer to them as *negative images* which are based on wrong beliefs about the social group under consideration and these negative ideas seem to be common across countries and cultures (Cuddy, Norton & Kiske, 2005). Nevertheless, more recent research has been shown several times that stereotypes have an ambivalent character, because they include positive and negative dimensions and are also based on ambivalent preconceptions. The latter continue to be pernicious and can be even more insidious because they can mask pejorative and disrespect attitudes under paternalist and benevolent appearances, forming the basis for more or less subtle discriminative and exclusion behaviors.

On the other hand, prejudice is seen either in the cognitive dimension of stereotypes or in the affective side of the attitude (also being largely shared by individuals in a given culture) and is expressed through the discrimination against a target social group; in our case, all of this would imply “ageism” because age is the basis for the stereotyping, prejudice and discrimination processes. Ageism basically involves the behaviors which denote a non-egalitarian treatment of elements of a specific age group because they belong to that particular group, and is also understood as a process of stereotyping and discrimination against older person because of their age. In other words, while a stereotype has a cognitive (distorted) and an affective (negative) component, ageism has objective indicators that exist in society and its citizens. Discrimination can be exercised at distinct levels: at the interpersonal level it can be expressed via the above mentioned non-egalitarian behaviors towards the members of the group in interaction with them; the institutional level

is expressed through norms that relegate the individual and the group to a disadvantaged position in a specific society; finally, at the extreme point, at the social level, it is possible to find signs of social exclusion, abuse and exploitation, which has been the subject of analysis in other parts of this white paper.

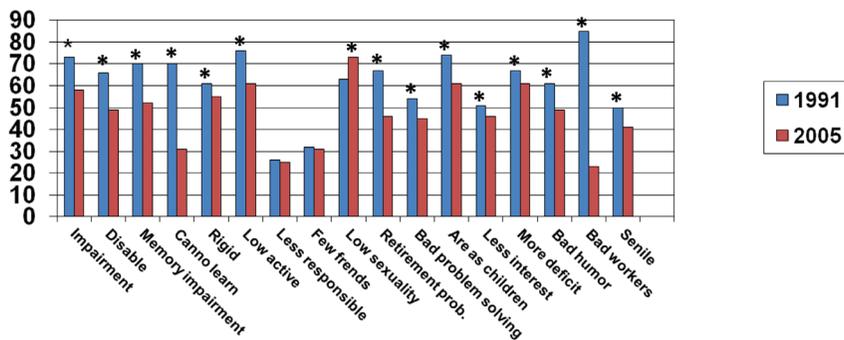
## ***2. Stereotypes about older people in Spain***

In different research studies developed in Spain and in other countries the undeniable presence of stereotypes and negative images related to old age has been detected (for a revision, please see Nelson, 2004; Palmore, 1999; Fernández-Ballesteros, 1992). These images seem to be present not only in the general population and/or in the young generation, but also in older people and, particularly, in those persons who take care of them (caregivers). The study conducted about social images and valuation of old age (IMERSO/UAM, 1992) showed that more than 60% of the Spanish population considered that “after 65 years of age a strong decline in health conditions occurs”, that “the majority of old people of 65 years old have incapacities that force them to depend on others”, that “old people have a deterioration of their memory”, that “they are rigid and inflexible”, that “they are less active”, that “they are similar to children, that “their deficiencies got worse with age” and that “they are irritable”; for more than 50% of the population old persons of 65 years old “are senile”, “worse at work” and “solve their problems in a less effective way than younger people”.

When results are analyzed trying to find interindividual differences associated with socio-demographic variables as age, sex and education, there are no significant differences in data. Nevertheless, more educated people tend to have less stereotyped images than persons with lower levels of education.

As is possible to observe in figure 8, such negative images have been decreasing in recent years, and despite the fact that they are still a reality, the policies that have been produced tend to foster a more positive vision

of old people in society, and these political decisions should continue to be implemented.



\*Significant differences,  $p < .05$

**Figure 8:** Stereotypes about older adults in Spain and related percentages (Fernández-Ballesteros, 1991, 2005).

In this context the most important thing may be the fact that old people are not exempt from this negative vision and this group of older individuals are also carriers of negative images about the aging process in general, and about their own age group.

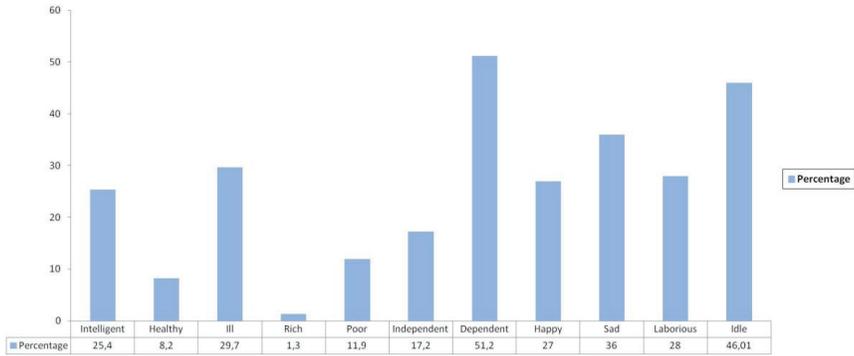
From a qualitative perspective, research concerning the perceptions about older people (IMERSO/CIMOP, 2002) stressed the relevance of the common dimension of active/passive when it comes to describe older persons, showing also that in this space a “rejuvenation” of old people has been produced. Considering the use of terms such as aging and old age, it is possible to find a contrasted image, the former being associated with a process full of expectations and vitality, and the latter based on an irreversible and highly negative state. The utilization of the concept aging instead of old age is a step forward in the creation of more dynamic social and cultural images of older people.

It is important to emphasize that each image about aging and old age of a group of old people should present enough differentiation between cultural stereotypes (those which old people perceive in the population), group stereotypes (the image that an old person has about the old persons group) and the self-image that the individual has about himself as an old

person. Considering these aspects it seems that old people perceive this cultural negative stereotype and have a negative image of their own age group instead of valuing their own image positively (Fernández-Ballesteros, Huici, Bustillos et al., 2007). It is important because the identification with one's own group seems to be a necessary condition to fight against discrimination (in any social group), and it should be taken into account when it comes to conceiving active anti-ageism policies.

Sociological approaches tend to use opposite adjectives which imply a overgeneralization of negative conditions related to old age, such as “dependent”, “illness” and “sad”, adding the condition of “idle”, because the group of older people is defined precisely by their condition of being in retirement. These objectives usually applied to better describe older people tend to create an idea of generalization about the conditions that occur in old age (figure 9), but they do not appear among the majority of elders. As we know, about 33% of old people of 65 years old are in a situation of some kind of dependency, only 12.3% perceive their health condition as bad or really bad, and only 12.3% agree that they feel sad (Imerso, 2008, 2010). And because leisure programs have been largely publicized among older people and in the wider social context, the resulting image is that they are “idle”, without taking into account the unpaid work that they do. In this line, several studies, like that one of Elea (Imerso, 2006), have highlighted that 100% of aged women and 99.8% of aged men do productive but unpaid work with an average of 6.9 hours a day (7.68 hours for women and 4.7 hours for men). If we compare these data to the total of the general population and give a monetary value to these hours, we will find that older people's contributions to the GDP will be about 106 million euros.

Because research methodology is essential for all scientific studies, it assumes a particular role when the object of study is related to images (imagery).



**Figure 9:** Verbal labels attributed to older adults in Spain (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> elections).

The results about stereotypes and attitudes related to older persons can be explained from different perspectives; the representation of old people produces mixed feelings, i.e., presents two faces (see: Cuddy, Norton and Fiske, 2005). In this sense, in contrast with an image of dependence, illness and incompetence, there is another related to wisdom, good advice, and experience. This dual vision can be useful to explain socially ambivalent behaviors: although a positive and merciful vision can lead to the development of programs of attention and protection, the other position leads to social exclusion and to discrimination. Also, this polarized vision can be partially dependent on the method used. The employment of bipolar adjectives on an evaluative scale may generate a more negative vision (more consentaneous with popular beliefs) than the use of evaluative statements with high social desirability.

Anyway, more research is needed to better understand not also the image that Spanish society has about aged people but mainly which are their behavioral effects and other actions (legislative, sanitarian, social, etc.).

### **3. The effects of stereotypes**

The *effects* of stereotypes are several in type and have large repercussions on the individual that is getting older, over all the social groups

implicated and over society globally considered. A synthesis of the potential effects can be made as follows:

a) On the individual

a) A first effect is related to the fact that the individual tends to adjust himself to the stereotyped expectations, as if the image was converted into a “*self-fulfilling prophecy*”. This theoretical assumption that has scientific corroboration shows that an internalization of the image that reigns in a specific social context is produced in the individual, and it turns into a *stereotype threat* because in particular situations, the elements of the group tend to exhibit behaviors and performances in accordance with what is expected. In the Enreve study (Imerso, 2006) it was observed that if distinct information was given to different groups of aged people, either positive or negative, related to the prototypical performance in a specific domain, these persons tended to act according to the information that they received; in fact, if they were given positive information concerning performance, they executed the task significantly better than if they received negative information (Fernández-Ballesteros, Huici, Bustillos, et al., 2008).

b) Social stereotypes seem to act in the long term at the individual level. The images that people receive across the lifecycle tend to be converted into self-stereotypes (individual perception about own aging process). This kind of internalization of stereotypes seems to constitute the basis of the negative images that individuals have about their own aging process, as was stressed by Levy and colleagues (2002) in their longitudinal study. “*Self-stereotypes*” can predict mortality and bad health conditions (in the case of negative stereotypes) or can be a good predictor of survival and good health conditions (in the case of positive stereotypes). People with positive images of their aging process live seven more years than people with negative images about own aging process. Despite the extraordinary importance of these results, it is important to take into account that individuals do not only act according

to the social images that they receive across the lifespan, but they are also sensitive to their own situation. In fact, when people talk about their own aging process, they tend to base their judgments not only on social images around them, but also on what they observe in other people and in their self-evaluations.

c) Social negative images about aged persons tend to exert an important role in the *depreciation of their own group* and in the overvaluation of other groups. As is easily observed, aged people themselves tend to overvalue the “youth” and pretend to adopt their own characteristics as if they were a positive compendium of what is desired; in short, elders tend to use the category “youth” to define themselves according to characteristics that are not exclusive of that classification. So, for example, when they say “I feel young”, they are mentioning not only age but also positive characteristics as being “healthy”, “active”, “happy”, etc.

d) Negative images about age also lead aged people to *a reduction in their identification with their own group*, and for them “older persons” or the “elderly” are the “others” (members of the group). This is important because in other social groups that also suffer from discrimination (for example: women *versus* men, black people *versus* white people), the identification with one’s own group under discrimination is a necessary condition for the group to assume collective actions against discrimination and unequal treatment.

In the previously mentioned Project Enreve, the conclusions were the following:

1) *The independence of social aspects of the stereotype of aged people from their personal vision about aging process.* Although older people are aware of the negativity with which society tends to evaluate them (because a great number of negative features are mentioned), it does not seem to influence their evaluation and their performance when this stereotype is activated. In return, a stronger identification with the group

is related to an increase in positive stereotypes about that group and to a more positive perception of the aging process.

2) *The vocabulary* which is used to describe the group of “aged” people (“old”, “elder”, etc.) seems to have a crucial role both in older persons and in their caregivers. Concerning the automatic activation of stereotype, it produces effects at the behavioral level and the interactions with persons of this age group are conditioned. So, in the evaluation of a person belonging to this age group, after exposure to the word “old”, individuals with more prejudices describe that person as more “blundering”, “slow”, and less “wise” or “experienced”. The aged person that receives the label “old” performs the task more slowly and tends to perceive all the people that belong to the same category as slower and more blundering. On the contrary, the activation of the more neutral label “aged” acts neither on motor nor evaluation terms. So, we contrast both the importance of denomination vocabulary and the neutrality of the attribute currently used for the designation of this social group.

3) *The effect of the threat of the stereotype* appears clearly: when explicit negative information is given to aged people during the execution of a memory task, they tend to have a worse performance in that task. This effect of activation of a previous scheme is congruent with the stereotyped vision of aged people in Spain. An important result is the protective effect for the older group of the perception of their own aging process and their identification with the group of aged people, which tends to moderate the threat of stereotype and prevent its influence in their memory performance.

#### b) In the group of caregivers

Research is consistent in the finding that attitudes and stereotypes of groups of professionals (physicians, occupational therapists, social workers, psychologists, etc.) that work with aged persons are more negative than those of the general population. Authors refer to two mechanisms as generators of stereotypes and negative attitudes in professionals: 1) A

cognitive mechanism through which a generalization is produced from the individuals that are in contact with the professional to the rest of the members of the group, because there is very little training about basic processes of aging. 2) The second mechanism is related to the stress caused by the overburdening work that is done by professionals and on professionals in contact with aged persons with high levels of physical and cognitive deterioration; this mechanism has its basis in the principle of classic conditioning, because age can be considered a conditioned stimuli – associated with other unconditioned stimuli such as suffering, pain and death.

The Project ENREVE mentioned above brought some contributions to increase the evaluations and interactions between health professionals and aged persons, leaving suggestions as to how both parties can be involved. In the first place, although the group of professionals did not show great levels of prejudice towards old people as a collective, it was observed that, as there was an accumulation of negative beliefs about the age group, the automatic behavior and their evaluation of the group were greatly affected. On the other hand, in relation to the use of labels, it was found that when the category “aged” was activated it was not related to a worse evaluation, nor with a modification of automatic behavior. As a consequence, the use of “neutral” labels would be desirable, eliminating as much as possible the utilization of words related to the more negative aspect of stereotype (“old”, “elder”, “grandfather”).

#### c) In the vast social context

Until now we have been examining how social images can be considered as a *social limitation* to a satisfactory aging process and we have discussed how these images could act as potential threats to active aging. Also, we stressed that this can culminate in prejudicial behaviors which lead to discrimination according to age, and it is possible to find signs of these processes in multiple spheres of social life, in the professional domain, in sanitarian systems of protection and also in specific medical treatments (concerning the regulated utilization of extraordinary treatments, or in the use of sanitarian protocols, or also in the development

of clinical trials with medical drugs for aged people). A detailed study of legislation and its practical application is needed at distinct administrative levels and in distinct spheres of daily life. We can conclude by saying that, at a descriptive level, the vision of the Spanish population about aged persons is mainly negative – although it has undergone an improvement in the last fifteen years – and mainly it is not adjusted to the reality of this age group. Because of that aged people perceive a negative vision from society and they also do not identify strongly with that group, which could be preventing a greater awareness of this social discrimination that we have been talking about. Also, the negative stereotypes act in the same direction over the group of aged persons (worse performance, greater slowness) and the group of caregivers who, generally speaking, exert a negative influence precisely over those dependent groups who are more vulnerable to this limitation.

On the opposite side of the negative images related to aging process, old age and aged persons, ageism and discrimination according to age, we find the prominence that international organizations have been giving to their elimination. In the Second International Plan of Action on Aging (United Nations, 2002) and in the document “Active Aging” (World Health Organization, 2002) an emphasis is made not only on the fight against stereotypes but also on the need for empowerment of old persons, because of their contributions to society. This could be considered a pending social policy that should be developed.

All of these should be studied more comprehensively through a rigorous analysis of social discrimination based on age (legislation, legal documents from different services and contexts of intervention, etc.), and also by creating a Permanent Observatory which should scrutinize potential discriminatory conditions and their adequate resolution.

## Conclusions and recommendations

**1) The promotion of individual and social development across the lifecycle** through actions such as:

a) Offering and encouraging the development of adaptive behaviors and healthy lifestyles in order to optimize individual and social capacities.

b) Promoting measures and programs to encourage personal development of the individual, including his cooperative, group and communitarian capacities, as well as the bio-psycho-social development of personality, through the familial, communitarian, education and training systems.

c) Recognizing and to capitalizing on the experience and knowledge of aged people in order to enhance their wellbeing and quality of life, highlighting and disseminating the productivity of older persons in their multiple “unpaid” services and contributions (in the family, the community, the society).

**2) Establishing procedures of follow-up and control of ageist images and of actions of discrimination against aged people**, mainly in the spheres that affect them most, like health facilities and social services, as well as in the media and publicity because of their social transcendence.

a) Promoting actions to encourage healthy aging based on the assumption that **the individual with his vital trajectory and his personal attitudes is the main agent in his own process of aging, which is a process that occurs across the lifecycle and begins in infancy.**

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