



Department of Psychology

Is it Age...or Society?
Aging Stereotypes and Older People's Use of
Comparative Optimism towards Health

Sibila Fernandes Magalhães Marques

A Dissertation presented in partial fulfillment of the Requirements for the degree of

Doctor in Social and Organizational Psychology
Specialty in Social Psychology

Supervisor:
Professor Maria Luísa Lima
ISCTE-IUL

Co-supervisor:
Professor Rosa Novo
FPCE-UL

July, 2009

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To Sérgio and Guilherme Moreira

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Resumo

Existem diversas evidências de que, tal como como os indivíduos de outros grupos etários, as pessoas idosas também utilizam estratégias de optimismo comparativo (Renner, Knoll, & Schwarzer, 2000). O uso destas estratégias parece influenciar aspectos tão cruciais como as taxas de hospitalização e a taxa de mortalidade num futuro próximo (Bailis, Chipperfield, & Perry, 2005).

Nesta dissertação assumimos uma perspectiva claramente psicossocial e pretendemos explorar o papel que a activação automática dos estereótipos de envelhecimento tem na utilização, por parte das pessoas idosas, de estratégias de optimismo comparativo relativamente à doença.

Para atingir este objectivo, realizámos oito estudos. O conjunto dos resultados destes estudos revelam o seguinte padrão: tal como noutros países, o estereótipo português de pessoas idosas contém tanto traços positivos (i.e., sábios) como negativos (i.e., aborrecidos). Para mais, os nossos resultados mostraram que, tanto a activação subliminar como a supraliminar do conteúdo negativo do estereótipo de envelhecimento, levam a uma menor utilização de optimismo comparativo do que a activação dos conteúdos positivos. No entanto, este efeito é moderado por duas variáveis principais: o grau de experiência prévia com as doenças e a saliência da identidade etária.

Julgamos que estes resultados são interessantes e nos ajudam a clarificar um tópico que tem sido relativamente negligenciado na literatura. Neste trabalho, discutem-se as suas implicações não só em termos teóricos, mas também em contextos aplicados.

Palavras-chave: idadismo, auto-estereótipos, primação estereotípica, optimismo comparativo

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Abstract

There are several evidences showing that, similarly to other age groups, older people also use comparative optimism strategies (Renner et al., 2000). The use of these strategies has been linked with crucial outcomes such as lower odds of hospitalization and death over the near future (Bailis et al., 2005).

In this dissertation we assume a clear psychosocial perspective and aim to explore whether the automatic activation of aging stereotypes affects older people's use of comparative optimism regarding typical aging illnesses.

In order to achieve this goal we conducted eight studies. Overall, the results of these studies showed the following pattern: similarly to what happen in other cultures, the Portuguese aging stereotype includes both positive (i.e., wise) and negative (i.e., boring) traits. Moreover, our results show that, both the subliminal and supraliminal activation of the negative content of the aging stereotype leads to lower use of comparative optimism than the activation of more positive contents. However, this effect is moderated by two main variables: personal experience with illness and the salience of age identification.

We believe that these results are interesting and help us understand a topic which has been relatively neglected in the literature. We discuss the implication of this work both in a theoretical and applied manner.

Key-words: ageism, self-stereotyping, stereotype priming, comparative optimism

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INTRODUCTION

A few months ago I was in a conference dinner and an older professor asked me when I told him my PhD topic: “Why would a young woman such as you study a sad topic as aging?” Well, this was an interesting conversation because it allowed me to rehearse my arguments and defend the value of my choice in a loud and clear voice. First of all, one can wonder about the importance of aging studies in general terms.

It is clear that we are living in an increasing ageing society. Worldwide, the proportion of people age 60 and over is growing faster than any other age group. According with data from the World Health Organization (2002) “between 1970 and 2025, a growth in older persons of some 694 million or 223 percent is expected. In 2025, there will be a total of about 1.2 billion people over the age of 60. By 2050 there will be 2 billion with 80 percent of them living in developing countries” (p. 6). In fact, population aging is indeed one of humanities greatest achievements. Better living conditions and health politics promoted an increase in life expectancy much beyond our expectations. However, nowadays every society has to deal with the consequences of this development because aging has several implications in social, economical and political terms. In this scenario, the study of aging issues should be one of our main concerns.

Traditionally, most of the studies about aging have adopted a bio-medical approach and have been particularly interested in explaining the effects of the aging processes on the physical body, largely focusing upon the symptoms of bodily decline in later life. This has become a powerful trend which as been labelled “the bio-medicalization of gerontology” (Featherstone & Wernick, 1995). However, within the realm of the social sciences the study of aging has been a relatively neglected issue. For instance, it was not until very recently that historians took the effort to explore this issue. In the cover of her notorious book “*The long history of old age*”, Pat Thane (2005) makes the following commentary: “here is an absorbing overview of one of the great – and most neglected – themes in all history. Old age is a subject with huge contemporary resonance, given gloomy predictions of an aging population imposing enormous financial burdens on a shrinking population of younger workers”. This neglect regarding the study of aging is also true for other social disciplines such as, for instance, sociology (Featherstone & Wernick, 1995). Of special interest to us is that it is also a neglected topic within our field of studies which is Social Psychology (B. Levy & Banaji, 2002; Nelson, 2002). Why do researchers tend to neglect such an important topic such as aging? According to Nelson (2002) the main reason for this seems to be an *ageistic* attitude regarding older people, even within the scientific contexts. In fact, there are several evidences suggesting the prevalence of *ageism* against older people in our industrialized societies. This

ageism takes the form of negative attitudes towards people based solely on their age. This involves the prevalence of negative stereotypes regarding aging, and prejudicial and discriminatory practices against people because they are older. Cross-cultural studies (Fiske, Cuddy, Glick, & Xu, 2002) showed that older people tend to be seen as a low status group compared with the other age groups (particularly the middle-age group) (Garstka, Shmitt, Bransombe, & Hummert, 2004). Well, according to Nelson (2002) social scientists are no different from other people in society: they fear aging and devalue old age as much as anyone else. This factor, together with the fact that there no real organized movements in favour of older people, as there is, for instance regarding Black people (e.g., The Black is beautiful movement) or Women (e.g., the feminist movements), contributes to refrain researchers to engage in these kind of studies. However, we should not be discouraged; in fact, research on aging has witness a flourishing within the last years (Kite, Stockdale, Whitley, & Johnson, 2005) and we suspect it will continue to increase in the future years.

So far, I have enumerated the rational choices to explore this topic of research. However, everyone knows that the choice of a PhD theme always involves a deep personal choice; an interest in exploring an issue during a long period of our lives. By the time I chose my PhD topic I was engaged in some work regarding aging in a more clinical perspective (Novo, Marques, & Mourão, 2003; Novo, Mourão, & Marques, 2003). Thinking about a topic to pursue, and as I will make clear in a second, it made sense to follow this exciting issue, but adopting my background perspective which is the *psychosocial perspective*. However, before I continue, I need to establish one important point because I feel I owe them that much. My choice to explore aging issues is heavily influenced by my personal experience with the wonderful role-models I've had during my life. Fortunately in my family people live very long lives. This is especially a blessing because they live very enriching lives. For instance, my great grand father lived until he reached 108 years of old. And he remained very active until his latest years. For instance, I still recall the discourse that he gave in the lawyers' chamber by celebration of his 100 anniversary: he stood up and gave a discourse of an hour for an entire room full of people and without the use of any type of memory aid. I remember that I was just a little girl by then but that I was very impressed by this fact. But I have still more meaningful and enduring positive contact with older people. When I was born, both my grandmothers were already retired from work. However, they were probably the most active people I have ever met: besides from their traditional roles at home such as cooking, sowing and mostly anything else (which by the way they did in a very efficient manner) they were also enrolled in several activities in the society. One of them was the head of an association

for retired people and was in charge of organizing several activities. She always brought me and my sister along in these tasks and so we began from a very early age to have many older people as personal friends. So, for me, the overall notion that old age is a “sad” period is not a “clear-cut” notion.

After enumerated the main reasons for choosing this topic of research I will now describe the main perspective behind the work developed and the structure of the present dissertation. It is important to establish that our research is developed within the broad context of the recent developed perspective of *socio-psychology of health*. According to Lima (2008) this perspective emphasizes a bio-psycho-social model of understanding health issues. Hence, it is not restricted to the role of individual factors; in fact, along with psychological factors, it also emphasizes contextual variables on a relational, societal and cultural level. Variables considered within this perspective are, for instance, group variables such as the role of family and work settings or more societal variables such as, for instance, the role of social class and ethnic background.

According to Lima (2008) we can resume this way the main goal of this perspective: “is the study of the psycho-social factors that intervene in the promotion and maintenance of health and in the recovery and adjustment to illness” (p. 4). We believe this is an important perspective on health issues and develops from the work conducted by influential authors within the social psychological field such as, for instance, Shelley Taylor and collaborators (Taylor, Repetti, & Seeman, 1997).

After establishing our background perspective, we now describe the specificities of the work presented in this dissertation. In this research, our main goal was to explore one specific issue regarding aging: the effects that aging stereotypes have on older people’s health perceptions; particularly regarding risks of illnesses in later age.

There is no doubt that the risks, at least of certain illnesses, tend to increase with age (WHO, 2002). However, how much weight does this “objective” risk has on the way older people perceive risks? In Portugal, there is this common popular saying that people use when they feel tired or ill. In these cases, one of the more often said phrases is “It’s my age” (in Portuguese that would be “É da idade”). However, we may wonder, is it really “age” which is making older people feel bad? Or are there other factors which also play a major role in these processes? As suggested by the title of this dissertation, we think that “society” also takes a big part in the way older people perceive about themselves. Particularly, several studies (Hess, Hinson, & Statham, 2004; B. Levy, 1996, 2003; Pinguart, 2002; Rothermund & Brandstädter, 2003) have suggested that the stereotypes associated with old age play a

determinant role in these processes, influencing the perceptions and behaviours of older people.

Several authors (Hummert, Garstka, Shaner, & Strahm, 1994; Schmidt & Boland, 1986) point to the fact that, in spite of being an overall low status category, old age is associated with mixed stereotypical representation. Hence, together with more negative traits such as “ill” or “dependent”, old age is also associated with positive attributes such as “wise” and “mature”. Interestingly, research conducted in the USA has shown that these different representations have differential effects on older people. The studies of Levy and collaborators (B. Levy, 1996, 2003) have been influential in this regard, showing that when older people are primed subliminally with more negative traits of the aging stereotype have lower performances in several measures (e.g., memory performance, handwriting) than when they are primed with more positive ones. Interestingly, these results show that these effects happen in an automatic manner, without older people’s awareness. In a continuation of this work, we aimed to explore the role that the activation of different contents of the aging stereotype may have on a new variable: risk perception of typical illnesses. In fact, in these studies our goal was to explore the effects of aging stereotypes on one specific phenomenon which is the *comparative optimism* regarding risks of typical aging risks. Comparative optimism is a widely studied phenomenon in the health psychology domain and shows the tendency of people to underestimate their personal risks in comparison with risk for others (Weinstein, 1980). Some studies suggest that use of this social comparison strategy is linked with the maintenance of high self-esteem (Taylor & Brown, 1988) and preventive health behaviour (Burger & Burns, 1988).

There are some evidences showing that older people also use this type of strategy when they think about health risks in advanced ages, and that these may be affected by psychosocial variables such as the group of belonging of the comparison target. In support of this prediction, Renner, Knoll and Schwarzer (2000) have shown that older people underestimate their risk of having typical aging illnesses such as cardiovascular illnesses when they are comparing with other older people, but not when they are comparing with younger individuals. Hence, it seems that group belonging plays an important part in the use of this strategy.

Following a psychosocial perspective, in this dissertation our main goal was to explore whether the use of comparative optimism strategies by older people could be affected by the automatic activation of aging stereotypes. However, we also aimed to test the role of some important moderator variables. Previous studies regarding the effects of priming aging

stereotypes (Hess et al., 2004) have questioned the role played by two major variables: prime awareness and self-relevance. Regarding “prime awareness” some authors (Hess et al., 2004; Rothermund & Brandtstädter, 2003) have hypothesized that whereas older people tend to *assimilate* to subtle activated stereotypes, they tend to *contrast* from more blatant forms of stereotype activation. According with these authors, being aware of the primed stereotype is enough so that older people engage in some type of “corrective” efforts that allow them to override the effects of aging stereotypes (Pinquart, 2002). However, these studies have several important limitations and still need to be further explored.

On the other hand, authors within this line of research (Hess et al., 2004; B. Levy, 1996) have also questioned the role played by *self-relevance* (i.e., whether the stereotype applies to one of the individual’s identities) in stereotype priming effects. These studies present some support for the idea that this variable has an important moderator effect and there is some preliminary evidence showing that high identification with the old age group is associated with stronger priming effects (O'Brien & Hummert, 2006). However, the role given to age identity also still needs to be further explored.

In this dissertation we aim to explore these issues in more detail. We believe that the use of the comparative optimism measure as a dependent variable has several advantages. In fact, besides its value as an indicator of health perceptions in old age, it is also a direct measure of social comparison between personal ratings and ratings of the overall group of older people. Hence, it seems like an ideal measure to evaluate assimilation and contrast effects to the aging stereotype.

Now that we have presented the major guidelines for the studies, I will talk about the structure of this dissertation. It is composed by two major parts: the Theoretical Part and the Empirical Part. The Theoretical Part is composed by two chapters of literature review. The first chapter is called “Stereotypes: being the target” and aims to review the main evidences regarding the effects of stereotypes on targets (i.e., individuals who belong to the stereotyped group). This is a general chapter, not specific of aging studies. As far as we know there is no literature review available on this matter that encompasses the main theories available regarding this issue; hence it felt like an important path to pursue in this dissertation. We begin this chapter by establishing our definition of stereotypes and the main functions they have in our social world. Only after, we turn to our specific topic which is the way stereotypes affect targets. We give special emphasis to the stereotype priming perspective (Bargh, Chen, & Burrows, 1996; Devine, 1989; Dijksterhuis & Bargh, 2001), since it is within this context that we have developed our work. However, we also focus on other important perspectives in

the field such as the stereotype threat theory (Steele & Aronson, 1995) and the social identity approach (Tajfel & Turner, 1986). Hence, our effort was to put together the main contributions of these different perspectives, emphasizing their main similarities and differences with the stereotype priming perspective.

The second theoretical chapter is called “Ageism and aging stereotypes” and relates to the issue of aging directly. Our goal in this chapter was to establish the importance of age categorization in our societies and the associated *ageism* that comes with it. We develop the idea that age categorization is a social construction, determined by cultural contexts. Afterwards we present the definition of ageism and its main characteristics. Finally, and more related to our topic of work, we present evidences regarding the content of aging stereotypes and the effects they have on older people’s performances.

After this literature review, we enter into the Empirical Part of this dissertation. We present eight studies, organized in three main sections. Section 1 is called “Aging stereotypes in Portugal” and aims to explore the content of aging stereotypes in our culture. When we began our studies we realized that there was not enough information regarding this issue in our country. Hence, we felt the need to develop some studies in order to explore this issue. Study 1 and Study 2 aim to measure directly the content of the young and old age representation in Portugal. Study 3 aims to replicate, using the Portuguese stereotypical content, one of Levy’s studies (B. Levy, Ashman, & Dror, 1999-2000) and which was originally conducted in North-America. Only after firmly establishing the stereotypic content associated with old age in our country, we felt it was possible to engage in more experimental studies regarding the effects of aging stereotypes on older people.

Section 2 is called “The effects of aging stereotypes on comparative optimism regarding illness” and aims to explore the main goal of this dissertation. Study 4 aims to investigate older people’s use of comparative optimism regarding typical aging illnesses. As far as we know only one more study (Renner et al., 2000) has addressed this issue in the past, so it felt like an important step to take. This allowed us to construe the dependent variable to use in the following studies. Study 5 and Study 6 are very similar and aim to study the effects of activating positive or negative traits stereotypical of aging on comparative optimism regarding typical illnesses of aging. However, these studies have one main difference. In Study 5 priming is done in a subliminal manner, in accordance with Levy’s (1996) studies; on the other hand, priming in Study 6 is conducted using a supraliminal manner. We believe that the use of these different methodologies allowed us to test for the effect of “prime awareness” on stereotype priming effects.

Finally, Section 3 is called “The effects of aging stereotypes on comparative optimism regarding illness: the role of age identification” and as is implied by the title aims to explore the role that this moderator variable has on these type of effects. In these studies, we introduce one important manipulation. Besides from measuring the degree of age identification, we also manipulated “salience” of age identification, that is, whether this identity was accessible in the priming context or not. As we will see in detail later, as it turns out, this factor played an important role in the way automatic activation of aging stereotypes affect older people’s answers to the comparative optimism measure.

We hope that this introductory background has established the major guideline of our research and serves as a useful index to the work presented in this dissertation. Now, and without further delay, we introduce you to the Theoretical Part.

THEORETICAL PART

The effects of stereotypes

Being the target

In all Portuguese public transportation there are some seats that are reserved for older people. We all know how to identify these seats because they are marked with a pictogram that portrays a bent individual with a can¹. Social rules dictate that every time an older individual enters into the bus we should get up from these seats and offer it to him or her. The pictogram is very efficient because it symbolizes the stereotypical representation of older people in our society. Because we share this common representation of older people as ill and dependent, we know that we have to give them the seats and they know that they are entitled to them. So, the next step in the process would be to identify which people we consider older or not. If we are seated in one of these seats we have to pay attention to the people that enter into the bus. If we perceive someone as older, we should quickly get up and give them the seat. If he/she self-categorizes as an older individual, he/she should accept it and thank us for our kindness. And then our bus tour continues in a peaceful and pleasant way until we reach our destination. However, one question remains: although stereotypes are useful and sometimes bring advantages (e.g., getting a seat in the bus), what consequences does this representation of illness and dependency have for older people?

Research about stereotypes and stereotyping has a solid tradition in social psychology (Fiske, 1998; Hamilton & Sherman, 1994; Hilton & von Hippel, 1996; D. J. Schneider, 2005). Researchers have studied stereotypes of several different groups like, for instance, gender (Rosencrantz, Vogel, Bee, Broverman, & Broverman, 1968), African Americans (D. Katz & Braly, 1933), older people (Brewer, Dull, & Lui, 1981), obese people (Brylinsky & Moore, 1994), professions (D. A. Levy, Kaler, & Schall, 1988), and national groups (Bond, 1986), just to name a few.

According to Stangor (2000), there are at least two reasons why researchers are so interested in studying stereotypes. First, because it has an immense practical importance in our increasingly diverse societies. Greater contact between people from different cultural backgrounds can create increased opportunities for the expression of stereotypes and prejudice that often translate into outright hostility between groups. In this sense, studying stereotypes development and use may help understanding and intervene in these contexts

¹ Actually, by the time I finished writing this dissertation there were some changes in the type of pictograms used in public transportation. In fact, at least in some of them, we do not see anymore this symbol of older people. It is a image that seems to symbolize people with disability in a general manner.

(Bar-Tal & Teichman, 2005). Secondly, researchers are interested in studying stereotypes because, from a basic and central perspective, they want to generally understand “how people make sense and react to each other” (Stangor, 2000, p. 1). In fact, the study of stereotypes is widespread and is integrally related to the most central topics in psychology like, for example, attitudes, group behaviours and aggression.

Such a wide topic as stereotypes encompasses researchers with different interests and approaches. Making sense of all the research in this field is not an easy endeavor to pursue. In fact, in his recent book, Schneider (2005) pointed out that it took him 15 years to finalize a book that could integrate all key research done in this domain.

In this chapter, we will focus on a specific aspect of the literature about stereotypes and stereotyping. Therefore, our goal is to explore the following issue: What effects do stereotypes have on targets? Or...do older people always accept the seat on the bus? However, before we continue, it is important to understand what we mean by stereotypes and what functions they serve.

What are stereotypes?

The definitions of stereotypes are almost as diverse as the authors who formulate them (Miller, 1982). In this chapter, we will not review all the definitions and discussions around this topic (for a review on this topic see Ashmore & Del Boca, 1981; D. J. Schneider, 2005). Rather, we will adopt the following general definition proposed by Garcia-Marques and Garcia-Marques (2003) that stereotypes are “cognitive representations about human groups and social categories, frequently socially shared. These representations are frequently linked with value or strong emotional associations that, when they are negative, define ‘prejudice’” (p.11). Below we would like to explore some of the major points related to this definition and that are useful for our present purposes.

Stereotypes as cognitive representations about human groups and social categories

Although there is still a considerable debate about its specific structure and organization, most contemporary researchers would agree that stereotypes are cognitive representations about human groups and social categories (Dovidio, Brigham, Johnson, & Gaertner, 1996; Hilton & von Hippel, 1996). They are knowledge structures, organized in memory, that involve associations between categories and several different type of attributes, and that can influence the way information is encoded, stored and retrieved (D. J. Schneider, 2005).

Stereotypes may refer to different type of categories that vary in their perceived entitativity, that is, the degree to which a collection of persons is perceived as a unified group. Categories can be lower in perceived entitativity like, for instance, broad social categories like age, race or gender, or they can be high in perceived entitativity like, for instance, a family (Lickel et al., 2000; Sherman, Hamilton, & Lewis, 1990)².

Also, stereotypes can be composed by several types of qualities. Although they are usually personality traits, they can also be expected behaviourss, physical features, roles, or almost any other quality (D. J. Schneider, 2005). For instance, the stereotype of older people include traits (e.g., “grumpy” or “warm”), behaviours (e.g., “walks slowly”), physical features (e.g., “grey hair”), and roles (e.g., “grandparents”).

Stereotypes involve descriptive and evaluative dimensions

Several authors argue that stereotypes have both a descriptive and evaluative nature, in the sense that each quality is frequently linked with value or strong emotional associations that can be either positive (e.g., warmth; grandparents) or negative (e.g., grumpy, walks slowly) (Dovidio et al., 1996; Leyens, Yzerbyt, & Schadron, 1994; D. J. Schneider, 2005). This distinction has important consequences for the way we conceptualize stereotypes and related concepts like, for instance, prejudice.

In an attempt to make sense of the theoretical field, several authors have proposed a “division of labor” for the study of stereotypes, prejudice and discrimination. Some researchers would agree with the general following division: stereotypes are described as category-based beliefs we have about people, prejudice as a set of affective reactions or attitudes, and discrimination refers to behavioural tendencies (Fiske, 1998). In a related but

² The concept of a group involves more then a social category. In a review of the concept of group, Vala (2002) concludes that “a group exists when individuals consider in their self-definition the belonging to a social category, assuming that this process is regulated by the interdependence between groups, social asymmetries and power relations” (p. 496).

different perspective, other researchers assume that prejudice is in itself an intergroup attitude, composed by three components: beliefs (stereotypes), feelings (affect), and behaviours (discrimination) (R. J. Brown, 1995; Jackson, Brown, & Kirby, 1998). Although they have the merit of distinguish between concepts, these divisions may generate the idea that these components are completely separate entities. For instance, according to these perspectives, one could infer that stereotypes might be cold, affect-free representations about groups. However, like in real life, theoretically the distinction between the three concepts is not easy to make (Dovidio et al., 1996). Fiske and collaborators showed that the activation of stereotypes leads to the activation of both cognitive and affective information (Fiske & Pavelchak, 1986), in the sense that affective responses involve a “range of preferences, evaluations, moods, and emotions” (Fiske & Taylor, 1991, p. 410).

Several researchers acknowledged this situation and adopted a multidimensional view of stereotypes as both descriptive and evaluative structures (Eagly & Mladinic, 1989; Esses, Haddock, & Zanna, 1993). In general, they found that considering the affective nature of stereotypes was important in predicting the overall attitudes towards groups.

However, this perspective raises some issues regarding the relationships between different concepts (Dovidio et al., 1996). Is the valence associated with stereotypic traits, especially the negative ones, a form of prejudice (Garcia-Marques & Garcia-Marques, 2003)? For instance, Wittenbrink, Judd and Park (2001) called the valence of the traits “stereotypic prejudice” and distinguish it from “generalized prejudice” toward a group (i.e., that refers to the evaluation of the group that is not related specifically to stereotype content).

We are not interested in resolving this debate here. The major point that we are trying to make and that matters most for our work is that we have to consider that these are complex concepts, that do not have linear relationships between them (Dovidio et al., 1996). For our present purposes, we would like to establish that we consider that stereotypes involve not only associations between specific characteristics and a group, but that these are linked with value in the sense that might be rated in a more positive or negative way.

Stereotypes are frequently shared

Over the years there has been a considerable debate over the shared nature of stereotypes. Initial conceptualizations considered that this consensual nature was an essential feature in the definition of stereotypes. In this sense, the studies of Katz and Braly (1933) were fundamental

in establishing the foundations for the socio-cultural orientation in the study of stereotypes. Using a *check-list* procedure³, these authors found a great degree of consensus between participants regarding stereotypes of several groups. These results lead them to conclude that stereotypes are highly consensual among individuals and that so they must be learned from social sources like the media or through hearsay (Stangor & Lange, 1993). For the sociocultural approach, society is the focus of attention, and stereotypes are part of a society's nonmaterial culture. This perspective assumed that individuals are socialized into a particular culture, and, through social rewards and punishments, led to act in accordance with cultural dictates. For this orientation, talking about "individual stereotypes" does not make any sense because stereotypes are widely shared concepts and are linked with the social values of a given culture. More recently, some authors have explicitly defended that this consensual property is an important feature in the definition, as well in the measurement of stereotypes (Gardner, 1973).

The study by Katz and Braly (1933) was a landmark in the field and has been prominent in the study of stereotypes (Leyens et al., 1994). However, this emphasis given to the consensual nature of stereotypes as a defining feature has been challenged by some recent perspectives. Within the socio-cognitive approach, some authors have argued that "neither the definition nor the measurement of stereotypes should be constrained by the necessity of consensual agreement" (Hamilton, Stroessner, & Driscoll, 1994, p.297). According to this perspective, it is not true that stereotypes always develop through assimilation to existing cultural values. For instance, Hamilton and Gifford (1976) showed that it is possible, through illusory correlations, to induce differential evaluations of artificial groups, which form the basis for stereotypes and prejudice. Given that this effect occurred using artificial groups, it is difficult to assume assimilation to existing cultural values (Garcia-Marques & Garcia-Marques, 2003)

According to these authors, stereotypes are considered as belief systems that reside in the minds of individuals, and the extent to which the same beliefs are shared in the population is an empirical issue (Hamilton et al., 1994; Judd & Park, 1993). This approach places a great emphasis in the way individuals process the information they encounter regarding members of social groups. Given that each individual may have different experiences, it is possible that they develop different beliefs regarding the group. Some beliefs may be greatly shared due to the fact that we all live in the same cultural context (e.g., several studies show evidence that older people are considered ill), but others may be more idiosyncratic given particular

³ Katz and Braly (1933) developed a paradigm in which subjects had to assign the five traits that were most typical of specific groups from a list composed by a total of 84 traits

personal experiences (e.g. I can think that older people are very good leaders due to the fact that many older people that I knew are involved in some kind of politic activity).

To address this issue, some authors proposed the distinction between *individual stereotypes or personal beliefs* (i.e., what an individual personally believes about a social group) and *cultural stereotypes* (i.e., what the individual beliefs that people in his society think about a social group) (Ashmore & Del Boca, 1981; Devine, 1989) and some studies showed that these representations differ within the same individual (Stangor, Sullivan, & Ford, 1992).

There is no doubt that both these perspectives – the more collectivist or individual approaches – have made important contributions to the study of stereotypes (Stangor & Schaller, 1996). The question that remains after this debate is: should consensus be a defining feature of stereotypes (Garcia-Marques & Garcia-Marques, 2003)?

Although it is true that it is possible to have unique, individual beliefs about groups, it is also true that most of our most relevant stereotypes are influenced not only by the culture in which we live, but also the groups to which we belong (D. J. Schneider, 2005). For instance, authors within the framework of *social identity* and *self-categorization* theories (Hogg & Abrams, 1988; Oakes, Haslam, & Turner, 1994; Tajfel, 1981a; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) argue that the psychological aspects of the stereotyping process are contextualized by group life and the realities of intergroup relations. Social groups are the basis of stereotypes, not only because these are their targets but also because they structure the perceiver's own cognitive activity. The perceiver's *social identity* – the part of their self-concept associated with membership in relevant social groups (Tajfel & Turner, 1986) – assumes a particular important role. Shared social identity serves to regulate individual cognitive activity by providing a common perspective on social reality and providing the basis for mutual influence (Abrams & Hogg, 1990). Several studies show the importance of group belonging in stereotyping. For instance, Haslam and collaborators (1998) showed that when the Australian identity was salient (e.g., when they had to compare themselves with Americans), Australian students had more consensus on traits they assigned to Australians.

According to these authors stereotypes are better seen as the product of a dynamic process of social judgment and meaningful inference. They can be fluid and context-dependent and vary with intergroup relations, the context of judgment and the perspective of the perceiver (Turner, 1999). Self-categorization theorist assume that all stimuli derive their meaning, at least in part, from the context in which they are perceived (Oakes & Reynolds, 1997), and stereotyping involves both top-down and bottom-up processing in which the fit of the stimuli

to alternative and possible categorizations is assessed and maximized. Stereotypes are thus the “best-fitting” psychological model of the data given certain goals and perceiver characteristics (e.g., being an Australian when Australian identity is salient) (Abrams & Masser, 1998)

Given this conceptualization we could wonder if it makes sense to talk about stereotypes as shared within one culture. If stereotypes are always changing depending on the way individuals perceive the current context, it seems that at best we could think of certain momentary representations that would be shared among individuals who share the same salient social identity in a given moment.

Faced with this issue, social categorization theorists felt compelled to establish limits to this relativistic representation of stereotypes. According to Oakes and Reynolds (1997), people feel the need to belong not only to smaller groups (e.g., their religious groups), but also to higher level of superordinate social identities and, in this sense, they are subject to wider influences. So, even if “at one level, in-group and outgroup may disagree about stereotypes without uncertainty, at the higher level of a superordinate social identity (as a member of ‘civilized society’, ‘Western culture’, ‘humanity’), even in-group and out-group will feel the need to reach agreement and reduce the uncertainty which arises from conflict” (Oakes et al., 1994) In a similar vein, Ellemers and van Knippenberg (1997) assume that

Social stereotypes comprise a collection of possibly relevant attributes, which delimit the boundaries within which the stereotype may vary. From this collection, people may then adaptively select those traits that best fit the specific situation, and/or best serve motives that are relevant given the situation(...)In a sense, the image of a group that emerges in a given situation, may be seen as reflecting the compromise between the consensual understanding of social situations and stereotypical group characteristics on the one hand, and the chronic or situationally evoked goals and motives of the perceiver on the other hand. To the extent that there exists consensus about the social situation (e.g., because one group is generally perceived as having lower status than the other), this restricts the nature of the social stereotype that may credibly be maintained. Conversely, variations in the social situation (e.g., when the group is perceived in a different comparison context), and the varying positions of parties involved in it, may affect the extent to which different aspects of the stereotype become salient as relevant group characteristics (p. 210).

We think that one interesting way to incorporate both cultural and group influences in stereotyping is to consider the contributions of *social representations theory* (Moscovici, 1981). In this sense, some authors (Amâncio, 1994; Hogg & Abrams, 1988; Vala, 1997) argue that stereotypes are a dimension of social representations in the sense that they are shared cognitive constructs that originate in everyday social interaction and that furnish individuals

with a commonsense understanding of their experiences (in the case of stereotypes, their experiences with social groups and categories). Being a type of social representations, stereotypes have all the qualities usually attributed to them. For instance, they can vary in their degree of consensus (Moscovici, 1988; Vala, 2002). They can be *hegemonic*, shared by a well structured group (e.g., a country), in a uniform and unquestionable way (e.g., the belief that old people have more years of age than young people); they can be *emancipated*, that grow from the sharing of ideas and knowledge of the subgroups that compose society (e.g., the belief that older people have more health problems than younger people is accepted by several groups in society and probably is the result of communication between different groups); or they can be *polemic*, growing out of social conflicts and are determined by the antagonist relations between groups and reflect exclusive points of view (e.g., the belief that older people are dying is probably more polemic). Either way, because individuals live in the same society, they have some knowledge regarding social representations of different social groups and categories. We will address this issue in more detail below when we discuss the functions of stereotypes.

In sum, in this topic the point that we tried to make is that we think that the shared nature is an important feature of stereotypes and hence should be included in their definition. In this sense, we believe that the following statement by Schneider (2005) summarizes very well the roles of experience and culture in the development of stereotypes:

We can argue that “all or nearly all of our important stereotypes are based on mixtures of what we have been thought and seen. We cannot separate cultural and experiential bases of our stereotypes – not because we lack the right modes of analysis or sophisticated computer programs, but rather because the two are integrally bound together. Trying to partial culture out of experience makes no more sense than trying to talk about a river without discussing its geography. Experiences are themselves products of culture (p. 329).

The functions of stereotypes

In our initial example about the use of public transportation in Lisbon we think one aspect becomes very clear: stereotypes are useful. We can all understand the pictogram and recognize an older person when he/she enters the bus. This is very important because we established that older people get tired faster and so they deserve to have a seat.

This functionalist view of stereotypes has always been acknowledged by the different theoretical proposals about stereotypes. Despite their specific orientations, all authors assume that stereotypes are important because they serve fundamental goals (Stangor & Schaller, 1996). Although in the past more collectivist and individualistic orientations tended to emphasize different functions over others⁴, nowadays several researchers agree that stereotypes serve simultaneous several functions of different levels (e.g., Garcia-Marques & Garcia-Marques, 2003; Hilton & von Hippel, 1996; Jost & Hamilton, 2005; D. J. Schneider, 2005).

According to Garcia-Marques and Garcia-Marques (2003), even in the early writings by Lippman (1922), there was already a reference to two functions of stereotypes: the heuristic and the defensive function. According to Lippman (1922), stereotypes have an heuristic function because they allow us to simplify and make sense of our complex environment. Using the “pictures in our head” is very useful to understand other people’s intentions and behaviours in the complex social situations that we deal with everyday. However, there is another reason why we use our stereotypes in a regular basis: they have an important defensive function of our social system. Stereotype content is neither social, nor politically neutral. In fact, it is composed in a way so that they serve to psychologically justify differences in social status and social inequalities.

Later, on in his influential book, Gordon Allport (1954/1979) reinforced once again these heuristic and justificatory functions of stereotypes. In fact, according to the author, “the stereotype acts both as a justificatory device for categorical acceptance or rejection of a group, and as a screening or selective device to maintain simplicity in perception and in thinking” (p. 192).

Analyzing the heuristic function of stereotypes, Allport (1954/1979) made a fundamental contribution to this field of study. He introduced stereotypes as the result of a basic cognitive process called the process of *categorization*. Allport observed that people universally and spontaneously separate themselves into homogeneous groups, into *us* and *them* categories. Because people feel more comfortable with their own group, they have rare opportunities to deal with other groups, allowing glib generalizations (“they” are all the same and differ from “us”). However, although these generalizations may have pernicious effects, this categorization is absolutely necessary. In his own words, Allport claimed that “the human

⁴ More collectivistic perspectives (D. Katz & Braly, 1933) tended to give special meaning to social functions of stereotypes as, for instance, the cohesion of society. On the other hand, more individualistic perspectives tended to refer specially to individual functions such as the simplification of stimuli in a complex world (Hamilton & Gifford, 1976)

mind must think with the aid of categories (the term is equivalent here to *generalizations*). Once formed, categories are the basis for normal prejudgment. We cannot possibly avoid this process. Orderly living depends upon it” (p. 20). According to the author, among other things, categorization is important because it enables people to function in the world. People cannot possibly treat every person (or object) as unique. However, we should note that, although categorization is the basic process for stereotyping, Allport (1954/1979) insisted that “a stereotype is not identical with a category; it is rather a fixed idea that accompanies the category” (p. 191).

The role of categorization in the explanation of the heuristic function of stereotypes was one of the major contributions of Allport to this field of study. However, he also established another important function for stereotypes: a justificatory function. According to Allport (1954/1979), the categorization and justification functions are compatible and mutually reinforcing. People use stereotypes not because of “any malicious intent” but because they are based in “culture-bound traditions” (p. 202). In a sense, Allport acknowledges that people use stereotypes to maximize cognitive efficiency, but also to justify cultural and institutional forms of prejudice. According to Jost and Hamilton (2005), he emphasized especially the perceiver’s use of stereotypes to justify liking (i.e., “love-prejudice”) or disliking of out-group members (i.e., “hate-prejudice”), basing it’s reasoning heavily on the psychoanalytic assumptions of the day. However, he also referred briefly to more “structural views”, assuming that stereotypes also serve to justify cultural and institutional forms of prejudice.

These ideas expressed by Allport (1954/1979) regarding the functions of stereotypes were later reinforced by Tajfel (1981a) in his chapter “Social stereotypes and social groups”. Tajfel argues that stereotypes serve functions both for individuals and society, and that is very important to link theoretically these two aspects in order to gain an integrative understanding of the way stereotypes operate (Hogg & Abrams, 1988). For individuals, Tajfel suggests at least two functions: a cognitive and a value function. His idea of the cognitive function of stereotypes follows the basic idea of Allport (1954/1979) of categorization, acknowledging that “the essential cognitive function of stereotyping is thus to systematize and simplify information from the social environment in order to make sense of a world that would otherwise be too complex and chaotic for effective action” (Tajfel, 1981a, p. 148). According to Tajfel, the process of categorization produces an *accentuation* effect that emphasizes the similarities between objects within the same category and the differences between stimuli in different categories. For instance, in which is now a classic study, Taylor et al. showed how this process occurred. Taylor et al. (1978) used a “category confusion” paradigm, in which

participants were presented with statements by members of two categories (e.g., black and white), and asked to remember “who said what” when subsequently presented with the same sentences (i.e., unattributed to the group members). The type of attribution errors made by participants provided an insight into the degree to which they use these categories as organizing principles in perception and recall. Taylor et al. showed that participants made more within-category errors than between-category errors in the sense that, for instance, they confused more the sentences said among black individuals, than they mistakenly said that a white individual said something which was truly said by a black individual. According to Taylor et al. this study provides evidence that participants were using race as a base for categorizing information.

One important issue to consider is that Tajfel, as Allport previously recognized, does not consider that this accentuation of social objects occurs in a cold or value free manner. In fact, stereotypes also serve a value function for individuals in the sense that they contribute to preserve their value system. Categorizations which are imbued with value and relevance for the subject enhance the accentuation effect and lead to more rigid and extreme stereotyping. For instance, in one study Doise (1978) asked participants to rate the personal attributes of people belonging to two different groups. Half of the participants were instructed to be prejudiced regarding one of the groups, whereas the other half did not receive any instructions regarding this matter. Results showed that those in the “high-prejudiced” condition perceived higher differences between the two groups in certain dimensions. In fact, when a category is value-laden and has a crucial relevance to one’s value system and conceptualization of self, there is a personal effort to preserve and accentuate intergroup distinctiveness. This has two main consequences. The first is, once they are formed, these value-driven distinctions are very difficult to change by disconfirming instances (e.g., men in western societies persist in accepting the traditional role of women despite the great amount of disconfirming instances like, for instance, successful business women). The second consequence is that these value-driven distinctions tend to preserve the superiority of the in-group, in the sense that, in important dimensions to the individual, “we” will be valued in a more positive way than “they”. One example where this “value” idea may apply is in the way group members perceive in-group and out-group variability. One of the most well known phenomena studied in social psychology is the “outgroup homogeneity effect” (Linville, Fisher, & Salovey, 1989; Ostrom & Sedikides, 1992; Quattrone, 1986), which refers to the fact that individuals tend to perceive the out-group as more homogenous than their in-group. This effect has been explained by several factors such as an increased familiarity with the in-group (Linville et al.,

1989), or as a result of different manners information about in-groups and out-groups is stored and processed (Park, Judd, & Ryan, 1991). However, some authors have also advanced a more motivational explanation. According to Brown (2000) the perception of intra-group homogeneity is determined by identity maintenance and protection. In support of this prediction, some studies have shown that, contrary to what might be expected, minority group members and high identified individuals perceive their in-group as more homogeneous than the out-group. This is a way to guarantee the group's cohesion and increase solidarity with the in-group, and is determined by the need to maintain a positive self-esteem.

Besides these individual functions Tajfel (1981a) also established that stereotypes serve important social goals. He enumerated three social functions: (a) *Social causality* - a search for the understanding of large and distressful large scale social events (e.g., the Nazi's use of Jews as an explanation of the economic crisis in Germany in the 1930's); (b) *Social justification* – justification of actions, planned or committed against out-groups (e.g., colonialist powers constructed derogatory stereotypes of races that were being exploited in the cause of imperialist expansion); and (c) *Social differentiation* – a positive differentiation of the in-group from selected out-groups in times when these differences are perceived to be insecure; or when it not positive, and the social context is perceived as providing a possibility for a change in the situation (e.g., in conditions when low status is perceived to be illegitimate).

The explicit consideration of these social functions was an important contribution for the study of stereotypes. Much more than being just a “hazy blue print” as he himself wrote (p.167), this text represented a landmark for future reflection and research. In this regard we would like to emphasize the work by Hogg and Abrams (1988), Jost (Jost & Banaji, 1994) and Fiske (Fiske et al., 2002).

In their revision of the work conducted by Tajfel, Hogg and Abrams (1988) reinforced this macro-social perspective by relating the social functions of stereotypes to concepts such as social representation and ideology. Social representations have a lot in common with stereotypes in the sense that they both satisfy the individual's need for understanding (they furnish causal and justificatory explanations) and represent agreement and consensus with relevant others, facilitating interaction and consolidating a view of reality. One important aspect in assuming that social stereotypes are a type of social representations is that it directly

links them to sociological concepts such as ideology⁵. Ideologies are linked with the way society is organized and determines the way social groups are perceived and relate to each other. Hence, according to Hogg and Abrams, stereotypes serve an important social function in the sense that they are a reflection of the dominant ideology.

More recently, the *System Justification Theory* proposed by John Jost and collaborators (for a review of this approach see Jost, Banaji, & Nosek, 2004) defended a similar idea. According to these authors, people have the psychological and social needs to imbue the social system with legitimacy and see it as good and fair. In fact, people seem to be motivated to defend and uphold the *status quo*, sometimes even at the expense of personal and collective interests and esteem (Jost & Thompson, 2000). In this context, the System Justification Theory assumes that stereotyping plays an important role in the legitimization of the social order and specific stereotype contents emerge to rationalize divisions of labor and unequal distribution of social roles. For instance, complementary stereotypes – stereotypes of both disadvantaged and advantaged groups that have both favorable and unfavorable content – are fairly common, insofar as these tend to legitimize the system as a whole (Jost & Hamilton, 2005).

The study of this interrelation between society's structure and stereotype's contents has been precisely the focus of the work conducted by Susan Fiske and colleagues within the range of the *Stereotype Content Model* (Fiske et al., 2002). This model assumes that there are two underlying dimensions that allow a characterization of the stereotypic content of stereotypes associated with any social group in society: competence (the degree in which groups are seen in a capable and confident way) and warmth (the degree in which groups are seen in an affectuous and sincere way). Frequently, subjectively positive stereotypes on one dimension do not contradict prejudice but are often functionally consistent with unflattering stereotypes on the other dimension. In this model, the perception of socio-structural variables, such as group status and competition, predict the way groups are rated. Importantly, the results obtained with the Stereotype Content Model may be explained by system-justification needs (Cuddy, Norton, & Fiske, 2005). In a system with clear status differences, dominant groups are perceived as more competent. On the other hand, as a way to diminish the dominant group's responsibility for inequalities among groups, cooperative subordinate groups are granted warmth stereotypes. For example, for subordinate, noncompetitive groups

⁵ One can think of an ideology as a systematically interrelated set of beliefs and propositions whose primary function is explanation. It is a "school of thought", which aims to provide a frame of reference for one's understanding of reality (e.g., capitalist or Marxist ideology).

such as older people, the positive stereotype of warmth acts together with the negative stereotype of low competence to maintain the advantage of more privileged groups

These contemporary views on stereotyping have one thing in common: they assume that stereotypes are not only tools that allow the simplification of the complex world in which we live (i.e., the cognitive function), but that they also exist for another reason: to justify the dominant ideology and to maintain the social structure (i.e., they have a social function). In the following section we will see how stereotypes affect individuals who live in this society.

The effects of stereotypes on targets

Being part of a society renders individuals with the shared knowledge of the cultural stereotypes associated with different groups. As we have seen, this is important because it helps consolidate a view of reality, supporting the existing social system. In fact, stereotypes have an important regulating role, guiding the way we perceive and act toward each other in our day-to-day encounters.

Until now, considerable amount of research has been devoted to understand how stereotypes affect our perceptions and behaviours (for a review see, for example, R. J. Brown, 1995; D. J. Schneider, 2005). Most of this research has been especially interested in studying the way we judge and behave toward members of other groups particularly minority groups such as, for example, Blacks, women, or older people. These studies have shown that stereotypes may have a self-fulfilling nature in the sense that they may make us see exactly what they prescribe. Hence, we may perceive women as less competent than men (Goldberg, 1968) or African Americans as more aggressive than Whites (Duncan, 1976). For example, in a classic experiment, Duncan (1976) showed the effects of stereotypes regarding race. In this study, participants watched a videotape of an encounter between two men turning increasingly hostile until one shoved the other. The race of the two men was varied, so that black and white men shoved both blacks and whites. Results showed that, consistent with the black stereotype, participants labeled the shoving by black stimulus as more violent than similar behaviours by white stimulus.

Moreover, some studies have shown that stereotypes may not only affect our perceptions, but also our behaviours regarding members of other groups. Bargh, Chen and Burrows (1996) conducted a classic study showing that when the African American stereotype was activated,

participants behaved in a more aggressive manner. Hence, it seems that we may not only perceive African Americans as more aggressive, but we may also act in a more aggressive manner toward them.

Understanding the effects of stereotypes on our reactions to others is no doubtly a crucial endeavor. However, looking at this issue in this way is still only one face of the coin of social interaction. Therefore, one important question remains: What happens to the social targets that are stereotyped? For instance, thinking about our initial bus example, if you are an older person and use the public transportation in Lisbon, how does the pictogram affect *you* (i.e., when you are the *target* of the stereotype)? According to Swim and Stangor (1998), despite its crucial importance, the study of the effects that prejudice and stereotyping has on targets has received considerably less attention than the effects that these have on the perception of others. In fact, even one of the classic works on stigma (Jones et al., 1984) has more information regarding those who are prejudiced against the stigmatized than the study of the stigmatized themselves. According to Swim and Stangor (1998) this relative neglect of this topic is surprising, given the practical and the potential theoretical advances that could be made by a deep study of the target's perspective. In fact:

The target person represents a classic social psychological individual – one who is highly motivated, in interests of self-defense and opportunity maximization, to carefully peruse the behaviours of others with the goal of accurately understanding the attitudes of those others toward him or her, and to attempt to tailor his or her behaviours to reduce or avoid negative actions from others (p. 1).

Nevertheless, although early attempts to understand this topic were relatively scarce when compared with other socio-psychological issues, this field of study has witnessed a flourishing since the 80s (see Major & Vick, 2005), that resulted in the increased number of perspectives that are available today. Each approach offers detailed accounts to explain the self-stereotyping process, and usually draws heavily on one of the different branches within the socio-psychological field (e.g., social cognition, social identity theory). However, as far as we can tell, in spite of the increasing amount of research conducted in this domain, there is no literature review that encompasses these various approaches and that makes an effort to integrate their efforts. In this sense, sometimes contemporary literature regarding the effects of stereotypes on targets appears fragmented, blurred, and even repetitive.

In this chapter we will make an effort to review the main theories and approaches regarding this topic in contemporary socio-psychological literature. However, given the broad

scope of this topic, we will choose to present what in our view are the three main approaches of self-stereotyping: the stereotype priming approach, stereotype threat, and the social identity approach. However, before we take that path, we will briefly review the early conceptions regarding this matter.

Early approaches

According to Swim and Stangor (1998), we can find some references to the study of the effects of stereotypes on targets in textbooks and papers since back to 1930s (Clark & Clark, 1947; Horowitz, 1939). However, several researchers (e.g., Major & Vick, 2005; D. J. Schneider, 2005) acknowledge that the discussion regarding this topic was initiated in a structured manner by the sociologist Robert Merton (1948), when he introduced the idea of stereotypes as self-fulfilling prophecies. Merton defined a self-fulfilling prophecy as “a *false* definition of the situation evoking a new behaviours which makes the originally false conception come true” (p. 423), and discussed some examples of how these work in our everyday social life in the creation of social problems, such as discrimination against Jews and African Americans. For instance, in one interesting example, he showed how the stereotypes that labor unions members had of African Americans, influenced the behaviours of members of this group, and ended up contributing to severe limitations in jobs opportunities for them. In the American society of the beginning of the 20th Century, being a member of a labor union was almost a precondition to find a job. However, most African Americans were not accepted as members of these unions because they were stereotyped as “strikebreakers” and “untrustworthy”. In this sense, they had big unemployment rates. When faced with a strike, companies offered jobs to all takers, and African Americans often accepted these positions. Thus, through a self-fulfilling prophecy, the union’s beliefs about African Americans were confirmed.

Later on, the role given to stereotypes as self-fulfilling prophecies was once again emphasized by Allport (1954/1979) in the *Nature of prejudice*. In the chapter “Traits due to victimization” he acknowledged the importance of considering the effects that stereotypes’ images can have on group members. According to Allport (1954/1979):

“If a man enters a group believing that all those present feel aggressive toward him, he will probably behave in such a defensive and insulting manner that true aggression will be evoked (...) The way we

perceive qualities in others cannot help but have an effect on what qualities others will display” (p. 159).

However, interestingly, we should note that Allport did not share an exclusive pessimistic vision of the way stereotypes might affect targets. First of all, he explicitly acknowledged that self-fulfilling prophecies can lead both to a benign circle, as well as to a vicious circle. Therefore, if someone is praised, appreciated, and welcomed in our group, he or she will probably make solid contributions. Secondly, in Allport’s view, even when a target is faced with negative expectations, this will not lead inevitable to a confirmation of this negative image. In fact, for Allport, “becoming the stereotype” is just one possible reaction that targets can have. Target individuals may have at their disposal an array of *ego defensive* strategies that they can use to deal with unwanted stereotypes images. The following passage summarizes very well the point he was trying to make:

A child who finds himself rejected and attacked on all sides is not likely to develop dignity and poise as his outstanding traits. On the contrary, he develops defenses. Like a dwarf in a world of menacing giants, he cannot fight in equal terms. He is forced to listen to their derision and laughter and submit to their abuse.

There are great many things such a dwarf-child may do, all of them serving as his ego-defenses. He may withdraw into himself, speaking little to the giants and never honestly. He may band together with other dwarfs, sticking close to them for comfort and for self-respect. He may try to cheat the giants when he can and thus have a taste of sweet revenge. He may in desperation occasionally push some giant off the sidewalk or throw a rock at him when it is safe to do so. Or he may out of despair find himself acting the part that the giant expects, and gradually grow to share his master’s own uncomplimentary view of dwarfs (p. 142).

As we shall see in detail below, these groundbreaking ideas of Allport (1954/1979) were later on included in contemporary self-stereotyping theories. However, in the years that immediately followed Allport’s book, the experimental studies that were conducted provided mostly evidences that confirmed the self-fulfilling nature of stereotypes.

Within psychology, the famous experiment of Rosenthal and Jacobson (1968) was influential in demonstrating the effect of self-confirming prophecies. These authors showed how teacher’s expectancies could influence the academic achievement of students. In their experiment, Rosenthal and Jacobson (1968) created a bogus situation where they incorrectly informed the teachers about the results of a test taken by their students. They randomly chose around one-fifth of the children in each year, and told their teachers that they would be likely

to show a significant improvement in their learning within the next year, in comparison with the remaining 80% of the children. One year later, Rosenthal and Jacobson retested all the children with the same ability test. Results showed that, at least in the first grades, the “experimental” children did actually significantly increase their scores on the intelligence test. Rosenthal’s and Jacobson work has been replicated in broad terms and served as inspiration for several contemporary work regarding this issue (Darley & Fazio, 1980). This work was important because it showed in a definitive way the pervasive effect that stereotypical expectancies might have on target’s behaviours.

In fact, together with the other early authors (G. Allport, 1954/1979; Merton, 1948), Rosenthal and Jacobson’s (1968) had the merit of giving special emphasis to the target’s perspective, and opening the way to more contemporary approaches in this domain.

Contemporary approaches

Although in early days there was a relative neglect of this topic in the socio-psychological literature, more recently several researchers have turned their efforts to understand the target’s perspective in stereotyping (e.g., Chen & Bargh, 1997; Hogg & Turner, 1987; B. Levy, 1996; Lorenzi-Cioldi, 1991; Major & O’Brien, 2005; Spears, Doosje, & Ellemers, 1997; Steele, 1997; Steele & Aronson, 1995). However, these follow different research traditions, and with few exceptions (Crisp & Abrams, 2008; O’Brien & Hummert, 2006; Wheeler & Petty, 2001), they do not make an effort to integrate the findings of the different approaches.

In the next section we will present what, in our view, are the main contemporary approaches on self-stereotyping: the stereotype priming approach, stereotype threat and the social identity theory. In this dissertation, we will give special emphasis to the stereotype priming approach, since it is this tradition that our empirical studies are included. However, in an attempt to integrate the findings of other research lines, we will also briefly present stereotype threat and the social identity approach and try to indicate the main contributions that they can bring to studies within the stereotype priming approach.

The stereotype priming approach

One of the most influential contemporary approaches exploring the effects of stereotypes on targets is the stereotype priming approach (the stereotype priming approach is also

sometimes called *self-stereotyping* (O'Brien & Hummert, 2006)). Following a clear socio-cognitive orientation, this perspective assumes a distinctively cognitive focus, trying to explain the mental processes by which stereotypes affect the responses of individuals using concepts such as memory, attention, automaticity, schemas, and associative networks (Hamilton et al., 1994; Operario & Fiske, 1999).

In accordance with the social cognitive view, we can think that this approach shares the following main characteristics (Leyens et al., 1994; Operario & Fiske, 1999):

- i) It focuses primarily in an intra-individual level of analysis, trying to explain intrapsychic processes.
- ii) It emphasizes processes rather than descriptive outputs. In this sense, it is concerned with models of information-processing and memory.
- iii) It uses fine-grained methodological paradigms that are borrowed from the mainstream in cognitive psychology.
- iv) It uses a vast array of different dependent variables including self-report measures but also reaction times, recall, recognition, neuroscience techniques, etc.

So far, most of the research conducted within this approach has been primarily concerned with the way stereotype activation affects our perception of others. However, as we shall see in more detail below, recently, there have been some successful attempts to explore their effects on targets (Hess et al., 2004; B. Levy, 1996; Shih, Ambady, Richeson, Fujita, & Gray, 2002). In this section we will describe these studies in detail. However, before we continue, we need to present some basic considerations regarding this perspective. We will begin by presenting the metatheoretical guidelines behind the socio-cognitive approach. Here we will focus on the way socio-cognitive research has evolved from being a purely “cold” cognitive perspective to a more motivational “warm” approach, considering individuals’ motives and goals (Schwarz, 1998; Sorrentino & Higgins, 1986). After this general presentation, we will describe how this change within the socio-cognitive field affected the stereotyping domain. We will divide these contributions in two topics: the effects of stereotypes viewed from a “colder” and from a “warmer” perspective. As we will see, these sections cite exclusively “other-stereotyping” effects, that is, studies where individuals are activated with a stereotype from a category to which they do not belong to (e.g., being primed with the Black stereotype if you are White). However, the evidence gathered within this literature is informative for understanding the more recently studied “self-stereotyping effects”, that is, studies where

individuals are activated with a stereotype from a category to which they belong (e.g., being primed with the Black stereotype if you are Black). Hence, only in the end of this section we will turn our attention to our specific topic of interest, which is exactly how stereotypes affect targets. Here we will give special attention to two variables that have been widely studied in this domain: self-relevance and awareness. However, let's begin by introducing the more metatheoretical general view of social-cognition.

Social cognition metatheory: is it getting hot in here?

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In their influential book *Social Cognition*, Fiske and Taylor (1991) identified three major metaphors to explain the evolution of research within the socio-cognitive approach (see also Operario & Fiske, 1999): the information processor, the cognitive miser and the motivated tactician.

The first wave of social cognition research began in the late 1960s, and was marked by heavy borrowing of cognitive methodologies without substantial changes. Many research programs merely simply imported certain variables from basic cognition research into social versions (i.e., perception became person perception, categorization became person categorization). This purely cognitive analysis generated various metatheoretical metaphors for human thought processes, two of which became very well known – the person as “information processor” and the person as “cognitive miser”.

The information processor metaphor assumed that people act as naïve scientists, in a fairly rational way. The basic idea was that, given enough time, people would work similarly to a computer, gathering all the relevant data and arriving at the most logical conclusion. For instance, early attribution theories (e.g., Jones & Davis, 1965; Kelley, 1967; Weiner, 1974) exemplify how this metaphor could apply. Attribution theories describe people's causal analysis of the social world. For example, when we witnesses a friend performing a certain behaviours (e.g., being irritable), an “information processor” would carefully weight the evidence for a situational cause (e.g., he is waiting in a busy traffic jam) or a dispositional cause (e.g., he tends to act this way very often) of his behaviours. The information processor metaphor was a purposeful theoretical strategy designed to push a rational view of people as far as possible, in order to discover its shortcomings. It was a *normative* and prescriptive model of human thinking and was mostly preoccupied in understanding the way people *should* behave. In this perspective, error is seen as an emotion-based departure from the normal process.

Under some circumstances, people clearly do proceed in this systematic manner. However, usually people are not always so careful. For instance, on an everyday basis, people often make attributions in a relatively thoughtless fashion. The main idea is that, because the cognitive system is limited in capacity, people take shortcuts. This mode of thinking about people characterizes the second major type of model that appeared in social cognition research: the cognitive miser metaphor. This approach is based on a *descriptive* model: what people actually do, instead of what they should do. The main idea is that, in order to keep cognitive resources, often people adopt strategies that simplify complex problems. Human thinkers use convenient shortcuts (heuristics, schemas, scripts, and stereotypes) in place of effortful thought. These strategies may not produce normatively correct answers, but they are very efficient. It is important to note that, according to the cognitive miser metaphor, errors and biases stem from inherent features of the cognitive system. In fact, it soon became apparent that the use of these cognitive shortcuts was not so much a matter of strategic choice as of automatic, unintended processes operating in person perception and social judgment.

At about the same time social cognitive theorists were embracing the cognitive miser idea, cognitive psychologists were developing the distinction between that mode of processing that was under the control of the person – controlled processes - and that which is not – automatic processes (LaBerge & Samuels, 1974; Posner & Snyder, 1975; W. Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977). Bargh (1984) summarizes the distinction made by these early cognitive models in the following way:

Conscious or *control processes* were described as flexible and easily adapted to the particular features of the current situation, but severely limited in scope at any given time by a limited processing capacity. *Automatic* processes, on the other hand, were said to be effortless and not restrained by capacity limitations. They are relatively static sequences of processing that developed out of frequent experience within a particular stimulus domain, and which are triggered by those stimuli without the necessity of conscious intent or control (p. 2)

Soon social cognitive researchers incorporated this notion of automaticity to explain social phenomena. In the final pages of their 1978 paper, Taylor and Fiske (1978) were the first to introduce this idea, and in the 1980s it was applied to almost all psychological phenomena like, for instance, trait attributions (Gilbert, 1989), interpretation of another's behaviours (Bargh & Thein, 1985), and stereotyping (Brewer, 1988).

These two metaphors – the information processor and the cognitive miser - swept the field during 1970s and 1980s, influencing metatheoretical views about human thinkers. They

influenced social psychology in a determinant way, increasing our understanding about information processing, and introducing new refined methodologies and techniques (Devine, Hamilton, & Ostrom, 1994; Hogg & Abrams, 1999). However, they also raised some concerns among social psychologists.

In the early social cognitive view, both the information processor and the cognitive miser were often portrayed as “cold” thinkers, lacking any kind of affect or motivation concerns (Schwarz, 1998). In the information processor metaphor, motivation played a secondary part, entering mainly as a potential qualification of the usual rational and systematic process. Therefore, affects and motives were responsible for increasing errors and deviations from the normal, *right* conduct. On the other hand, early cognitive miser views tended to neglect all together the issue of motivations or feelings. In fact, according to Fiske and Taylor (1991), “the cognitive miser model is silent on the issue of motivations or feelings of any sort. The role of cognition is central to the cognitive miser view, and the role of motivation has vanished almost entirely, with isolated exceptions” (p. 13). This apparent early disregard for more social aspects, led several researchers to qualify social cognitive research as a reductionist and asocial account of human behaviours (Hogg & Abrams, 1999; Leyens et al., 1994) and, despite changes within the field, this criticism is somewhat still present today.

As the cognitive miser viewpoint has matured, researchers gradually began to address the issue of motivations and emotions. Indeed, since late 1980s/1990s empirical research turned to the roles of affect, motivation, and situational constraints in guiding thought and behaviours (Higgins & Sorrentino, 1990; Showers & Cantor, 1985). Given these advances, a new metaphor emerged, that of the “motivated tactician” (Fiske & Taylor, 1991). The motivated tactician metaphor emphasizes the undeniable pragmatic and flexible nature of mental activity. It describes people not as machines, but as fully engaged thinkers with several cognitive strategies available. According to this view, people may use a wide variety of pragmatic cognitive tactics, from the effortless heuristics processes of the cognitive miser, to the effortful systematic processes of the motivated thinker, based on their goals, motives, and needs as determined by the power of the situation. In fact, schema-based perception now follows from people’s context-driven goals, not merely from human cognitive shortcomings. For instance, research that previously might address “schematic biases in impression formation” would change its approach under this new paradigm, and might refer to “motivated impressions shaped by social situations” (Operario & Fiske, 1999).

“Warm” social cognition characterizes contemporary social cognitive research. Attempts to reintroduce social variables such as motives, affect and the social context are undertaken and

welcome in several research areas. Some examples are, for instance the study of the effects of mood on memory and judgment or the socially situated cognition approach (see Schwarz, 1998 for a review on this issue).

These metatheoretical changes within the socio-cognitive perspective were reflected in the way researchers addressed specific issues within the literature. In this dissertation, we are particularly interested in addressing how these metatheoretical views contribute to our understanding of the stereotyping process.

The automatic effects of stereotypes from a “cold” perspective: the information processor, the cognitive miser, and the cognitive monster

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Since the seminal ideas of Lippman (1922), Allport (1954/1979) and Tajfel (1969; 1981b) the idea of individuals as rational “information processors”, perceiving others in a systematic and individualized way, was called into question. Hence, early on researchers saw categorization and stereotyping as a natural process that allowed the efficient processing of information (see previous section *The functions of stereotypes* for more details). Later, under the umbrella of the “cognitive miser” metaphor, this heuristic function of stereotypes in person perception was once again emphasized by socio cognitive researchers. Brewer (1988) and Fiske and Neuberg (1990) argued that the use of stereotypes is the default option, when a perceiver lacks capacity and motivation. The idea behind these models is that individualization of a social target is an effortful strategy and that, in most occasions, perceivers will use a global strategy such as the application of stereotypes. In the same vein, the work by Macrae, Bodenhausen and colleagues was influential, showing that the use of stereotypes does allow for more efficient processing of information about people, in that less attentional capacity is needed and thus can be devoted to other relevant tasks (e.g., Bodenhausen, 1990; Bodenhausen & Lichtenstein, 1987; Macrae, Hewstone, & Griffiths, 1993; Macrae, Milne, & Bodenhausen, 1994)⁶. According to Macrae, Stangor and Milne (1994), general knowledge structures such as stereotypes may serve several roles as capacity-conserving devices. First, they can serve a data reduction function in the sense that they provide expectancies that direct attention and other processing resources to expectancy-

⁶ For instance, in an ingenious study, Bodenhausen (1990) showed that people relied more on stereotypes when they were at the low end of their circadian cycles. What does this mean? People go through daily variations in their arousal levels that affect capacity and efficiency of working memory. Some people reach their functional peak during the morning (these are “morning people”), while others reach it in the evening (“night people”). According to the idea that stereotypes are used as capacity-saving devices, Bodenhausen (1990) showed that morning people use stereotypes more in the evening and night people use them in the morning.

congruent information. Second, they can also economize cognition by enriching the information available about a stereotyped target. Therefore, stereotypes enable us to go beyond the information present in a given social context and fill in any gaps that may occur.

One fundamental idea behind the “cognitive miser” approach is the notion that stereotypes can be automatically activated in the social context, influencing individual’s responses. Based on early perspectives in cognitive psychology (Posner & Snyder, 1975; Shiffrin & Schneider, 1977), automaticity was defined as having the following qualities (see Bargh, 1989 ; 1994 for a review): *unintentional* (e.g., not able to control the start of the process), occurring *outside awareness* (e.g., outside conscious perception), *efficient* (e.g., in that they consumed little if any attentional capacity), and *uncontrollable* (not able to be stopped once started). Bargh (1989; 1994) argued that these characteristics do not necessarily hang together in an all-or-none fashion and strongly advised researchers to carefully analyze the process under study according to each characteristic.

According to these ideas, since the 1980’s, several studies within social cognition have explored how these characteristics may apply to the use of stereotypes. First of all, we may wonder, why might stereotypes be automatically activated? According to Hamilton and Sherman (1994) there are several reasons that may explain this effect. First, many stereotypes are learned at a very early age (e.g., P. A. Katz, 1976). As a consequence they have a long history of activation and are likely to be highly accessible (e.g., Higgins & King, 1981). In addition, due to their long term use, stereotypes are likely to become proceduralized (e.g., Smith, 1990). In this sense, several researchers (e.g., Bargh, 1994; Brewer, 1988; Fiske & Neuberg, 1990; Macrae, Stangor et al., 1994; Wegner & Bargh, 1998) have argued that the mere perception of easily discernible group features – especially the “big three” of gender, race, and age - is sufficient to cause the activation of the respective category and usually also of the stereotype associated with the group, which then influence judgments and behaviours of a group member in an unintended fashion, outside of perceiver’s awareness. Before we describe these contributions in more detail, let us first take some time to introduce a methodological note that is essential to understand the nature of the experiments.

Studies that explore the automatic effects of stereotypes use a *priming* technique. Priming studies are interested in studying the temporary activation of an individual’s mental representations by the environment and the effects of this activation on various dependent measures. Specifically, the term *priming* refers to “how recent or current experience passively (without an intervening act of will) creates internal readiness” (Bargh & Chartrand, 2000, p. 255). Its use as an experimental technique initiated in studies of memory (Segal & Cofer,

1960; Storms, 1958) and it was imported to the social psychological domain by Higgins, Rholes and Jones (1977) with the famous “Donald paradigm”. Higgins et al exposed participants to synonyms of certain personality traits (e.g., “adventurous” or “reckless”) as part of a first, memory experiment. Next, in what participants believed to be an unrelated experiment, they read about a target person named Donald who behaved in ways ambiguously related to the primed traits (e.g., sailing across the ocean alone). Results showed that those participants who had been exposed to words such as “adventurous” and “independent” formed more positive impressions of Donald than those who were exposed to terms such as “reckless” and “aloof”. It is important to note that participants evidenced no awareness of having been influenced by the previous exposure to trait terms in the first experiment (see also Srull & Wyer, 1979).

In the past 25 years, the use of priming techniques have evolved immensely within the socio-cognitive field (Bargh, 2006). Researchers developed different and sophisticated modes of priming like, for example, *conceptual priming*, *mindset priming*, or *sequential priming*. Also, they have developed techniques that involve priming stimuli at different levels of awareness (e.g., subliminal and supraliminal techniques) (see Bargh & Chartrand, 2000 for a review). Despite their differences, what is important to note that all these experimental techniques have one fundamental thing in common:

They address the residual effects of one’s use of a representation in comprehending or acting on the world, which leaves the prime representation, or any other representation automatically associated with it, active for some time thereafter. During the time it remains active, it exerts a passive effect on the individual, one that he or she is not aware of and does not intend – and is therefore unlikely to control (Bargh & Chartrand, 2000, p. 259)

After the initial studies on trait activation (e.g., Bargh & Pietromonaco, 1982; Higgins et al., 1977; Srull & Wyer, 1979), researchers applied the priming technique to explore the automatic activation of stereotypes. Usually this involves presenting participants with the category label or/and the characteristics associated with the stereotype. Typically researchers have used verbal labels. However, it is possible to use also other sources such as, for instance, photographs (Hummert, Garstka, & Shaner, 1997) or materials such as typical uniforms (C. E. Cohen & Ebbesen, 1979). The results of these studies show that stereotypes can be automatically activated upon the presentation of the prime, and that this affects individual’s subsequent judgments and behaviours. In support of this prediction, some of these

experiments have showed, for instance, that when a stereotype is primed participants gain rapid access to its contents (e.g., Banaji & Hardin, 1996; Dijksterhuis & Van Knippenberg, 1996; Dovidio, Evans, & Tyler, 1986; Gaertner & McLaughlin, 1983; Macrae, Stangor et al., 1994; Perdue & Gurtman, 1990). Moreover, others have also shown that the increased accessibility of stereotypes seems to influence perceiver's overall impression of a social target (e.g., Banaji & Greenwald, 1995; Banaji, Hardin, & Rothman, 1993; Devine, 1989; Macrae, Milne et al., 1994). For instance, in which is now a classic experiment, Devine (1989, Study 2) showed that subliminally exposing individuals to the categorical labels (e.g., Blacks, Negroes), along with the stereotypical traits of the African American stereotype (e.g., musical, athletic), made them rate a target person's ambiguously relevant behaviours as more hostile than did a control group. Interestingly, she did not prime the trait "hostile" in itself so, the fact that this was active during the judgment task shows that the prime manipulation was indeed due to the activation of the stereotype as a whole and not only due to the activation of the "hostile" trait, as others have previously shown (Bargh & Pietromonaco, 1982). The only way this result could have occurred was if the concept of hostility had become active (and thus temporarily more accessible for use in interpreting the target's behaviours) by its participation in the activated stereotype.

Soon stereotypical priming effects were extended also to other domains. In an influential work, Bargh, Dijksterhuis and collaborators (Bargh et al., 1996; Dijksterhuis & Bargh, 2001; Dijksterhuis, Chartrand, & Aarts, 2007) showed that stereotype activation could not only influence participant's perceptions and evaluations, but also their effective behaviours. In a widely cited paper, Bargh et al (1996) found that subliminal priming of the elderly stereotype caused their experimental participants to walk more slowly down the hall (i.e., in line with the "weak" and "slow" features of the stereotype) when leaving the experimental session, and that subliminal activation of the African-American stereotype caused participants to react with greater hostility to the experimenter. Also, in related work, Dijksterhuis and van Knippenberg (1998) found that participants primed with the "professor" stereotype subsequently scored higher in a game of Trivial Pursuit than did participants primed with the "soccer hooligan" stereotype.

In these studies, stereotypes are assumed to influence behaviours through "ideomotor processes". The main idea is that, because stereotypes and related behaviours are associated in memory, when one is activated it is more likely the other to occur (Dijksterhuis & Bargh, 2001). Usually, this process follows a "trait-route" (Dijksterhuis et al., 2007). When we see a person, we automatically categorize him or her according to salient characteristics (e.g., age)

and usually, we also activate the stereotypical traits associated with that category (e.g., slow). According to Dijksterhuis et al (2007), because each trait is associated with several behaviours in memory, activating the trait serves as a cue to activate the appropriate behaviour. For example, if we meet an elderly person, the category “elderly” becomes activated as well as associated traits such as “slow”. The activation of the trait construct “slow” will guide one’s behaviour to walk more slowly irrespective of why and how the trait was activated. This process is moderated by strength of memory associative linkages between the category and the stereotypical traits (i.e., the degree in which the the category “elderly” is associated in individuals’ memory with the trait “slow”) (Dijksterhuis, Aarts, Bargh, & Van Knippenberg, 2000).

In sum, all this evidence shows that stereotypes are essential tools that are very useful to the cognitive miser in order to make sense of the complex social world. He or she doesn’t even have to notice it; stereotypes become activated in an automatic way affecting his or her perceptions and behaviours. Although this is a compelling idea in terms of energy-saving, it does pose a challenging question: Are we just passive recipients of these effects? Are we doomed to always act towards black people in an aggressive way and paternalize older people? Are we no more than “cognitive monsters” (Bargh, 1999), who passively follow automatic stereotypical tendencies?

This idea of the cognitive monster as someone who acts in an automaton and “cold” way soon raised big concerns among several researchers. As Bargh (1999) eloquently argues, soon the chevaliers of “motivation” and “awareness” questioned the role played by “warmer” motives such as our attitudes and self-motives. This led to a change in the way researchers conceptualized the effects of stereotypes. After all, individuals are not just “cognitive misers”...sometimes they act in a “motivated” and “tacit” way (Fiske & Taylor, 1991).

The automatic effects of stereotypes from a “warmer” view: the motivated tactician and the malleability of stereotype activation

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The automatic effects of stereotypes just described reflect *assimilation effects*, in the sense that people’s perceptions and behaviours shift toward the activated knowledge (i.e., when you are primed with the elderly stereotype, you walk more slowly) (Stapel, 2007). As we reviewed above, these effects are very common and easily replicated in experimental settings. However, these are not the only option available. In fact, in some studies there are evidences of *contrast effects*, in the sense that behaviours and perceptions shift away from the activated

knowledge (Stapel, 2007). These cases often happen in two ways: either there are effects contrary to what was expected (i.e., when you are primed with the elderly stereotype you walk faster), or there are no effects whatsoever. Either way, in both cases, the prime is not having the expected effect on individual's responses. This evidence is important because it constitutes a good argument against the inevitability of the cognitive monster.

After the mid 1980's, temperatures rose in the socio-cognitive stereotyping domain. Some influential studies (e.g., Devine, 1989; Gilbert & Hixon, 1991; Macrae, Bodenhausen, Milne, Thorn, & Castelli, 1997; Neuberg & Fiske, 1987) showed that stereotyping was not as inevitable and "cold" as the "cognitive miser" view supposed. For instance, in defense on this claim, Devine (1989) argued that although stereotype activation was an inevitable automatic process, actual stereotype application was under the motivational control of each individual. In support of this prediction she showed that high and low prejudice individuals could accurately report the same African American cultural stereotype (Study 1), and were both equally influenced by its subliminal activation (Study 2). However, they differed when explicitly asked about their personal beliefs regarding the stereotyped group (Study 3). According to these results Devine argued that, although stereotypes may become active in an automatic way, their application may be under motivational control, in the sense that individuals may choose to defend or not the cultural stereotype based on their personal values.

Around the same time, Gilbert and Hixon (1991) presented even more extreme evidence that stereotypes were not as "inevitable" as one previously thought. They showed that high load on attentional resources – induced by giving participants a secondary task – disrupted the otherwise automatic activation of the Asian American stereotype. According to Gilbert and Hixon, this result indicated that, at least the activation of some stereotypes was dependent upon the allocation of cognitive resources. This idea that stereotype activation needs some "focus of attention" from the part of the perceiver was further supported also by Macrae and colleagues (Macrae, Bodenhausen, Milne, & Calvini, 1999; Macrae et al., 1997). For instance, in one set of studies, Macrae et al. (1997) investigated the focus of attention in a sequential priming task, in which the primes were pictures of common inanimate objects or women, and the targets were stereotypic or counterstereotypic traits associated with women. In one condition, the participants were asked to decide whether each picture was of an animate object (condition of high attention given to female features), whereas the participants in another condition were asked to decide whether a white dot was present (condition of low attention given to female features). Results showed that pictures of women facilitated responses to the stereotypic traits only in the animate-nonanimate judgment task; automatic stereotypes did not

occur when the perceiver's attention was focused on detecting the white dot. According to Macrae and Bodenhausen (2001), when the perceiver is motivated to process the target in a social manner, stereotypes are activated. Otherwise, they may not be activated at all.

Although this "malleable" idea of stereotypes raised some criticisms in the field (see, for instance, Bargh, 1999), recent evidences show strong support for this notion that stereotype's effects can be moderated by perceiver's goals and intentions (Blair, 2002; Bodenhausen & Macrae, 1998; Dijksterhuis et al., 2007; Kunda & Spencer, 2003; Payne, 2005).

Kunda and Spencer (2003) offer a valuable insight on this matter. These authors describe a model for understanding stereotype effects. According to this view, individual's goals and motives can promote or inhibit both stereotype activation and application. According to these authors, stereotypes may influence individuals' responses by two routes. On one hand, there are situations where the mere activation of a stereotype can influence judgments about a stereotyped individual through automatic assimilation (Devine, 1989; Lepore & Brown, 1997). However, there is also a second route available: one where perceiver's goals and intentions may enter into play. The extent to which each process is followed is dependent upon a host of chronic and situational factors. The goal-based framework identifies three major classes of goals that affect the activation and application of stereotypes in the way we perceive others: comprehension goals, self-enhancement goals and the motivation to avoid prejudice.

Comprehension goals refer to the need to understand events, reduce the complexity of the environment, gain cognitive clarity and form coherent impressions. Increases in the strength of comprehension goals can prompt stereotype activation and application when stereotyping is assumed to aid comprehension. For example, a puzzling behaviours may prompt the use of applicable stereotypes that can help explain it (Kunda, Davies, Adams, & Spencer, 2002). However, comprehension goals may also prompt stereotype suppression, if stereotyping is assumed to disrupt comprehension. For instance, people may inhibit the activation of one stereotype when another is more salient to permit a coherent impression of the person (Macrae, Bodenhausen, & Milne, 1995).

A second class of goals are *self-enhancement goals*. These refer to the need to maintain, protect, and enhance self-esteem, affirm self-worth, and preserve valued aspects of self-concepts. There is evidence that self-enhancement goals may influence stereotype activation. For example, Sinclair and Kunda (1999) found that automatic stereotype activation of Blacks (as measured by a word completion task) was found to be weaker after a Black supervisor had delivered a positive evaluation of the participants, compared to a control condition. The

stereotypes were stronger, however, when the evaluation was negative. In a similar vein, there are evidences showing that self-enhancement motives may also moderate the application of stereotypes like, for instance, in judgment tasks. For example, in one study, Sinclair and Kunda (2000) showed that students rated their female professors more negatively than their male professors if they had received poor grades from them, but not if they had received high grades. This stereotype application was likely due to participant's motivation to discredit their harsh evaluator and salvage their self-worth.

Finally, a third class of moderators is the *motivation to avoid prejudice*. The basic assumption is that when stereotyping is assumed to indicate prejudice, people motivated to avoid prejudice may attempt to inhibit stereotypes applicable to their interaction partners. According to Kunda and Spencer (2003), variables related to the motivation to avoid prejudice may inhibit stereotype activation. For example, in one study Moskowitz et al. (1999) showed that chronic egalitarian beliefs are an important moderator of stereotypes activation. In one study, participants with and without a chronic goal of being egalitarian toward women had to quickly pronounce a series of words, some of which were stereotypic of women. The presentation of each word was preceded by a very brief presentation (200 ms) of a male and female face. The speed of pronouncing stereotypic words served as measure of stereotype activation. Results showed that participants who lacked chronic egalitarian beliefs activated the stereotype of women when primed with female faces. However, participants with chronic egalitarian beliefs did not. A follow-up study showed that this lack of stereotype activation by chronic egalitarians was not due to their lack of associations between female cues and the stereotype of women but, rather, to their inhibition of that stereotype. Interestingly, it is important to note that these results were shown even when the time between the presentation of the photography and the stereotypical attributes was very short (200 ms), indicating that the participants were in fact, automatically inhibiting the stereotypical traits. This study shows that individuals with chronic egalitarian beliefs can inhibit stereotype activation in the service of these goals. Moreover, similarly to what happens with other goals, there is evidence showing that even when stereotypes are activated, the motivation to avoid prejudice may also affect stereotype application in judgment tasks. According to Kunda and Spencer (2003) this involves a more deliberative process: perceivers can actively avoid stereotyping others if they have the necessary cognitive resources. Studies that assessed both stereotype activation and application (Gilbert & Hixon, 1991) have found that, when cognitive resources are available, perceivers may refrain from applying an activated group stereotype to the group member whose very presence had caused its activation.

This approach by Kunda and Spencer (2003) is interesting because it gives special emphasis to the role of perceiver's motivations and goals. Hence, it is definitely a warmer vision of stereotype effects and much more in tune with the "motivated tactician" view (Fiske & Taylor, 1991). Moreover, Kunda and Spencer's (2003) approach makes specific predictions that contribute to a deeper understanding of the effects of stereotypes.

First, Kunda and Spencer's model gives similar emphasis to factors that affect both activation and application. Hence, contrary to earlier models (Bargh, 1999; Devine, 1989; Fiske & Taylor, 1991) that assumed that stereotype activation was an inevitable process, Kunda and Spencer assume that both the activation and the application of stereotypes' may be affected by perceivers motives and goals (see also Blair, 2002).

Second, the model assumes that the perceiver can entertain multiple goals simultaneously, and that these can act together to determine stereotype activation and application. For example, according to Kunda and Spencer, it is possible that comprehension goals increase stereotype application, while at the same time the motivation to avoid prejudice acts in an inhibitory manner.

Third, it is important to note that, according to Kunda and Spencer's model, fluctuations in the activation and application of goal-relevant stereotypes are dependent upon fluctuations in goal intensity. Interestingly, Kunda and Spencer assume that differences in goal intensity may be due both to individual and situational variations. On one hand, people may differ in their chronic strength of certain goals and this is an important moderator of stereotype's effects. For example, variables that moderate these effects are chronic egalitarian beliefs (Moskowitz, 1999) and the level of prejudice (Lepore & Brown, 1997). However, chronic differences do not seem to be the only moderators of stereotypes' effects. Situational factors may also activate different individual's motives and goals affecting stereotype automatic activation and application. For example, self-enhancement goals can be intensified by factors such as receiving praise or criticism from the target (Sinclair & Kunda, 1999) or being in situations that pose external threats to the self (Spencer, Fein, Wolfe, Fong, & Dunn, 1998).

Fourth, Kunda and Spencer's model place a great emphasis on stereotype contents. In this sense, it differs from earlier theories such as Fiske and Neuberg (1990) or Brewer (1988). These theories assumed that goals influenced stereotype application by determining the perceiver's mode of processing – stereotype-based or attribute-based. The contents of the stereotype are irrelevant to such a determination. In contrast, Kunda and Spencer assume that stereotype activation and application can depend on the goal-relevance of the stereotype,

which depends on its contents. Hence, a negative stereotype may be applicable to someone who is criticizing us, but not to someone who is praising us (Sinclair & Kunda, 1999).

Finally, it is important to emphasize that Kunda and Spencer assume that goals may influence stereotype activation and application both in an automatic and controlled way, and they present evidence supporting this claim. For instance, chronic high-egalitarians can automatically inhibit stereotype activation (Moskowitz, 1999). However, people can also intentionally suppress unwanted thoughts if they are motivated to do so (at least in the short term) (Wegner, 1994). Goals may influence stereotype application also in an automatic and controlled manner. For instance, Lepore and Brown (1997) argue that differences in motivational variables, such as the degree of prejudice, are linked with different stereotypic representations of the target group such that high-prejudice individuals have a more negative chronic representation of the group than low-prejudice individuals. In support of this claim, Lepore and Brown (Experiment 2), showed that when only the category label was activated in a subliminal way (and not the actual traits as in Devine's (1989) study), high-prejudice participants formed a more negative impression of a target person than low-prejudice participants. In this study, the motivation to avoid prejudice influenced judgments without any intention or awareness from the part of the perceiver. However, there are occasions where individuals are intentionally motivated to inhibit stereotypic impressions. According to Bodenhausen and Macrae (1998), after stereotypes are active, inhibitory mechanisms of hierarchical control may enter into play. This type of inhibition mechanism operates whenever higher order motives, such as "not being prejudiced", drives individuals to actively suppress stereotypic thoughts and discriminatory practices. According to Bodenhausen and Macrae, this is an effortful process, which will only succeed if people are aware of the potential for bias, if they are sufficiently motivated to inhibit stereotype expression, and if they have enough cognitive resources. Either way, although demanding, this type of inhibition mechanism may occur in certain situations. For instance, when in experimental settings individuals are explicitly asked to avoid stereotypic thoughts (a suppression condition), they write significantly less stereotypic impressions of a given target than those participants who did not receive any instructions (control condition). Only when the suppression motivation dissipates over time, will these controlled efforts vanish and often "backfire", increasing stereotypic impressions regarding a second target (Macrae, Bodenhausen, Milne, & Jetten, 1994).

More recent models also support Kunda and Spencer's idea that goals and motives may influence stereotype activation both in an automatic as well as in a controlled manner. For

instance, the auto-motive model of self-regulation by Bargh and colleagues (1990; 2004) assumes that on some occasions people may use conscious self-regulatory controlled strategies in order to fulfill their goals and motives. However, many situations involve the use of nonconscious, automatic self-regulatory processes. In this case, the full sequence of goal pursuit – from goal setting to goal completion – can proceed outside of conscious awareness and guidance. Nonconscious operating goals enable people to control thoughts, feelings and behaviours, without the need to invoke conscious choice or control processes. Consistent with the prediction of the auto-motive model, Spencer et al. (1998) found that threat to one's self-image is enough to activate stereotypes in the presence of members of a minority group. This effect seems to happen in an automatic way, without participants' intention or awareness.

Most of the work developed within the “motivated” perspective has been particularly devoted to stereotype's applications in judgments regarding stereotyped individuals. However, recently this approach has also been explored in studies measuring actual behaviours (Cesario, Plaks, & Higgins, 2006). Within this perspective, researchers have given special attention to one class of individual's motives: self-motives. In this sense, Dijksterhuis et al. (2007) identifies two groups of studies.

The first group of studies relates to the role of self activation. In one study, Shubert and Häfner (2003) showed that subliminally priming the self (i.e., using words such as me, I, myself) during the activation of a stereotype to which the self does not belong leads to automatic behavioural contrast from the stereotype. According to these authors, this effect occurs because there is a spontaneous comparison between the self and the stereotype. Interestingly, Shubert and Häfner (2003) showed that the same results are obtained when more social aspects of the self are activated. In fact, making explicitly salient that participants belong to an out-group, is enough to provoke an automatic behavioural contrast from the stereotype to which the self does not belong. In the same line, similar results were also obtained by Spears et al. (2004) although with a different manipulation. These authors showed that priming participants' with their in-group identity (e.g., psychology students) was enough to override behavioural priming effects from other-stereotypes (e.g., business people). Recently, Hall and Crisp (2007) showed that this effect is particularly strong for high identified individuals.

The second group of studies that explore the role of self-motives in behavioural priming effects is interested in studying the role of *self-relevance* of the prime. These studies are especially concerned with exploring the effects that stereotype activation has on targets. Overall these studies seem to show that targets of stereotypes are more sensitive to subtle

stereotype activation than non-targets (Dijksterhuis et al., 2007). Since this is a main topic of this chapter, we will discuss this issue in more detail in next section. However, before we continue we will briefly summarize the main point we are trying to make in this section.

Overall we think that the studies described in this section contribute to a more flexible vision of the stereotyping process in the sense that it assumes that “cold” passive processes are not the only expectable outcome of stereotypes’ activation. In sum, we think it is safe to say that, after the reign of the “cognitive miser”, contemporary perspectives of stereotyping assume a much more malleable approach, which considers the influence of several moderator variables, including the role of individuals’ motives and intentions. In this sense, these perspectives are much more in tune with the warm metaphor of the “motivated tactician” (Fiske & Taylor, 1991)⁷.

After reviewing these background evidences regarding the stereotype priming approach, it is finally time to present the target’s perspective. We hope these introductory explanations helped to contextualize the general characteristics of the stereotype priming approach.

Being the target: the moderator role of self-relevance and awareness

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As we already described, research within the stereotype priming tradition devoted considerably more efforts to understand “other-stereotypes” effects than “self-stereotypes”. However, more recent studies have begun to address this issue. As the point of departure of this approach, researchers assumed that the same basic principles that apply to “other-stereotypes” should also apply to “self-stereotypes” (B. Levy, 1996; B. Levy & Banaji, 2002). The basic idea was that it is possible to automatically activate, using a priming methodology, the stereotype of a group to which one belongs. Priming effects occur in the same fashion as in “other-stereotypes”: increased activation of the stereotype exerts a passive effect on the individual, one that he or she is not aware and does not intend – and is therefore unlikely to control. Like “other-stereotypes”, automatic “self-stereotypes” may affect judgments, perceptions and the target’s behaviours (Wheeler & Petty, 2001).

⁷ However, contemporary motivational perspective distinguishes from the motivated tactician in one important aspect. Fiske and Taylor (1991) argued that the motivated tactician was someone who could *choose* the best strategy to follow according to his goals and the specific situation. By contrast, in contemporary perspectives (Bodenhausen & Macrae, 1998; Payne, 2005), this is not necessarily so. In fact, contexts may also have the power to determine the best strategy to follow, despite individual’s intentions. For instance, if a situation activates self-focus, this will likely activate the use of more controlled strategies (Macrae, Bodenhausen, & Milne, 1998). In the same vein, situations where the perceiver has to respond in a quick manner will increase the strength of automatic responses (Payne, Lambert, & Jacoby, 2002).

The work of Levy and collaborators (Hausdorff, Levy, & Wei, 1999; B. Levy, 1996, 2000; 2003; B. Levy et al., 1999-2000; B. Levy, Hausdorff, Hencke, & Wei, 2000) represents a major contribution in this domain⁸. In a widely cited paper, Levy (1996) showed, for the first time, that the behaviours of a target could be affected by the automatic activation of self-stereotypes. In this study, she showed that older people who were subliminally primed with a negative aging stereotype (e.g., senile) performed worse on a memory task, whereas those who were primed with a positive aging stereotype (e.g., experienced) performed better. This is a classic assimilation effect to the aging stereotypes and has been broadly replicated in the memory domain (Hess et al., 2004) and using other dependent variables such as will-to-live (B. Levy et al., 1999-2000), speed of walking (Hausdorff et al., 1999), quality of handwriting (B. Levy, 2000), and stress levels (B. Levy et al., 2000).

Similarly to “other-stereotype” studies, researchers were also interested in uncovering possible moderators of these assimilation effects. In fact, if it seemed difficult to accept that stereotypes affected the way we perceive and behave towards others in a “cold” manner, it seemed even more intriguing to think that we would accept such influences in our own behaviours and self-worth, without the interference of more motivational variables. Exploring this issue in more detail, researchers within the stereotypic priming approach literature have focused their efforts to uncover the moderator role of two main variables: self-relevance and prime awareness (Hess et al., 2004; O'Brien & Hummert, 2006; Shih et al., 2002).

The role of self-relevance

Authors within this approach made an important prediction: although targets and non-targets may be affected by the stereotype, targets seem to be much more sensible to such stimuli and show a lower threshold of activation for such stimuli than do nontargets. The main reason for this is that the stereotype for targets is self-relevant – applicable to one of their identities. According to Shih and collaborators (Shih et al., 2002), because people consistently see themselves as the central focus of experienced events, they most frequently process self-relevant information, leading to increased ease and speed of processing. In support of this prediction, studies within this tradition have shown that targets are typically influenced by

⁸ As we will see, much of the research on automatic self-stereotyping has been conducted in the domain of aging stereotypes. Because this topic will be further developed in posterior sections of this dissertation (please see the chapter *Ageism and aging stereotypes*), here our goal is to generally describe the main results of these studies, comparing with the results found with other stereotypes, and analyze the main processes involved.

subliminally activated stereotypes, whereas non-targets are not. For instance, Levy (1996; 1999-2000) and Hess, Hinson and Statham (2004) showed that only older, but not younger, individuals were affected by subliminal priming of the aging stereotype. In the same sense, Shih et al. (2002) showed that only Asian participants, but not non-Asian, were affected by the Asian subliminal stereotypical prime.

Although there are some contradictory results with these findings in the “other-stereotype” literature, researchers generally agree with the idea of target’s higher stereotype sensitivity (Dijksterhuis et al., 2007). In one study, Dijksterhuis and colleagues (Dijksterhuis et al., 2000) showed that subliminal activation of the aging stereotype did lead to deteriorated memory performance among younger participants. However, one important moderator affected this result: this effect was stronger for younger individuals who had high degree of contact with older people and hence showed stronger associative links between the aging stereotype and the “forgetful” attribute. In this sense, it seems that associative strength is indeed an important moderator of stereotype priming effects. Since targets have a larger experience with self-stereotypes, strength of activation should be higher and the effects of self-relevant primes on behaviours should be easier to obtain (Dijksterhuis et al., 2007).

Related to this idea that self-relevance is an important moderator of stereotype prime effects, some authors have questioned the role played by the degree of group identification. In one recent study, O’Brien and Hummert (2006) showed that implicit age identification (i.e., measured by the IAT) moderated the effects of aging stereotypes. As expected, middle-aged participants with higher degree of identification with the old age group showed worse memory performance after being primed with the negative aging stereotype than participants with lower degree of identification.

However, this moderator effect of group identification still needs further clarification. As far as we know only one other study explored this issue and did not find support for this prediction. Hall and Crisp (2007) asked young university students to answer a scale of identification with young age. Afterwards, they primed participants with the young age stereotype and measured performance on memory of events related with young people’s habits (i.e., remembering the names of bars and clubs). Results showed no significant effects of in-group identification (similar results were found in a second study using gender stereotypes and math performance as a dependent variable). According to Hall and Crisp, this effect occurred because thinking about an in-group provides an inter-individual comparative context and so it does not lead high identifiers to assimilate more to the in-group stereotype. However, in our view, this result is not very clear. As we referred above, there are other

studies that have shown the moderating role of in-group identification on self-stereotyping (O'Brien & Hummert, 2006). The difference in the results may be due to the fact that the two studies used different measures of identification. It is possible that the use of an explicit measure in Hall and Crisp's study activated different processes than the use of the implicit measure of identification used in the O'Brien and Hummert study. Maybe the use of the explicit measure of identification generated the need to think about own group belonging in a more elaborated manner, inducing explicit self-in-group comparisons. On the other hand, the use of the implicit measure is not subject to these strategies; it merely reveals the chronic identification with the in-group (measured by the associative strength between the self and the group). However, this issue still needs further clarification.

Taking these results in consideration, we think it is important to address this issue in future studies. In fact, several researchers agree that the role of self-relevance, and self-activation in general, is still a challenging topic in behavioural priming studies and an interesting path for future research (Dijksterhuis et al., 2007).

The role of awareness

Another important moderator that has been identified in the literature is prime awareness. Some authors (Hess et al., 2004; Shih et al., 2002) argue that the degree in which targets are aware of stereotype activation affects the way they influence their performance. The main idea is that when targets are primed in a subtle way, they act in line with the activated stereotype resulting in assimilation effects. However, when they are primed in a more blatant manner, contrast effects occur, and individuals are not influenced by stereotype activation. Both Shih et al (2002) and Hess et al. (2004) used similar procedures to test these predictions in different samples.

In two studies, Shih and collaborators (2002) showed these effects by priming Asian American students with the Asian American stereotype either in a subtle or blatant manner. In Study 1, they manipulated the manner of stereotype activation using different versions of a questionnaire answered in the beginning of the experimental task. In the *subtle* stereotype condition, they asked participants to answer a demographic questionnaire (i.e., asking questions such as their native language or the number of generations of their family that had lived in America). In the *blatant* condition, participants completed a stereotype evaluation task that explicitly asked participants to evaluate the commonality and validity of several stereotypes associated with Asian Americans. Finally, there was also a *no prime* condition,

where participants completed an entertainment survey not related with the Asian stereotype (e.g., how frequently they went to movies). Afterwards, in what was presented as an ostensibly unrelated task, they answered a challenging quantitative test. Results showed that compared with the no-prime condition, participants in the subtle stereotype activation showed boosts in math performance in accordance with the Asian stereotype of “superior math ability”. However, there were no significant differences between the no-prime and the blatant condition. In Study 2, these results were replicated using a different method of stereotype activation. In this study, using a “computer vigilance task”, Asian American students were primed with the same Asian stereotype words either in a sub (i.e., at 80 ms) or supraliminal manner (i.e., at 1000 ms). There was also a control condition, where participants were primed with words unrelated with the Asian stereotype. Afterwards, they answered the math test. Results showed that participants had better performance in the subliminal than in the no-prime condition; however, they had lower results in the supraliminal condition compared with the no-prime condition. According to Shih et al. (2002), the results of these two studies support the general idea that targets of stereotypes are only affected by stereotype activation when they are primed in a subtle manner. Hence, when they are aware of the priming stimuli, there usually occurs contrast effects. According to the authors, the “key factor determining whether an assimilation or contrast effect will be found is participant’s awareness of the priming event” (p. 645). They assume that blatant stereotype activation is enough to make participants aware of the association between the stereotype prime and the task at hand. This causes a feeling of “choking under pressure”, leading to diminished performance even when participants are primed with positive stereotypes.

In line with these predictions, Hess and collaborators (2004) conducted similar studies, but this time using a sample of older participants. In Study 1, they primed older participants with positive or negative stereotypes of aging in a subtle or blatant manner using a scramble sentence test (Bargh et al., 1996). In the subtle condition, participants were presented with a set of 30 words (which included either the positive or negative age-related words) and asked participants to form grammatically correct sentences. In the blatant condition, along with the presentation of the words, participants were also explicitly told that two thirds of the sets of words contained a trait – which was highlighted – that is often thought of in association with views of older people in the American society. They were further instructed to use the trait words in forming their sentences and to underline these words in the sentences they formed. All participants were then informed that they would be given a memory test. Results showed that, according to Shih et al (2002), there were significant effects of stereotype priming on

recall performance in the subtle condition, with older people in the positive condition showing higher recall than those in the negative condition. However, there were no significant differences in the blatant condition. Older adults recall levels in the both blatant prime conditions were similar to that observed with the positive prime in the subtle condition. According to Hess et al. “this suggests that older adults are able to counteract the influence of activated stereotypes, with some support for this position provided by the greater evidence of strategic behaviours in the aware than in the nonaware condition” (p. 500).

Study 2 was conducted in an attempt to replicate and extend the results obtained in Study 1. Similarly to the procedure used in Shih et al. (2002), older adults were exposed to positive or negative aging-related terms under sub or supraliminal prime conditions in a lexical decision task, and memory performance was subsequently examined. However, there was an important difference in this procedure from the Shih et al. study. In the Hess et al. study, just before the memory test was administered participants were informed that they would be taking a memory test that was typically used in studies of aging and memory. Hence, participants were actually subject to two types of priming: the explanation and the actual stereotypical traits in the lexical decision task. As expected, results of Study 2 showed significant differences in recall in the subliminal condition: older people in the positive condition showed significant greater recall than older people in the negative condition. However, there were no differences in recall in the supraliminal condition. Moreover, contrary to the results in Study 1, the level of older adult’s recall in both prime conditions in the supraliminal group was similar to that of the negatively primed participants in the subliminal condition. According to Hess et al., in this case this effect occurs because participants are explicitly noting the diagnostic value of the recall test for examining aging effects in memory. Coupling the test instruction with explicit exposure to aging-related primes may have created threat in the aware condition that caused the contrast effect. Hence, in this case, results are similar to the results of Shih et al.’s study.

Taken together, these studies show differences in performance due to differences in the manner of stereotype activation. Hence, this seems to be an important factor to consider in behavioural priming effects. However, we think this issue still needs further clarification. In fact, these studies do not address some major issues: Why is that that after a certain degree of prime blatancy assimilation effects cease to occur? Is the blatancy of the priming stimulus *per se* what matters or is the key factor the awareness of the possible relation between the priming and performance? Does prime awareness leads to increased feelings of anxiety and pressure with effects on actual behaviours?

We think these studies do not provide a proper answer to these questions. First of all, as we have seen, they present mixed results. If it is true that subtle priming seems to lead inevitably to assimilation effects, the effects of blatant priming are not so clear. In fact, sometimes it seems to have harmful effects on performance, hindering the effects of positive stereotypes (Hess et al., 2004, Study 2; Shih et al., 2002). However, on other occasions, blatant priming leads to an increase in performance caused by contrast against the negative stereotype (Hess et al., 2004, Study 1). We think we need to explore this issue in more detail in order to understand the factors that explain these differences. Secondly, we think that neither of these studies provides a good explanation that helps us understand the processes at hand. The studies by Shih et al (2002) had major shortcomings in the sense that they did not include any measures of perceived anxiety or threat that could help explain the results obtained (especially because they assumed that in the blatant condition occurred “choking under pressure” that caused diminished performance). More crucially, they did not include a proper awareness assessment questionnaire (Bargh & Chartrand, 2000; Bargh et al., 1996) that would allow us to understand the type of awareness involved in the processes at hand. In fact, we are not sure from Shih et al. study whether participants are merely aware of the stimulus or if they are, as Shih et al. argue, aware of the possible effects of the stimulus on their behaviours. One thing is that participants can see the traits (as in the supraliminal condition in Study 2) and maybe even remember the words in the end; another different thing is to actually understand the effects that these words are having on their subsequent performance. Some authors argue that correction efforts after stereotype activation only occur when individuals are aware of the possible influence of stereotypes on their behaviours. Hence, supralimilarity of the stimulus *per se* is not sufficient to cause contrast effects (Bargh, 1992; Lepore & Brown, 2002) (we will address this issue in more detail at a later stage of this dissertation).

Hess et al. (2004) tried to overcome some of the limitations identified in Shih et al.’s study. First of all, they introduced a measure of state anxiety (STAI-S). Secondly, they introduced an awareness assessment questionnaire (Bargh et al., 1996) in the end of the task, in order to assess the extent to which participants were aware of the age-related nature of the words used in the scrambled sentence task (e.g., “what do you think the purpose of the study was?”; “how could the words in the scrambled sentence test have affected your behaviours?”). However, results were not very helpful in understanding the effects obtained. In both studies, analysis revealed no significant mediator effect of anxiety. Hence, it seems difficult to accept Hess et al.’s explanation that contrast effects in the blatant condition (especially in Study 2) occurred due to an increase in perceived threat resulting from stereotype activation. We think

this issue still needs further clarification. Analysis of the awareness assessment questionnaire validated the awareness manipulation used in both studies in the sense that those in the subtle condition were in fact unaware of the stimulus prime, whereas those in the blatant condition were aware of the stimulus prime. However, Hess et al. are unclear whether participants were aware of the effects that stereotype activation could be having on their behaviours. Hence, this is a matter to be further investigated in future research.

The stereotype priming approach: summary of main characteristics

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The stereotype priming approach is one of the most influential currents in the study of stereotype's effects. Deeply rooted in the socio-cognitive tradition, this approach began by explaining stereotype's effects from the "cognitive miser" perspective: as a "cold", resource saving individual, who is subject to act in line with the inevitable primed stereotypes. However, more recently, authors adopted a more motivated "warm" look. Contemporary perspectives (e.g., Blair, 2002; Bodenhausen & Macrae, 1998; Kunda & Spencer, 2003; Payne, 2005) give percipient's own motives and goals a determinant role in explaining stereotypes' activation and application. These variables moderate the effect of primed stereotypes, determining individuals' judgment and behaviours.

Research within the stereotype priming approach has been mostly devoted to explain "other-stereotypes" effects, that is, the way we perceive and behave towards other individuals. However, more recently, researchers' efforts have turned to understanding the way stereotypes affect the targets of those stereotypes. Researchers have shown that, similarly to what happens with "other-stereotypes", in some occasions targets are influenced by primed stereotypes and act in line with these expectations in an assimilative manner (e.g. B. Levy, 1996, 2003). However, these effects seem to be moderated by two factors: self-relevance and awareness. Hence, on one hand, preliminary evidence shows that those who are highly identified seem to be the ones who are particularly highly affected. Those who are highly committed have a lower threshold of activation for in-group stereotypes. On the other hand, the manner of stereotype activation also seems to influence stereotypes effects. Some authors (Hess et al., 2004; Shih et al., 2002) have argued that targets seem to assimilate when they are subtly primed with the stereotype, whereas they contrast when they are primed in a more blatant manner.

However, probably due to the recency of the studies conducted within this approach, we think this issue still needs further understanding. The processes driving stereotypes effects on

targets are unclear in the sense that one cannot specify, for instance, what will happen when we use more blatant manner of activation or whether priming effects are influenced by hotter feelings such as anxiety levels. Hence, we believe knowledge in this domain would be greatly benefited if it considered the contributions of other currents in the social psychological domain. Mainly, the traditionally motivated perspectives such as the *stereotype threat theory* and the *social identity approach* may have something to add to this socio-cognitive stereotype priming approach. In the next sections we will briefly review each of these approaches and explain the way they may contribute to our understanding of stereotype priming effects on targets.

Stereotype threat theory

The stereotype threat perspective includes a vast body of research in social psychology and we can find good literature reviews in several journals of the area (Crisp & Abrams, 2008; Mass & Cadinu, 2003; Shapiro & Neuberg, 2007; Wheeler & Petty, 2001). Introduced for the first time by Steele and Aronson (1995), this theory assumes a clear “hot” perspective on self-stereotyping, focusing primarily on the feelings and motivational states that may accompany stereotype activation. Specifically, according to Wheeler and Petty (2001) “this theory predicts that the activation of negative self-stereotypes can lead to performance decrements on a task and that such performance decrements are mediated by overt, threat-like sensations experienced by the individual in whom the stereotype is activated. This threat may stem from confirming a negative stereotype of one’s group” (p. 803). For example, an older person might have lower performance on a memory task following the activation of the elderly stereotype because of the fear or anxiety associated with the idea of appearing senile to the investigator (Hess, Auman, Colcombe, & Rahhal, 2003). This effect has been observed in a number of different groups and in several performance domains like, for example, African Americans (Aronson, Fried, & Good, 2002; Steele & Aronson, 1995), women (R. P. Brown & Pinel, 2003; Josephs, Newman, Brown, & Beer, 2003), homosexual man (Bosson, Haymovitz, & Pinel, 2003) and Caucasian students of low socio-economic status (Croizet & Claire, 1998; Good, Aronson, & Inzlicht, 2003) (for a review see Crisp & Abrams, 2008). The classic study of stereotype threat is Steele and Aronson’s (1995) experiment with race stereotypes. In this experiment, Steele and Aronson recruited African Americans and Caucasian participants with high verbal skills to take part in an experiment examining verbal skill. In one condition, participants were told that the test was very difficult and would

provide an accurate measure of their verbal abilities and limitations (diagnostic condition). In the other condition, participants were told that their ability would not be evaluated and that the test was only to better understand factors involved in solving verbal problems (nondiagnostic condition). Results showed that performance was worst for African Americans, but only in the diagnostic condition. According to the authors, the diagnostic condition created a threatening situation, leading to an increase in anxiety linked with evaluation apprehension, which in turn resulted in a decrement in test performance.

The stereotype threat theory has several distinctive characteristics. For the sake of brevity, we will discuss each one of them in the following section while, at the same time, we compare the similarities and differences between this approach and the stereotype priming perspective.

Stereotype threat theory: contributions to understand stereotype priming effects

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Wheeler and Petty (2001) have identified the specific theoretical features of the stereotype threat theory and the main differences and similarities with the stereotype priming approach. We will use their proposal as a way to distinguish between the contributions of these two perspectives. However, we would like to note that we added one further criterion to the ones proposed by Wheeler and Petty: Methods of stereotype activation. Hence, it is possible to compare these two approaches in the following manner: i) *Target of the stereotype*: contrary to stereotype priming effects, which explain the effects of stereotypes on targets and nontargets, stereotype threat theory only applies to targets of the stereotype. It applies both to minority and dominant group members, as long as there is some negative stereotype that is active in a given situation (e.g., memory performance in the elderly or athletic performance in Caucasian man). It is a situationally based threat that can arise any time negative in-group stereotypes may provide suitable explanations for one's difficult performances. Hence, one not need to experience long-term feelings of inferiority to be a target of stereotype threat; ii) *Stereotype applicability*: Both stereotype threat theory and the stereotype priming approach assume that stereotype activation should lead to behavioural changes only when the stereotype is applicable to the behavioural domain (e.g., math performance and the African American stereotype in Steele & Aronson, 1995 experiment). Similar results are expected according to the stereotype priming approach. Consistent with theory in construct activation (Higgins, 1996), the stereotype priming approach would predict greater behavioural changes when the behaviour is related to the traits implied by the stereotype; iii) *Importance of the*

behavioural domain: The stereotype threat approach assumes that behavioural changes following stereotype activation should occur primarily among individuals who are identified with the behavioural domain. In the same manner, some authors within the stereotype priming approach assume behaviours moderation by identity, to the extent that highly identified individuals have domain-relevant stereotype more chronically accessible, and hence, capable of activation (O'Brien & Hummert, 2006); iv) *Awareness of stereotype implications*: Contrary to stereotype priming effects, stereotype threat requires that the individual in whom the stereotype is activated recognizes the applicability of the stereotype in explaining his or her performance. In fact, one of the hallmark features of stereotype threat is that it is a consciously experienced, negative state; v) *Direction of effect*: Stereotype threat refers to the effects that negative stereotypes have on diminishing individual's performance. Hence, this theory does not explain stereotype "boost" effects like the one's found, for example in the studies by Shih et al (2002); vi) *Mediation by affect variables*: One of the main points of stereotype threat is the idea that the effects of stereotypes on the performance of targets is mediated by "hot" factors such as the presence of emotional distress, pressure, anxiety, evaluation apprehension (Wheeler & Petty, 2001). Hence, as we already have seen, the idea behind this theory is that the threat effect is caused by anxiety to the fear of being evaluated on the basis of individual's membership of a stigmatized group, rather than being evaluated in terms of one's own individual merits (Crisp & Abrams, 2008; Steele, 1997). This motivated perspective differs from the traditionally "cold" stereotypical priming theory (e.g., Bargh et al., 1996) in the sense that this perspective does not assume mediation by any of these factors (Marx & Stapel, 2006); vi) *Methods of stereotype activation*: Researchers have used many different manipulations to create stereotype threat. For example, stereotype threat has been elicited by having participants identify their group membership prior to a stereotype-relevant performance (Steele & Aronson, 1995), explicitly reminding individuals of the negative stereotypes about their group (Aronson et al., 1999; Spencer, Steele, & Quinn, 1999), having participants answer questions about the effects of negative stereotypes on them (Josephs et al., 2003), labeling participants' performance as diagnostic of their standing on a negatively stereotyped trait (Marx, Stapel, & Muller, 2005), telling participants their participation help inform an understanding of group differences (Abrams et al., 2008; Abrams, Eller, & Bryant, 2006; Spencer et al., 1999), and having participants watch TV adds that portray members of their group in a stereotypic manner (Davies, Spencer, Quinn, & Gerhardstein, 2002) (for a review see Shapiro & Neuberg, 2007). Although the adoption of this multimethod approach to the study of stereotype threat increased the generalizability of the effect, it has also raised

some criticisms in the field. For instance, one of the critics has to do with the confusion that sometimes is created between stereotype threat and stereotype priming methodologies. For instance, some of these manipulations use the activation of stereotypic category or/and specific traits that is very much in line with what is done in priming tasks, particularly when researchers use supraliminal methods of activation (e.g., activating the stereotype by watching TV commercials portraying members of the in-group in a stereotypic manner). Hence, some research that is interpreted as supporting stereotype threat is actually subject to an ideomotor explanation especially because several times researchers do not show mediation by anxiety or feelings of worry (Wheeler & Petty, 2001). This situation has caused some confusion in the literature between the concept of stereotype threat and stereotype priming effects. Some authors (Dijksterhuis & Bargh, 2001; Shih, Pittinsky, & Ambady, 1999; Wheeler, Jarvis, & Petty, 2001) have argued that the priming of negative traits is a sufficient means to create a stereotype threat situation. According to these perspectives, stereotype threat can be viewed as a general priming effect that happens in a specific situation: when negative stereotypes are activated and affect targets. However, recently, some authors have made an effort to clarify the differences between these two perspectives. Marx and Stapel (2006) conducted a study where they empirically demonstrated that priming of stereotypical traits is not enough to create stereotype threat in targets. They compared the math performance of female participants when they were either primed with female traits (e.g, dumb) or presented with the typical stereotype threat manipulation (i.e., presenting the math test as diagnostic of their performance). Results showed that both methods had a negative effect on math performance. However, only in the stereotype threat condition this result was accompanied by an increase in threat-based concerns. According to Marx and Stapel (2006) “These results support the notion that the activation of stereotypic traits is not enough for stereotype threat to occur. For stereotype threat to occur, targets need to make the connection between the stereotype and how well they perform in a specific testing situation; hence, in line with the knowing-and-being logic of stereotype threat, they need to link what they know about the stereotype to who they are” (p. 247). In a follow-up study, Marx and Stapel further explored the conditions necessary to cause an increase in perceived threat. They showed that the mere activation of the social identity (through priming words such as we-ourselves) had similar effects than the stereotype threat manipulation previously used (i.e., presentation of the math as a diagnostic test) and was enough to cause a decrease in target’s math performance accompanied by feelings of perceived threat.

Finally, after presenting the main similarities and differences between stereotype threat theory and the stereotype priming approach we need to answer one important question: What can stereotype threat theory bring to the stereotype priming approach? We believe that, despite its shortcomings, the stereotype threat approach has the merit of clearly bringing motivation and affect into the self-stereotyping arena. It is definitely a “hot” approach that shows that at least under some situations of stereotype activation targets become aware of their potential negative effects and are subject to anxiety feelings which affects their performance. We think that the recent “motivated” priming approach needs to consider these results in order to better understand situations where percipient’s motives and goals are in line.

The social identity approach

The Social Identity approach embodies a theoretical and research tradition that has been developed for more than a quarter of a century. Framed by the development of post-war European perspective to social psychology, it emerged from the need of Henry Tajfel and colleagues to offer an alternative to contemporary individualistic visions in social psychology (F. Allport, 1924). The aim was to create a theoretical approach to social psychology that would be able to deal with the relationship between the individual and society: that is to study the *social* dimension of human behaviours (Hogg & Abrams, 1988; Tajfel, 1984).

From a metatheoretical point of view (Hogg & Abrams, 1988), Social Identity assumes a psychological Marxist’s vision of the world. They assume that society is composed by social categories that stand in power and status relations to one another. These relationships are not static; instead they are in constant conflict between them causing changes in society’s structure. Social categories become human groups because the individuals that compose them come to understand that they share a common belief system. In keeping with Marx and the symbolic interactionists (e.g., Mead, 1934), the Social Identity approach considers that identity and self-conception mediates between social categories and individual behaviours. However, it goes further. It assumes a social psychological approach, and explores the psychological processes involved in translating social categories into human groups. In a very fundamental way, the Social Identity approach explores the “groups within the individual”, as opposed to the “individuals in the group”. Being part of a group confers individuals with a *social identity*, or a shared/collective representation of who one is and how one should behave (Hogg & Abrams, 1988). Social identity is a central concept in this approach and according to

Tajfel (1972) refers to the “the individual’s knowledge that he belongs to certain social groups, together with some emotional and value significance to him of the group membership” (as cited in Turner, 1982, p. 18). Hence, the social identity approach assumes a clear motivational perspective of human behaviours, considering individuals’ motives attached with group belonging (Operario & Fiske, 1999).

The social identity approach is a broad perspective and covers several topics of human behaviours (for a review of other topics covered by the Social Identity approach please see Abrams & Hogg, 1990). In this section we will focus on our topic of interest: the way this approach has explained the self-stereotyping process. Due to its long research tradition, it is difficult to present social identity contributions regarding this topic in just a few pages as we have done, for instance, for stereotype threat theory. Hence, we decided to separate this topic in several subtopics, hopefully covering the complexities of this field.

Before we continue, it is important to note that, when we talk about the Social Identity approach we are referring to the two main branches within this framework and which are the Social Identity Theory (SIT) (Tajfel, 1972, 1981a; Tajfel & Turner, 1979, 1986; Turner, 1975) and, the follower, Self-Categorization Theory (SCT) (Turner, 1982, 1984, 1985; Turner et al., 1987). Although they share the same basic metatheoretical concerns, they differ in some theoretical aspects, and these had reflections on the way they have conceptualized the self-stereotyping process. As we shall see, temperatures went up and down in this domain: after an initial “hot” period where Social Identity Theory gave individual’s social and motivational a determinant role (Tajfel & Turner, 1979), there was a “cooler” season with the Self-Categorization emphasis on more cognitive aspects (Turner et al., 1987). Finally, in recent years, research within the Social Identity Approach has begun to “warm” again, while researchers joined the contributions of both social identity and self-categorization theories, and reintroduce individual’s motives and affects back into the self-stereotyping domain (Spears, Doosje, & Ellemers, 1999b).

Social Identity Theory: a very “hot” perspective

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SIT was the original theory, and its main focus was to explain basic processes in intergroup discrimination, and its application to the explanation of real-life conflict and change (Turner, 1988). Tajfel and colleague’s (1978; 1979; 1986), goal was to explain real life intergroup situations in socially stratified societies. Although SIT did not address the issue of self-stereotyping in specific, it offered an explanation of how individuals come to act in

line with a particular social identity. According to Tajfel and Turner (1979; 1986) social behaviours can vary along a continuum from interpersonal to intergroup. At the 'interpersonal' extreme, the behaviours of individuals is determined by their personal relationships and their idiosyncratic personal qualities. On the other hand, at the 'intergroup' extreme, the way individuals behave is fully determined by their belonging to different social groups or categories, by their social identities. Shift between the continuum (and the adoption of a specific social identity) varies in function of psychological and social factors.

Using the 'minimal group paradigm' Tajfel and colleagues (Tajfel, Flament, Billig, & Bundy, 1971) showed that the mere social categorization of people into distinct groups was enough to produce intergroup behaviours in which participants favored in-group over out-group members. According to Tajfel (1972), mere social categorization was enough to create a social identity for the subjects, in the sense that they accepted it as a relevant self-definition in the situation. Based on the results of the 'minimal group studies', Tajfel and Turner (1986) derived three theoretical principles: 1) Individuals strive to achieve or maintain positive social identity; 2) Positive identity is based to a large extent on favorable comparison that can be made between the in-group and some relevant out-group; and 3) When social identity is unsatisfactory, individuals will strive to either leave their existing group and join some more positively distinct group and/or make their existing group more positive. Regarding this third aspect, Tajfel and Turner (1979; 1986) elaborated in more detail the possibilities available for members of devalued social groups to deal with the predicaments of a negative social identity.

Being a member of a subordinate group, may render individuals with a negative social identity and hence lower self-esteem. This is an unsatisfactory state and mobilizes individuals to change the situation. According to Tajfel and Turner (1979; 1986), members of devalued groups can choose to shift among more intergroup or interpersonal behaviours as a way to deal with the negative situation. However, this is dependent upon the way individuals perceive the nature and the structure of the relations between groups in their society, that is, depends on their *subjective belief structures*. Tajfel and Turner (1979; 1986) identified two major belief systems. The belief system of "social mobility" is based on the idea that the boundaries between groups are permeable, in the sense that individuals can leave their group ('exit'), in search of one that provides a more satisfactory identity ('pass'). The belief in social mobility leads subordinate group members to adopt individualistic strategies (individual mobility), that help to change one's personal position, but that leaves the group's position unchanged. On the other hand, the belief system of "social change" rests on the assumption that intergroup boundaries are impermeable, and that it is relatively impossible

passing from a low to a high-status group. In this sense, negative consequences of group membership cannot be escaped simply by redefining oneself out of a group and into a dominant group. The only way to cope with this negative situation is to adopt group strategies, aimed to accomplish a relatively positive re-evaluation of the in-group (i.e., social creativity or social competition strategies). Based on the initial proposition by Tajfel and Turner (1979; 1986), several authors showed, through experimental and correlational studies empirical evidences that seem to corroborate this approach (a summary of these studies can be found in Hogg and Abrams (1988), but see also, for instance, Mummendey and colleagues (1999)).

It is important to note that, SIT assumed a *malleable* perspective in the sense that it established that individuals could *or* could not accept to behave according to a salient social identity in a particular context, and described an array of strategies that they could follow in order to achieve their goals. However, SIT did not make specific predictions regarding the self-stereotyping process. As we shall see next, Self-Categorization Theory (SCT) gave a more elaborated look on this issue.

Self-Categorization Theory: down one or two degrees...

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Based on the initial predictions of SIT, Turner (1982; 1985; 1987) advanced a “cognitive” hypothesis to explain variation along Tajfel’s (1978) continuum. SCT argues as follows. The self-concept can be conceptualized as a cognitive structure which functions to regulate behaviours under certain conditions. Based on the ideas of Gergen (1971) , Turner (1982) argues that the self-concept is composed by two major subsystems: personal identity and social identity. Personal identity refers to self-descriptions in terms of personal or idiosyncratic attributes such as personality, physical and intellectual characteristics. On the other hand, based on Tajfel’s idea (1972), social identity refers to self-definitions in terms of social category memberships such as race, gender, or age, for example. The total identity of a person is comprised of specific social identifications. Different social contexts have the power to ‘switch on’ and make salient different self-conceptions, which are used in an adaptive manner to construe social stimuli and regulate behaviours.

According to Turner et al (1987), salience refers to “activated, cognitively prepotent, operative” (p. 44), and it is based in the ideas of Bruner (1957) and explained in the following way: “variations in the salience of any given level of self-categorization as a function of an interaction between the *relative accessibility* of a particular self-category (‘perceiver

readiness', the readiness of a perceiver to use a particular categorization) and the fit between category specifications and the stimulus reality to be represented (the match between the category and the reality)" (Turner, 1999 , p. 12).

Relative accessibility reflects the active selectivity of the perceiver in being ready to use certain categories, and it's a reflection of the person's past experience, present expectations and current motives, goals and needs. On the other hand, fit refers to two aspects: normative and comparative fit (Oakes, 1987). The most adequate category is the one that corresponds to the data in the specific context – normative fit – and that maximizes the differences between categories and minimizes the differences within categories – comparative fit (Oakes, 1987; Turner et al., 1987). This second aspect is also referred to as metacontrast ratio (MCR). The MCR is borrowed from the original ideas of Rosch (1978) and refers to the average perceived inter-category difference over the average perceived intra-category difference (Haslam & Turner, 1992). For instance, according to Turner (1999) to categorize a group of people as Psychologists rather than Economists, they have to differ (in attitudes and actions) from Economists more than from each other. Moreover, they have to do it in the right direction in the sense that their similarities and differences must be consistent with our normative beliefs about the substantial meaning of the category (for instance, we expect psychologists to be more sympathetic with other people's feelings; on the other hand we expect economists to have more a financial motivation).

There are several ways to operationalize social identity salience. One way that has been commonly used is the creation of contexts that promote intergroup competition, like making individuals directly participate or watch an intergroup discussion (e.g, intersex collective encounter) (Hogg & Turner, 1987; Oakes, Turner, & Haslam, 1991), or to participate in other type of intergroup contexts like, for instance, a reward allocation task like the typical 'Tajfel-matrices' (Ellemers, Spears, & Doosje, 1997). Some researchers argue that it is also possible to make a certain social identity salient by direct activation of an intergroup comparison mindset like, for instance, just putting participant in intergroup contexts (e.g., studies that involve the simultaneous presence of in-group and out-group members) (Abrams, Thomas, & Hogg, 1990), telling participants that the study aims to evaluate intergroup differences (Lorenzi-Cioldi, 1991), or priming them with "us-them" or "we-they" words (Spears et al., 2004). Another method that has also often been used by researchers does not involve intergroup competition, but is simply aimed to activate the identity in question by asking participants to complete an in-group identification scale (Cinnirella, 1998; Spears et al., 2004) or to self-categorize (Shih et al., 1999).

Once some specific social identity is salient, an individual supposedly assigns to self and others the typical or representative attributes that define the group as a whole. In consequence, there is an accentuation of similarities between individuals belonging to the same group, and differences between those belonging to different groups. According to Brown and Turner (1981), the special cognitive output of a social identification is then a stereotypic perception⁹.

Importantly, SCT emphasizes that as individuals stereotype others, they also stereotype *themselves* – self-stereotyping – in terms of their common attributes (e.g. personality traits, social attitudes, prestige, needs, motives or goals, social norms, and emotional states). They see out-group members as homogeneous, but also themselves as relatively interchangeable with other members of the in-group – *depersonalization*. It is through this process that salient social identities help regulate behaviours: they act in a direct way, causing members to act in terms of shared needs, goals and norms which they assign to themselves. According to Turner (1982), stereotypes influence targets by a process of Referent Informational Influence that takes place in three stages: 1) Individuals define themselves as members of a distinct social category; 2) Individuals form or learn the stereotypic norms of that category; and 3) Individuals assign these norms to themselves when the category membership becomes salient. Thus, their behaviours becomes more normative (conformist) as their category membership becomes salient.

Turner (1999) argues that initially, it was assumed that the personal and social identities were at the poles of the bipolar interpersonal-intergroup continuum. However, subsequently this conception was revised (Turner, 1985; Turner et al., 1987). The basic idea that salient personal and social identity have opposite effects on self-perception, causing personalization and depersonalization was maintained. However, personal and social identities were conceptualized not as forming a bipolar continuum, but as representing different levels of (inclusiveness) of self-categorizations (the superordinate level of human being; the intermediate level of in-group-out-group categorizations; the subordinate level of personal self-categorizations). This new conceptualization establishes that the self can be categorized at different levels, but the factors that influence the salience of a given level do not need to be inversely related. In fact, according to Turner (1999) there are many situations that promote the salience of both personal and social identities.

⁹ In this sense, one can argue that, according to this perspective, categorization is somewhat equivalent with stereotyping, in the sense that “categorization accentuates differences between groupings (inter-category differentiation) and similarities within groupings (intra-category assimilation). This process, which consists of the differential attribution of traits learned through personal and cultural experience, *is* the process of stereotyping...if perception without categorization is impossible, and category differentiation is a consequence of such perception, then stereotyping is inevitable” (Lepore & Brown, 1999, p. 141)

There is much evidence that supports SCT's idea that a salient social identity leads to self-stereotyping (Abrams et al., 1990; Coats, Smith, Claypool, & Banner, 2000; Hogg & Turner, 1987; Lorenzi-Cioldi, 1991; Smith, Coats, & Walling, 1999; Smith & Henry, 1996). For instance, Abrams et al (1990) found evidence of increased self-stereotyping when gender salience was increased. They showed that after seeing a sexist advertisement, female students who were in a low-salience gender condition (i.e., groups composed by same sex individuals: 8 women), endorsed less traditional sex-role attitudes than those who were in a high-salience gender condition (i.e., groups composed of different sexes: for instance, 4 men and 4 women). These self-stereotyping effects were also found using more implicit procedures (Coats et al., 2000; Lorenzi-Cioldi, 1991; Smith et al., 1999; Smith & Henry, 1996).

Overall, SCT had the merit to address the self-stereotyping process and to establish the specific conditions that allow this process to occur. However, the initial conceptualization by Turner et al. (1987) had one major shortcoming: it lost the *malleability* idea present in SIT's initial predictions. It adopted an idea of individuals as "cognitive automatons" (Abrams, 1990) in the sense that their behaviours seemed to be totally determined by the salience of certain social identity. Faced with this limitation, recently, some authors within the social identity approach have tried to change this perspective adopting a more "warm" and malleable view of self-stereotyping.

Contemporary Social Identity Approach: "warm" again...

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Recent advances within the contemporary social identity approach have sought to identify possible moderators for the self-stereotyping process. In this vein, the work by Ellemers, Spears, Branscombe and colleagues (Ellemers, Spears, & Doosje, 1999) made relevant contributions. For instance, recovering SIT's original macro social focus, Branscombe and collaborators introduced "perceived threat" as a main moderator of self-stereotyping effects. Branscombe *et al.* (1999), indicates that contexts that pose threats to the individual's social identity, may lead to the use of different strategies by in-group members. For instance, one type of threat is *categorization threat*, which refers to cases where people are categorized against their will. For instance, people may expect to interact primarily on an interpersonal basis and wish to be judged in terms of their personal characteristics and merits or they may prefer to be categorized in a different category. In these cases, being categorized in an unwanted category may cause them to feel victims of prejudice, consider the situation to be unjust and act in order to change it. Another type of threat is the *threats to value*. This is the

basic SIT's idea (Tajfel & Turner, 1979, 1986) that people will react against belonging in negative valued groups.

Other moderator variable identified in the literature has been, for example, the differences in communicative contexts. The social identity model of deindividuation effects (SIDE, Reicher, Spears, & Postmes, 1995) shows that intergroup behaviour does not automatically reflect the contents of identity, but that individuals judge the impact of their responses strategically according to the communicative context (e.g., the nature of the audience present in the situation). For instance, a study by Reicher and Levine (1994) showed that students for whom the "student" identity was made salient (as opposed to a "scientist" identity) only admitted to behaviours sanctioned by lecturing staff (e.g., essay plagiarism) when their responses to this out-group were not identifiable. Interestingly, however, participants accentuated the expression of non-punishable behaviours deemed normative for the in-group (e.g., anti-animal experimentation) when identifiable to the out-group. The presentation of the self considers the power sanction of the out-group, but also provides an audience to whom one can express a distinctive group identity (Ellemers, Barreto, & Spears, 1999).

However, the main moderator variable identified in contemporary social identity is, no doubt, the level of identification with the group or *commitment*. In fact, the degree of group identification is a critical factor that determines whether individual's reactions are more individually oriented or more group-based. In this sense, group identification can be seen as an operational definition or indicator of the extent to which people are likely to see their categorization as relevant (Spears et al., 1999b)¹⁰, revealing "the centrality of some group membership in a person's understanding of their place in the social order and their relationship to others and also their commitment to that identity as a consequence of that understanding and their social values" (Turner, 1999, p. 23).

Once a given social identity is salient, the results of several studies have consistently shown that people with low group commitment are less likely to act in accordance with the group's norms than do people for whom this particular group membership is more important. For example, in two studies Terry and Hogg (1996) studied the behavioural intentions of Australian individuals to adhere to significant health-related norms in the Australian context (i.e., engaging in regular physical exercise and sun-protective behaviours). They showed that

¹⁰ It is important to clarify that these authors do not consider group identification as an individual difference variable. This would reduce seeing all processes to an individual level, which is against the basic premises of SIT that defend the importance of contextual influences. Instead, Spears and colleagues (1999a) consider that identification as "the momentary and sometimes more long-standing crystallization of past contextual influences and ongoing allegiances, which itself vary as a function of identity and context" (p.61).

perceived group norms in combination with the subjective level of identification predicted behavioural intentions. Specifically, high identifiers intended to behave according to perceived group norms, whereas low identifiers didn't (see also Jetten, Spears, & Manstead, 1997). In fact, the degree of group identification has proven to be one of the more important predictors of the way individuals react regarding their group memberships. In fact, Ellemers, Spears and Doosje (1997, Study 1) showed that it is more important than subjective belief structures like, for instance, perceived permeability between groups.

It is important to note, however, that the effects of degree of group identification on self-stereotyping are moderated by the effects of other variables; hence there are higher-order interactions that are important to consider when we study these effects. For instance, the differences between high and low identifiers are particularly present in cases of social identity threat. Threats to identity suggest that the group need us, and that is time to stand up and be counted as group members. However, faced with the adversity, only high committed individuals are likely to 'stick' with the group. In support of this claim, in one study, Spears, Doosje and Ellemers (1997) showed that, when faced with threats to the value of social identity ("status") high identifiers self-stereotyped more than low-identified participants. In fact, results showed that when group status was high (no identity threat) there was no reliable difference in the degree of self-stereotyping. However, when status was low (identity threat), low identifiers showed significantly less self-stereotyping than high identifiers.

Another variable that also seems to interact with commitment is the degree in which the social identity is made salient in the context. In one study, Ellemers et al. (1997, Study 2), manipulated the salience of categorization by either having participants perform an intergroup reward allocation task before the dependent measures were taken (high salience condition) or by administering the dependent measures before collaboration on an intergroup reward allocation task (low salience condition). Results showed that in the low salience condition, ingroup identification did not affect the desire for individual mobility. However, in the high-category-salience condition, high identifiers had less desire for individual mobility than low identifiers. According to Spears et al. (1999a) these effects seem to show that increasing the presence of high category salience in itself appears to elicit the divergent perceptions of high and low identifiers, even when social identity is not directly threatened¹¹.

¹¹ Sometimes more than one factor interact to influence the way group commitment affect individual's behavior. For instance, Spears and Doosje (cited in Spears et al., 1999a) showed that degree of identification, salience, and perceived threat interact to explain individual's responses. They found that under low-category salience conditions, there were no differences among high and low identifiers. However, when category salience was high, the pattern was different for high and low identifiers. For high identifiers, the degree of categorization was

All these studies have one thing in common: they all show that self-stereotyping is not inevitable. In fact, it may be affected by a host of factors from which the degree of group identification assumes a determinant role. Some authors have sought to explain these differences between low and high committed individuals. These explanations joined the findings of the social identity approach with a more socio-cognitive perspective.

Lepore and Brown (1999) advance an explanation based on associative models of memory. These authors argue that differences in the level of identification reflect differences in the chronic representation of the in-group in memory. Their assumption is that those who identify more strongly with the in-group, should manifest greater chronic accessibility to in-group-relevant attributes. This argument rests on the finding that frequency of activation ultimately leads to chronic accessibility (Higgins, Bargh, & Lombardi, 1985). According to Lepore and Brown (1999), whenever the in-group category is activated, different stereotypic representations will be activated in high and low identified individuals resulting in differences in the observed overt performances. Hence, this effect may explain, for instance, why high identified individuals self-stereotype more than low identified individuals: the threshold of activation for high identified individuals is lower than for low identified. However, as interesting as this perspective may be, we argue that it still leaves some questions unanswered. For instance, it does not explain why low identifiers differ in their responses, self-stereotyping more or less when there is identity threat or not. Also, it does not explain why high identifiers sometimes seem to self-stereotype even more when their in-group identity is threatened. These kinds of 'strategic' responses seem to presuppose the occurrence of processes that involve more than just the kind of 'associative' explanations assumed by Lepore and Brown (1999).

The Social Self-Regulation model (SSR) proposed by Abrams (1990; 1994; 1996) might shed some light regarding this issue. The SSR integrates the social identity (specifically, self categorization theory) and self-attention (Carver & Scheier, 1981) approaches. Its main idea centers around the distinction between *salience* of self-image and *attention* devoted to regulating behaviours. Abrams (1994) defines *salience* (following SCT) as "the accessibility x fit of categories to stimuli" (p. 476), whereas *attention* (following self-attention theories) as "a process through which people direct their responses to those stimuli" (p. 476). These two concepts are important to understand individuals' behaviours and determine the possible

high irrespective of whether their group was portrayed in favorable or unfavorable terms. However, low identifiers were considerably more likely to use this categorization when their group was portrayed favorably, but much less likely to use it when their group was portrayed unfavorably.

courses of action once a social identity is salient in a given context. According to the SSR, events happen in the following sequence: First, a *salient* contextual social identity provides a framework and the content for judgment and action. It is related to an increase accessibility of both the category and the associated stereotype, and it is assumed to occur in a relatively automatic and unconscious way (Abrams, 1999). Afterwards, once this social identity is salient, there are two possibilities. On one hand, there may be occasions when in-group norms are so clear and well-learned that trigger an uncontrolled automatic response. For instance, when watching a sports match, supporters of the home team all tend to cheer at the same time when that team scores a goal. This situation corresponds closely to Turner's et al. (1987) notion of depersonalization and self-stereotyping. On the other hand, there may be occasions where social identity is salient *and* there is also a contextual determinant that increases the amount of *attention* devoted to the self. Self-focused attention or self-awareness refers to a "selective processing of information about the self" (Carver & Scheier, 1998, p. 31). There are many contexts that may generate the increase in self-focus. Novel or problematic situations are such an example because they require an extra effort in dealing with its demands. Other contexts may activate self-focus in a more direct way like, for example, when one is in the presence of video cameras or of an evaluative audience, when one is in the presence of a mirror image of one's face, or spend time writing an essay about oneself. Finally, it is also possible to have individual differences regarding the tendency to self-focus ('self-consciousness'). Those individuals who are more self-conscious will more likely devote attention to the self-aspects in a regular basis than those who are low self-conscious (Carver & Scheier, 1998).

Attention to the self is associated with increased compliance with personal and social standards for behaviours, and is an important process in the intentional regulation of social behaviours causing a feedback control system to engage (Carver & Scheier, 1981). In this case, a "supervisory attention-full system" (Shallice, 1988) becomes responsible for managing the complex processes responsible for behaviours and sets behavioural targets in accordance not only with the salient categorization, but also considering other self-relevant information such as individuals broader goals and motives (e.g., self-image preservation, survival, etc.)¹². In fact, "the system mediates between higher level objectives such as ideological, strategic,

¹² A supervisory system has been defined as one that "has access to a representation of the environment and of the organism's intentions and cognitive capacities. It is held to operate not by directly controlling behavior, but by modulating the lower level contention-scheduling system by activating or inhibiting particular schemata. It would be involved in the genesis of willed actions and required in situations where the routine selection of actions was unsatisfactory – for instance, in coping with novelty, in decision making, in overcoming temptation, or in dealing with danger" (Shallice, 1988, p. 335)

moral concerns, and the immediate implications of salient self-images. As a result, the behaviours are directed and systematic but may not always correspond directly to stereotypical norms” (Abrams, 1996, p. 157).¹³

Now that we have outlined the major culprits of the model, it is interesting to think how it might explain the differences between high and low identifiers self-stereotyping. It is possible to think that there are some contexts that may activate the social identity motives behind the different strategies used by low and high identifiers. According to the SSR model, it seems that this will be particularly true in contexts that activate the private self-focus (i.e., when there are no self-presentational concerns involved), and when identity is particularly threatened or salient. These types of situations will activate self-regulatory mechanisms that will make the motivational concerns of high and low identifiers active and prone to influence their behaviours. Hence, for instance, we should expect that under threat high identified individuals will adopt strategies that allow them to self-stereotype more and low identified individuals adopt strategies of disidentification with the group. Indirect support for this prediction comes from a study conducted by Abrams (1984, cited in Abrams, 1990). In this study, Abrams found that there was a significant interaction between private self-consciousness (i.e., the tendency to self-focus in a private way) and the degree of identification. He showed that among high private self-conscious subjects, there were significant differences among high and low identifiers, in the sense that high identifiers expressed more in-group bias than low identifiers. However, there were no differences between high and low identifiers in low private self-conscious participants. These results seem to show that “those who are focusing on their self-definition often disregard social desirability and regulate their behaviours in a way that will confirm or enhance their social identification with the group” (Abrams, 1990, p. 104).

Overall, we think that although the SSR model still needs further empirical support, it has the merit of giving a prominent role to the “strategic” behaviours that individuals may adopt in a self-stereotyping situation. As we will see below this is an important feature that may contribute to our understanding of the stereotype priming framework.

¹³ This idea of a supervisory attention-full system operating whenever situations enhance self-focus is very similar to the proposal of the Bodenhausen-Macrae model (Bodenhausen & Macrae, 1998) previously presented in the Stereotypical priming section.

The Social identity Approach: contributions to understand stereotype priming effects

Similarly to what we have done for the stereotype threat theory, we think it is possible to adapt Wheeler and Petty's (2001) criteria to compare the main similarities and differences between the social identity and the stereotype priming approach. As far as we know this is the first time such a comparison is attempted. So, here we enumerate the main factors we consider in this distinction: i) *Target of the stereotype*: both the social identity and the stereotype priming approach are broad frameworks that explain the effects of stereotypes on targets and nontargets. In this review, we have focused in the self-stereotyping process (on the effects on targets). However, the social identity approach offers a valuable understanding of how the activation of "other-stereotypes" may affect, for instance, judgments of prejudice and discrimination regarding minority group members (R. J. Brown, 1995); ii) *Stereotype applicability*: Similarly to the stereotype priming approach, the social identity approach assumes that self-stereotyping only occurs in behavioural applicable domains. In fact, the process of Referent Informational Influence proposed by Turner (1982) established that individuals learn the stereotypic norms of a social category and assign these norms to themselves whenever that category is salient. Hence, self-stereotyping occurs only for the characteristics that define that social identity; iii) *Importance of the behavioural domain*: Similarly to the stereotype priming approach (O'Brien & Hummert, 2006), social identity approach assumes that self-stereotyping following salience of a certain social identity occurs primarily for those individuals who are highly identified with the category and that value the group norms. High identified individuals are more willing to assume the group's norms and behaviours (Spears, Doosje et al., 1997); iv) *Awareness of stereotype implications*: Contrary to the stereotype priming approach, with few exceptions (Abrams, 1990; Lepore & Brown, 1999), the social identity approach seem to defend the idea of a full conscious individual, who is aware of the effects of a salient social identity and acts in an active way to deal with its possible effects. In fact, according to Brown (2000), "the emphasis in SIT is very much on the strategic – i.e., voluntary – nature of the social psychological processes involved in social identity maintenance or enhancement...group member's behaviours in different intergroup contexts can be variously described as attempts to escape from or avoid esteem threatening situations, or to redefine (or change altogether) those situations in ways more favourable to the in-group, or to reduce uncertainty, and so on. Indeed, Tajfel himself wrote eloquently on the need for social psychologists in general to pay greater attention to people's *active* attempts to make sense of their social environments (Tajfel, 1966, 1969, 1981). Such a constructivist

perspective is obviously apparent in SIT. As a result, research within the SIT tradition has concentrated exclusively on controlled processes, relying almost invariably on various explicit measures of intergroup attitudes and behaviours” (p. 767)¹⁴; v) *Direction of the effect*: Similarly to the stereotypical priming perspective, the social identity approach assumes that in-group member’s behaviours occurs in line with the salient stereotypical contents. Hence, a salient social identity may cause “boosts” or “decrements” in performance compared with a control condition. For instance, Shih et al. (1999) conducted a study with Asian female students where they activated either their Asian identity or their female identity. In line with the cultural stereotypes, they showed that, when the Asian identity was salient, participants had better performance in a math test than the control group. However, the opposite effect occurred when the female identity was salient; vi) *Mediation by affect variables*: The social identity approach, as the traditional “cold” stereotypical priming perspective, does not assume any mediator effects of affect or anxiety in the self-stereotyping process. A salient social identity affects directly the performances of in-group members (although these effects occur in a more or less extreme depending on some *moderator* variables such as the degree of group identification); vii) *Methods of stereotype activation*: unlike the stereotype priming approach, the social identity approach does not *prime* the actual stereotypic traits. In fact, the methods used by researchers within this approach aim to activate the social identity: the category to which individual’s belong. Hence, as we have seen, these methods include asking participants to answer an identification scale (Spears et al., 2004) or evoke a comparative context between in-group and out-group members (Abrams, 1990). A salient social identity influences individuals in order to act in line with the in-groups stereotypical norms.

After presenting the main similarities and differences between the social identity and the stereotype priming approaches, it is now time to answer our main question: What is the major contribution that the social identity approach may bring to the study of behavioural-priming effects? We think that it is the “strategic component”, that is, the idea that individuals may have an array of possible available behaviours to deal with an activated stereotype. Let us elaborate a little further. As we have seen, for many years, the predominant view of the “cognitive miser” within the stereotype priming approach defended the idea that categories and stereotypes could be activated and influence individual’s behaviours in a “cold” assimilative manner. Hence, according to this perspective, both targets and non-targets could

¹⁴ However, despite this theoretical background, actual self-stereotyping experiments (Abrams et al., 1990; Hogg & Turner, 1987) within the social identity approach are unclear about participants’ awareness of stereotype implications (e.g., they do not use an awareness assessment questionnaire). Hence, we can not know for sure whether the effect on performance is occurring due to a more automatic or controlled process.

be affected in a similar manner (e.g., both older and younger individuals walked slower after the activation of the aging stereotype)(Bargh et al., 1996; Hausdorff et al., 1999). However, more recent perspectives within the stereotype priming approach have begun to explore the role that individual's self motives may have on this process. First of all, some evidences suggest that prime's *self-relevance* is an important moderator variable of behaviours-priming effects. Regarding this matter, recent studies have shown that targets seem to be much more sensitive and show a lower threshold of activation to in-group stereotypes (Shih et al., 2002), particularly if they are highly identified with the group (O'Brien & Hummert, 2006). Moreover, other evidence has also shown that it is possible to make nontargets contrast from a primed stereotype by activating the social identification with their own group (Spears et al., 2004). Focusing attention on the self seems to be enough to contradict simple priming effects.

We think that this recent focus of the stereotype priming approach on the role of the self may be greatly benefited if it included the contribution of the social identity approach. This approach makes specific predictions regarding the effects of social identity activation – particularly the strategies used by high and low identified individuals. Hence, these evidences may help to explain the role of self-activation in behavioural-priming effects and should be considered in future studies.

Conclusions

In this chapter our goal was to review the literature on stereotypes adopting the target's perspective. We began by providing a general definition of stereotypes and describing their main functions. Our emphasis was on the dual role of stereotypes as both cognitive devices that help us make sense of our social environment (categorization function), and a social repository of our culture's deepest ideologies (social justification function). The review conducted in this section led us to one main conclusion: the understanding that living in a culture creates a common background in the sense that both targets and nontargets share, at least in some degree, the main stereotypes about social groups. Hence, it is clear that targets of stereotypes are subject to the influences of prevailing cultural stereotypes. This leads us to our second main question which was exactly how these stereotypes affect target's behaviours. We presented three of the main theories that address the effects of stereotypes on targets. We focused our attention mostly on the stereotype priming approach, since this provides us with the main theoretical background to our empirical studies. Our literature review showed how

the focus of this approach has evolved from being a “cold” cognitive perspective to a more “warm” approach, where individuals’ motives, goals and affects are taken into consideration. In fact, we have presented several recent empirical studies showing that individuals (and targets) are not just passive recipients of automatic stereotype activation. Individuals are not just “cognitive monsters”; sometimes they act in a “motivated” and “tactical” manner.

After presenting the stereotype priming approach, we introduced two other perspectives in social psychology: the stereotype threat theory and the social identity approach. We showed how the “warm” motivational focus of both these theories may give some valid contributions to understand the effects found within the new motivated behavioural-priming perspective.

The main contribution of stereotype threat theory is questioning the possible role that variables such as anxiety and perceived threat may play in the self-stereotyping process. We think that the mediator role of these variables has not been properly addressed within the stereotype priming perspective and that further empirical support is still needed.

Regarding the social identity approach, the focus has been on the “strategic” nature of self-stereotyping. In our review, we have seen how moderator variables such as perceived threat, salience, and especially the degree of in-group commitment may affect the way individuals act in line with a salient social identity. The degree of commitment (or in-group identification) was given a prominent role, and we showed that high and low identified individuals follow different strategies when they are in self-stereotyping contexts. Generally, high identifiers tend to “stick” and defend the group, even when it is negatively evaluated; on the other hand, low identifiers leave the group when it does not suit their needs. Overall, we think that the study of this strategic component within the social identity approach may give some valid contributions to understand some of the effects found within the stereotype priming approach, such as the role of individuals’ self-motives (e.g., self-relevance; self-focus).

Finally, we would only like to make a note regarding the contribution of other self-stereotyping approaches that were not considered in the present chapter. We are aware that we left some interesting contributions out. For instance, the work on social stigma by Brenda Major, Jenifer Crocker and colleagues (1998) represents a fruitful contribution to understand the way individuals cope with negative identities. However, we chose not to include this approach in the present chapter mainly for two reasons. First, we are interested in the way general stereotypes affect target’s performances; hence we are not exclusively interested in the effects of stigmatized negative stereotypes. Secondly, we think that this approach borrows from other theoretical backgrounds such as the stereotype priming approach, stereotype threat

and the social identity approach in order to explain its findings. Hence, although they make, in some occasions, a good integration of each of these individual approaches (see, for instance, the identity threat model of stigma proposed by Major & O'Brien, 2005), we think that it was more valid for our work to go directly to the original sources. We hope this is a valuable contribution to understand an issue that has been relatively neglected in the social psychological literature. Moreover, we hope this chapter provides a solid background to understand the topic of this dissertation which is: the way aging stereotypes affect the performances of older people. We turn to this issue in the next chapter.

Ageism and aging stereotypes

Age as a social marker

Age as long been recognized as an important basis of social organization and social integration (Hagestad & Uhlenberg, 2005). Both sociology and anthropology have shown the importance of age as a criterion for participation in society's division of labour. For instance, in their model of social stratification, Riley and Foner (1968) showed how age has a prominent role in the process of 'matching people and roles'. In the same vein, classical anthropological accounts of age grading (for a review please see Cain, 1964) showed how age groups differed in their rights and responsibilities, and how rites of passage had such an important role marking the movement across different age grades. Hence, there is no doubt that age, like other variables such as social class, race or gender, serves as an important social marker by which people are categorized. Age groups are associated with different roles, status, power and social responsibilities, and this structuring has several advantages because it promotes predictability of the normal course of life and provides individuals a sense of belonging through peer ship (Garstka et al., 2004).

Similarly to what happens in other social categories, age categorization is not a rigid "one option" phenomenon. Like other social markers, age is the product of social constructions and reflect the organization of societies (Heckhausen & Lang, 1996). In fact, there are evidences that categorizing people by the colour of their skin is a subjective classification that may vary in function of the historical moment (see, for instance, the changes regarding the "one drop of blood rule")¹⁵. In a similar vein, classifying people in age groups is also a product of social construction. It varies across historical contexts and different cultural backgrounds

¹⁵ In the American society of the beginning of the nineteenth century, the distinction between black and white poor people was perceived to be very important as a way to appropriately segregate these two groups of people (e.g., in schools, in transportation). Hence, a very strict rule of classification was created in order to guarantee no confusions. By this time, the distinction between black and white was made based on the criteria of the "one drop of blood" rule. According with this system, even if someone looked white, having one black ancestry was considered enough to classify this person has black. This was a very strict criterion and aimed to guarantee total separation between these two groups. However, it also caused some problems due to its exaggerated nature. In fact, there were several cases where people who had always thought of themselves as "white" discovered in the middle of their lives that they were, in fact, considered "black" when in official contexts (e.g., like marriage) they felt the need to explore their ancestral background.

In contemporary American society the "one drop of blood" rule is considered illegal and does not apply anymore. In the new definition, a person's race is expressed in terms of where most of their ancestors come from ("preponderance of ancestry"). Hence, today the average person who self-identifies as black in the United States has at least 53% of their ancestors from sub-Saharan Africa. Only 10% of Americans who self-identify as black are less than 50% sub-Saharan in ancestry (Wikipedia, 2009). We believe that this change in the criterion for race is an interesting example of how different historical contexts shape the classification of human groups.

(Heckhausen & Lang, 1996). For instance, in an interesting historical review, Pat Thane (2003) showed how the age limits associated with “old age” varied in function of historical periods in different countries¹⁶.

First of all, Thane starts by demystifying the common sense idea that people did not grow old in the past because they did not live long enough to reach such high ages. According with the author, although it is true that in the past there were lower numbers of older people as there is now, there was nevertheless a significant proportion of people who did survive until older ages. In fact, data from England show that, even in the sixteen century, those who survived the hazardous first years of life had a respectable chance of living at least into what would be defined as middle-age, and often longer. In fact, according to Thane, it is estimated that the proportion of English population over sixty fluctuated between six and eight per cent though the seventeen and eighteen century. In France the scenario was similar: in the mid eighteen century there were seven to eight per cent of the population over sixty; by 1890 the proportion was ten per cent, by the early twentieth century twelve per cent, and by 1946 fourteen per cent. In fact, by the mid nineteen century, there are evidences of significant proportions of older people in other European countries (e.g., Sweden) and in the EUA, Canada, Australia and New Zealand.

According to Thane, societies always felt the need to establish the “limits” of old age. In fact, “the concept of old age was firmly present in all known past cultures and it had multiple meanings and uses“ (Thane, 2003, p.97). Since ancient days, a fixed threshold of “chronological” old age has long been a bureaucratic convenience, suitable for determining rights and duties, such as access to pensions or eligibility for public service. For instance, in ancient Greece, the formal obligation to military service did not end until age sixty. On the other hand, writings show that in ancient Rome people were defined as old at ages varying from the early forties to seventy.

In European countries, sixty and seventy seem to have been used to signify the onset of old age in formal institutions at least since medieval times. For instance, in medieval England, men and women ceased at sixty to be liable for compulsory service under the labour laws and for performing military service. In the same vein, in the thirteen century, seventy was set as the upper limit for jury service. According to Thane, there are evidences that these limits were also used across other European countries. Interestingly, it seems that some aspects have remained stable across time. The first aspect is that it seems that governments have

¹⁶ It is important to note that these analysis focus on White, European countries (what Thane assumes as Europe/North America/Australasia).

consistently tried to keep “official” retirement ages as high as possible in order to guarantee active service. The second aspect is that retirement ages for manual workers were always lower than for other jobs. And, finally, the third aspect is that even in medieval and early modern Europe there were no retirement age for many elite positions, and appointments could be made at advanced ages.

However, in spite of these “official” chronological age limits, there is evidence that in pre-industrial Europe old age was fundamentally defined not by age-defined rules about pensions and retirement but much more by appearance and capacities. Hence, some records from the eighteenth century describe people as “old” in their fifties and others not until their seventies. In fact, there are evidences showing that supplicants for public service pensions in eighteenth century France ranged in age from 54 to 80 years.

In our contemporary societies, the beginning of old age is usually marked by demographers as sixty or sixty-five because this is usually the retirement age in several countries. Hence, this criteria is currently used in national demographical studies (INE, 2002).

We believe that this historical research support the fundamental notion that age limits are socially constructed and are an “expression of the value system of the community and may define individuals as old according to codes of dress or other commonly accepted signifiers” (Thane, 2003, p.98).

Interestingly, in defence of this constructivist perspective, there are also evidences showing that age classification not only varies across time and cultures, but also as a function of individual’s own age group (Cameron, 1969; Drevenstedt, 1976). In fact, research on the boundaries of age categories support the conclusion that, although age-related conceptions about the segmentation of the life course do involve substantial inter-individual consensus, they also show some minor but significant distortions, reflecting the informant’s own age status. In support of this prediction, both Cameron (1969) and Drevenstedt (1976) showed that older people tended to significantly increase the inferior age limit of the old age category when compared with younger participants. According with these authors, this result reflects older participants’ wish to postpone self-categorization into the old age category. Hence, age classification seems to reflect not only social norms but also individual’s personal involvement.

Nevertheless, one should be cautious when we talk about this flexible age categorization. There is no doubt that the individual’s own age “frontiers” may change. However, they seem to change within certain boundaries. Living in a culture renders individuals with a common background, which they use as norms to guide their own behaviours. Hence, according to

Cameron (1969), in spite of small individual variations marked mostly by one's own age group, there is some consensus that in our modern, present day societies, age limits are perceived to be fixed around the following boundaries: young from 18 to 25 years, middle-aged from 40 to 50-55 years, old from 60 to 80 years, and very old over 80 years.

According to Heckhausen and Lang (1996), age normative conceptions are not arbitrary, they are constrained by their function to orient the individual within the social reality of the life course of a certain society. Hence, even conceptions of age groups that are at present distant from oneself are very important to the individual, because these age groups will have been or will become the frame of social being for the self. Heckhausen and Lang (1996) wrote about the adaptation value of the classification regarding age:

Age normative conceptions of the life course that are shared by the individual members of a given society may have committing power as internalized, naturalized, and therefore hardly questionable ways of thinking about human life. Thus, age-normative conceptions about development have come to be a major constraint to people's regulation of development throughout the life course. They provide structure and predictability to individual's lives and are therefore most adaptive both for society and for individuals. On the societal level, age-graded predictability is conducive to the functioning of the labour market, family cycles and educational planning. On the individual level, age-normative conceptions provide signposts for individual aspirations, as well as markers for developmental deadlines after which futile goals need to be abandoned. Moreover, age-normative conceptions may function as social stereotypes and help to organize and render efficient social perception processes ('tell me your age, and I tell what you do') (p. 379)

It is clear that age categorization is a fundamental tool to structure our societies. Age limits are established in a manner to guarantee predictability of the life course. Importantly, however, is that we need to take in consideration that this division into age groups is not free of content; in fact, each age category has its associated contents expressing guidelines for individual behaviours. The idea that "tells me your age, and I tell you what to do" does not carry only benefits. As we shall see below, classification into age groups may also lead to segregation and prejudicial practices based solely on people's belonging to an age group.

Age categorization and ageism

Although categorizing people according to their age has an adaptive value, it may also have some pernicious effects. In fact, sometimes it may lead to “us versus them” distinctions, promoting prejudice and discrimination (Hagestad & Uhlenberg, 2005). Butler (1969) was the first to notice the negative effects of this “classification” according to one’s age group; in this case particularly against the older age group. Back in the sixties, the District of Columbia proposed to build a public housing project designed for poor seniors in the Maryland, USA. This project was highly controversial and local residents fought hard against its implementation based on the ideas that this would bring tax losses, cost, and zoning and property values. However, according to Butler, the financial concern was only part of the resident’s feelings of irritation. Instead, Butler argued that there seemed to be, in fact, an underlying “ageism” against these older people which he defined as “the subjective experience implied in the popular notion that of the generation gap...a deep seated uneasiness on the part of the young and the middle-aged – a personal revulsion to and distaste for growing old, disease, disability, and fear of powerlessness, ‘uselessness’, and death” (G. Butler, 1969).

Later, Butler (1980) went on to further define *ageism*¹⁸ so it would be useful for social researchers. Wilkinson and Ferraro (2002) resume Butler’s definition in the following manner:

Ageism comprises three distinguishable yet interconnected aspects: (1) prejudicial attitudes toward older persons, old age, and the aging process, which includes attitudes held by older adults themselves; (2) discriminatory practices against older people; and (3) institutional practices and policies that perpetuate stereotypes of older adults, reduce their opportunity for life satisfaction, and undermine their personal dignity. Attitudes and beliefs, discriminatory behaviours, and institutional policies and practices are mutually reinforcing (p. 339).

In the thirty years that followed Butler’s contribution, we witnessed a flourishing of this research field (Wilkinson & Ferraro, 2002) and, as it is common in the social sciences, there was a proliferation in the number of ageism definitions available. In fact, it is interesting to note that even when they write chapters in the same book (Nelson, 2002) authors do not agree on one definition for this concept. Some assume that ageism includes only the emotional

¹⁸ In Portuguese, ageism translates as “idadismo” (Neto, 2004) .

(prejudice) and behavioural components (discrimination) (Wilkinson & Ferraro, 2002); while others only include the belief (stereotypes) and behavioural components (discrimination) (McCann & Giles, 2002)¹⁹. However, we think that currently the most commonly accepted definition of ageism involves two basic ideas: i) it is an “umbrella” concept (Braithwaite, 2002) which refers to the several components of attitudes. Hence, several authors (Cuddy & Fiske, 2002; Kite et al., 2005; Kite & Wagner, 2002; B. Levy & Banaji, 2002; Montepare & Zebrowitz, 2002) adopt the traditional tri-partite model of attitudes (Eagly & Chaiken, 1993) and assume that ageism comprises three basic components which are an affective component, represented by prejudicial feelings, a cognitive component, represented by beliefs and stereotypes about age groups, and a behavioural component, represented by behaviour or behavioural intentions²⁰; ii) although the majority of studies are conducted regarding attitudes towards older people, ageism also refers to attitudes regarding other age groups as well. Hence, it can be defined as negative attitudes towards an individual based on that person’s age in general terms (Greenberg, Schimel, & Martens, 2002). In this dissertation, we adopt this general definition of ageism. However, since our focus is on the effects on aging stereotypes on older people health perceptions, we will emphasize more the “belief” component of ageism and a specific age group: older people. However, before we continue we need to address an important topic in ageism research and which influences the way we should think about this phenomenon: is ageism similar to other attitudes toward social groups such as racism or sexism?

We believe that there are five aspects of ageism which makes it a unique type of attitude towards social groups. We can summarize these aspects under the following labels: 1) age group changes; 2) strong out-group favouritism; 3) main form of perceived discrimination; 4) wide social acceptance; and 5) shortage of explanatory studies. We will address each of these issues below.

¹⁹ See Pereira (2007) for a similar analysis for the general concept of “Prejudice”.

²⁰ Recall however from our discussion in the chapter “Stereotypes: Being the target” (p. 5) that this is just a useful “division of labour”. In fact, these are complex concepts that share multiple relations. For instance, recall that Fiske and Pavelchak (1986) showed that the activation of stereotypes leads to both the activation of both cognitive and affective information. In the case of ageism, it is important to consider that the valence of stereotypic traits is very important and especially considered in the definition of stereotypes of older people. We will discuss this issue in more detail later.

Age group changes

First of all, we should consider that everyone is a possible victim of ageism effects at some point in life. In fact, if we think that the middle-age category is the high status category, we are only living in this “blessed” status for some years; otherwise we are members of lower status age groups such as “young people” or even lower status “old people”. Hence, during our life course, eventually all age groups will become an “in-group” (Nelson, 2002). Hence, the way we think about age groups to which we do not belong yet (hence they are out-groups at his point) may eventually influence us when we reach that age. This is particularly distressing when we think about old age. In our societies, we learn from a very early age to act in an ageistic manner against older people (Montepare & Zebrowitz, 2002). In fact, research suggests that we develop negative stereotypes of older people when we are only six years of age (Isaacs & Bearison, 1986). Because we are not an older person ourselves (hence, they are the *out-group*), we tend to uncritically accept these negative images without questioning them (Golub, Filipowicz, & Langer, 2002). We make what Chanowitz and Langer (1981) called “premature cognitive commitments” with this mode of thinking. These are defined as beliefs that are accepted unconditionally, without benefit of consideration or awareness of alternative interpretations of the information. Unfortunately, when finally we reach this age group, that is, when we get older, this *mindless* way of thinking reveals its most ironic consequences: it makes us think badly of our own in-group, the group of “older people”. In fact, this leads to the second aspect in which ageism differs from other attitudes toward social groups.

Strong out-group favouritism

Several evidences show that older people display out-group favouritism regarding the younger age group. In a meta-analysis, Kite and collaborators (Kite et al., 2005) showed that, although differences tend to be smaller as individual’s age increases, there is nevertheless an overall tendency of older people to evaluate in a more positive manner the younger age group than the older age group. In fact, further evidences support this idea showing that this pattern is even stronger when using implicit measures. Studies conducted with the IAT (implicit association test) showed that older people seem to be the only group that shows strong

negative implicit attitudes toward their own group as does the out-group (the young) (B. Levy & Banaji, 2002). This lack of effect of group membership stands in contrast to other implicit attitudes such as religion, race, and gender, where group membership plays a determinant role in implicit attitudes. In fact, the majority of groups show preference for the in-group over the out-group (take, for instance the cases of gender (B. Levy & Banaji, 2002) and nationality (Greenwald, McGhee, & Schwartz, 1998)). Moreover, even when they do not show significant differences in the attitudes toward their in-group or out-group as do African Americans, they nevertheless show more positivity towards their in-group than do White people (B. Levy & Banaji, 2002). According to Levy and Banaji (2002) older people's "out-group favouritism" is an unusual pattern according with Social Identity Theory (Tajfel & Turner, 1986) predictions and may only be understood in the context of the long term commitment with young age as a better age category. However, we believe this pattern can also be explained by *system-justification needs*. According to Jost and Banaji (1994) people have the psychological and social needs to imbue the social system with legitimacy and see it as good and fair. In fact, people seem to be motivated to defend and uphold the *status quo*, sometimes even at the expense of personal and collective interests and esteem (Jost & Thompson, 2000). In a society that values youth over aging, favouritism towards the younger age group is the expected pattern according with system-justification theory. In support of this prediction, previous studies showed that older people tend to actively pursue behaviours that favour the *status quo* in detriment of their own well-being. Levy and Schlesinger (2005) showed that older participants were more likely than younger participants to oppose increased funding from the government to social programs dedicated to old age (e.g., Medicare). One important aspect of these results is that they showed that this opposition was predicted by a stereotype of aging based on more favourable perception of the capacities of young than of the old, thus favouring system-justification explanations.

However, although there are several evidences that the use of system-justification strategies has advantages for individuals and for societies in general, there are also associated costs (Jost & Hunyady, 2005). In fact, especially for disadvantaged groups, conflicting goals between personal and system needs may cause lower subjective self-esteem and depression (Jost & Thompson, 2000). This is especially important if we think that age discrimination is the most prevalent form of perceived discrimination in our societies. We will address this issue in the next point.

Main form of perceived discrimination

There are evidences suggesting that ageism is the major form of perceived discrimination among individuals in a society. In two influential studies conducted with representative samples in the United Kingdom, Abrams and collaborators (Age Concern England, 2004, 2006) asked individuals to indicate whether they had ever been victims of prejudice and discrimination based on several aspects: gender, age, religion, race or ethnic background, disability and sexual orientation. Results showed that age was the main category referred by the inquiries, even higher than discrimination regarding other basic categorizations such as race and gender²¹. In the same vein, recently, one pilot studies conducted in the context of the European Social Survey (for more information please see <http://ess.nsd.uib.no/>), showed the same pattern in Bulgaria; this result may indicate that this is a widespread phenomenon across different cultural backgrounds. These results are alarming and call our attention to the possible negative effects that ageism practices are having on individuals in our societies. We believe that these results reflect our overall neglect regarding this matter and is linked with the fact that ageism is a much more socially accepted form of prejudice than other “isms” such as racism and sexism.

Wide social acceptance

Several authors suggest that, unlike other forms of prejudice such as racism or sexism, ageist attitudes are uphold and widely explicitly accepted in our contemporary societies. For instance, Nelson (2002) talks about the growing industry of the greeting card business in America built around the “over the hill” theme. According to Nelson (2002) “such cards are often portrayed as humorous, but the essential message is that it is undesirable to get older ... most Americans tend to have little tolerance for older persons and very few reservations about harbouring negative attitudes toward older people” (p. ix). We believe that this acceptance of negative attitudes regarding aging is also true for other countries as well. If we think about

²¹ It is important to note that age was the most commonly reported form of discrimination experienced by White people (who constituted the majority of the sample). Among people of mixed, Asian, and African or Caribbean origin race was the major form of perceived discrimination, followed by age. This emphasizes the need to consider different ethnical backgrounds in ageism research. In fact, most studies within ageism research are conducted with White people. However, several researchers (Kite & Wagner, 2002) explicitly acknowledge the need to extend these studies to people from other ethnic and cultural backgrounds.

our own experience we will acknowledge that during our life we might have heard or said ageistic commentaries against older people without giving it much thought. Sometimes, they seem to express feelings of true concern for the older person (e.g., “help your grandfather, he cannot walk properly”); however, other times we even use more blatant forms of prejudice without any consequence (“granny is too old, she doesn’t understand things anymore”).

Social sanctions against expressions of negative attitudes and beliefs about the elderly are almost completely absent. According with Levy and Banaji (2002) “this state of affairs stand in contrast against other social groups, where, at least in public discourse, there has been a notable change in recognition of social disadvantage and the need to ameliorate its consequences” (p. 50).

However, interestingly, this wide acceptance of negative feelings and beliefs about the elderly is accompanied also by a lack of strong, explicit hatred towards them. In fact, there are no hate groups that target the elderly as there are hate groups that target members of religious, racial and gender groups. Hence, we can think that negative attitudes toward older people in our societies have the following characteristics: they are “normal” and all good, “normal” people show them, one time or the other.

We can think that this is also true for other age groups as, for instance, younger people. If we think about it, no one has problems in recognizing that someone “looks too young to do that job” and we know the problems young workers face when they enter into the job market. In support of this prediction, there are some studies showing that younger individuals sometimes indicate more perceived discrimination regarding their age than older individuals (Garstka et al., 2004).

Why isn’t ageism sanctioned as happens, for instance, with other forms of prejudice? We think that this is due to the fact that, unlike racism and sexism, no one has ever fought against this prevalent form of prejudice in an organized manner. We know that civil rights movements such as “the black is beautiful” and feminists’ organizations have had a major role changing the way we act regarding race and gender. Well, no such movements have had such a strong role in changing “ageism”. We believe that *premature cognitive commitments* (Golub et al., 2002) play a major role in this fact in the sense that, it does not make much sense to fight “hard” against something we believed and expressed during our entire life (we will explore this issue below in further detail when we discuss ageism against older people).

It is important to note however that there are, in fact, some organized movements such as the Gray Panthers or Age Concern who slowly began to engage in this active fight against ageism. They have done an important work combating age discrimination in the labour

market, ageist language and negative stereotypes of the aged in general (Featherstone & Wernick, 1995).

Finally, another reason why we think that ageism is a much wider accepted form of prejudice has to do with the lack of academic studies conducted regarding this matter. In fact, when we compare with research conducted regarding racism and sexism we are surprised by the shortage of interest in this topic. Below we develop this issue in further detail.

Shortage of explanatory studies

There are evidences suggesting that, upon encounters, people tend to automatically categorize others along three major dimensions: race, sex, and age (Kunda, 1999). Based on these categorizations, we infer individual's characteristics, and these guide the way we behave and the kind of information we attend. However, although there are several studies exploring racism and sexism, there is a surprising limited amount of studies addressing ageism. For instance, a quick search on the PsycInfo database shows exactly this pattern. Following Nelson (2002), I ran three searches and set up the search criteria to look for words *racism*, *sexism*, and *ageism* anywhere in the abstract of each article. Results indicated 4208 articles for racism, 1430 for sexism, and only 407 for ageism. In accordance with the search conducted back in 2002, we see that the lack of interest in ageism compared with racism or sexism is still a contemporary issue. What explains this lack of interest?

The majority of researchers are keen to point to one explanation as the major cause of this pattern: science is also “ageist” and social scientists are no different from anyone else. Being a social accepted form of prejudice renders the idea that it is not as important to study ageism as it is to study, for instance, racism or sexism. Moreover, especially regarding the study of ageism regarding older individuals, social scientists are just as “afraid” of old age and aging as is everyone else. Hence, this is a difficult issue to address. This is not only true of social psychology (B. Levy & Banaji, 2002), but also of other social sciences such as Sociology (Featherstone & Wernick, 1995) and History (Thane, 2003). We believe that this lack of interest in the study of ageism is an interesting indicator of the widespread of ageism in our societies and contributes to reinforce the idea that age prejudice is not an important topic. We think that explicitly addressing this issue is fundamental to combat ageistic practices. In this sense, we make ours the following appeal by Levy and Banaji (2002):

The fair-less research attention accorded to age is yet another indicator of the ease with this form of discrimination appears to be acceptable compared with others. Ageism, unlike racism, does not provoke shame. It may be a matter of some interest to track changes in the recognition of ageism as a form of discrimination worthy of study even in the community of social scientists working on the topic of prejudice (p. 51).

After we described the main definition of ageism and its distinctive characteristics we will now focus on a more specific topic which is ageism against older people and the content of aging stereotypes. In fact, although globally there is a shortage of studies regarding ageism, we will see that research regarding aging stereotypes may be one of the most developed fields within this approach.

Ageism against older people: the content of aging stereotypes

As we already referred, several international studies have shown that old age is perceived systematically in a more negative way than younger ages (Kite et al., 2005; Nelson, 2002) and that these negative representations are often associated with prejudice and discrimination against older people. These studies showed that older people are perceived to be inferior to middle-aged people in aspects like power and social status, wealth, respect and influence (Cameron, 1970; Foner, 1984; Garstka et al., 2004; Pampel, 1998; Youmans, 1971). Hence, older people seem to be in fact, the lowest status group in our contemporary societies (Garstka et al., 2004). Why is old age devalued in comparison with other age categories?

Several factors are frequently referred to explain these negative perceptions of older people (Cuddy & Fiske, 2002). The first one is the fact that older people are not actively working. In a society that values productivity, this factor considerably diminishes their perceived value as it seems to impoverish their contribution to society and diminish their objective wealth and power (Branco & Williamson, 1982; Nelson, 2005). The second one refers to the fact that they are now considered a burden to society due to the amount of spending that governments make with aging programs (and this is linked with the fact that we witness an unprecedented growth in the number of older people who in need of assistance). Today there is a diffused idea that the funds are not distributed in an equitable way to all age groups and that the elderly are using much more than what they need at the expenses of younger generation (Binstock, 2005). And thirdly, is the fact that the elderly are perceived as the most threatening

reminder to individuals of their inevitable mortality. According to *terror management theory* (Greenberg et al., 2002) younger generations fear their own fate of diminishing beauty, health, sensation and ultimately, death. In this sense, they tend to neglect the elderly and the aging process. All these factors seem to contribute to maintain the stigmatization of older people.

At this point one can ask: is this a problem specific of our contemporary societies? According to Thane (2003) the answer is a big 'NO'. In her historical revision, Thane cites several evidences where older people seemed to share this low status position throughout time. For instance, according to Thane, the growing proportions of older people in western societies over the twentieth century have, periodically, caused panics which influenced attitudes regarding old age. For instance, there are evidences that in the nineteen twenties' France old age and aging were met with high disapproval. In a time of rapidly falling birth-rates and lengthening life-expectancy accompanied by a perceived military threat from 'younger' countries such as Germany, and a perceived cultural threat from the growth of non-white populations in other continents, the lost of youthful vitality in France was seen with fear and linked with negative attitudes towards old age.

In fact, this negative vision about old age and aging has been very common across several periods in history. For example, according to Thane (2003), "an extensive body of work on old age in the United States since the eighteen century finds the status of old people to be in decline over a variety of life-scales: from the late eighteen century to the early nineteenth, in the mid-nineteenth, [and] between the late nineteenth and twentieth century" (p. 105).

However, Thane calls our attention to the dangerous of this "decline" speech. Although it may be true that old age may be regarded in a negative manner, one should be cautious not to loose sight of the immense diversity of individuals involved in the "old age" category. In fact, throughout time, there have also always been older people who were highly regarded and respected. One such good example is presented in the *Treatises on Friendship and Old Age* by Cícero (106-43 B.C.) in the image portrayed of Marcus Cato by Laelius and Scipio. Here is an example of Scípío's discourse:

Many a time have I in conversation with my friend Gaius Laelius here expressed my admiration, Marcus Cato, of the eminent, nay perfect, wisdom displayed by you indeed at all points, but above everything because I have noticed that old age never seemed a burden to you, while to most old men it is so hateful that they declare themselves under a weight heavier than Aetna.

In this text we can see that, even in ancient times, not all older people were portrayed in a negative and declining manner. In fact, since early days, “wisdom” has always been a trait associated with positive aging (see also the introduction of Plato’s (428/427–348/347 B.C.) *Republic* for a similar point). Thane found support for this idea in her historical review. After analyzing several historical evidences, she reaches an important conclusion regarding the images of old age throughout history: “In all times older people (female and male) who retained economic or any form of power, along with their faculties, could command, or enforce, respect. At all times poor and powerless older people have been, though not universally, marginalized and denigrated” (p.105).

One important aspect to consider is that the way individuals perceive older people’s status in a society seems to be an important predictor of the stereotypes associated with this category. In fact, according with the Stereotype Content Model (SCM), proposed by Fiske and colleagues (2002), the fact that people regard old age as low status and non competitive social category is significantly associated with the fact that older people are perceived in an incompetent and warm manner (the “doddering but dear” stereotype) (Cuddy & Fiske, 2002). In fact, evidences from several countries (i.e., EUA, Belgium, Costa Rica, Hong Kong, Israel and South Korea) suggest that this is a widespread perception in our contemporary societies (Cuddy et al., 2005).

It is interesting to note that these results show us that, although they are viewed as a generally low status category, older people are nonetheless perceived in a mixed manner: they are characterized by the negative trait “incompetent”, but, at the same time, they are also associated with the positive trait “warm”. In fact, this idea that the representation of aging is diverse and involves several different components has been the cornerstone of research regarding the content of aging stereotypes.

In their seminal study regarding aging stereotypes in America, Brewer, Dull and Lui (1981) were the first to defend that the category *elderly* represented a superordinate category that included several subcategories. These authors argued that a broad category such as “the elderly” was too large to capture attitudes toward older adults accurately. The basic idea was that, although we may be able to measure attitudes towards this superordinate category, these measurements may yield contradictory findings if people are thinking of different subgroups while making the ratings. In accordance with this idea, Brewer, Dull and Lui explored the existence of “older subgroups” in a sample of college students. They defined a priori three subcategories of older adults: grandmother, representing a family-oriented older women; senior citizen, representing the stereotype of an isolated, inactive elderly person of both sex;

and elder statesman, representing the image of a respected and distinguished conservative gentleman. Then they asked participants to sort photos representing each subgroup into categories of people that could be grouped together. Participants sorted the photos as expected and appropriately attributed traits consistent with each subgroup (e.g, “kindly” to grandmother, “dignified” to elder statesman, and “lonely” to senior citizen). Interestingly, these results were later replicated in a sample of older women (Brewer & Lui, 1984).

This work by Brewer studied subgroups determined in advance by the researchers. In an expansion of this work, Schmidt and Boland (1986) conducted a study to determine “older subgroups” when no a priori categories were given. Using a free response format they asked college students to describe the typical older person. Results supported the idea that older stereotypes are complex and include many opposite trait such as “sedentary-active” or “poor-wealthy”. Afterwards, in a second study they asked another group of college students to sort the ninety-nine obtained traits into groups. Results showed evidence of many subgroups of older people, some with positive and some with negative valences. According to Schmidt and Boland this is an interesting result and suggests that negative attitudes and derogation of older people may not be as widespread as one may think; in fact, it may be especially linked with more negative subgroups of the older stereotype.

The work by Hummert and colleagues has found strong support for this mixed image of aging stereotypes. Based on traits generated by young, middle-aged and old adults, Hummert et al. (1994) identified seven subgroups of older people. These included four negative subgroups (Severely impaired, Shrew/Curmudgeon, Despondent and Recluse) and three positive subgroups (John Wayne Conservative, Golden Ager and Perfect Grandfather)²². Subsequent work explored the relationships between these different subgroups and other variables. For instance, evidences from one study (Hummert et al., 1997) showed that subgroups that were seen as older had fewer positive traits associated with them. For instance, a subtype such as ‘Despondents’ was seen as having more memory problems than was the ‘Golden ager’. Moreover, and in support of Schmidt and Bolland’s (1986) predictions, Hummert, Garstka and Shaner (1995) argued that negative attitudes were mostly linked with negative subgroups of aging. Finally, Cuddy and Fiske (2002) also argued that different aging subgroups are associated with different ‘competence-warm’ ratings and with different perceived status. For instance, the ‘grandmother’ most closely mirrors the global aging

²² It is interesting to note however that middle-aged and older adults generated several additional subgroups (e.g., Small Town Neighbor). According to Hummert et al. (1994) this suggests that there is greater differentiation of the older categories with age.

stereotype portraying someone who is seen as warm, yet incompetent. However, the senior citizen lacks both competence and warmth. People see this subgroup as complaining and lazy, responsible for their situation.

All these studies point to one main conclusion: aging stereotypes are heterogynous. In fact, there are several variables that may matter when we think about this age group. First of all, target's age is very important. In fact, some studies suggest that there are differences in the manner how people think about 'younger' and 'older' old age. Old age is not unitary; the 'younger' older adults are seen in a more positive manner than are "older" older adults (Kite et al., 2005). Moreover, gender also seems to matter. Kite and Wagner (2002) point to the need to consider the "double standard of aging" which affects the evaluations of older women. According with these authors, there are differences in the perceptions of older women and men. For instance, women are thought to reach middle and old age at a younger age and to be stereotyped negatively at a younger age than are men (Hummert et al., 1997). Given these divergences in the perceptions of women and men we believe that this is an important point to consider in research about aging stereotypes.

It is important to note that the finding that stereotypes of aging include mixed contents, with more positive and negative associated traits has also been extended to other cultural contexts. For instance, studies conducted in the United Kingdom (Age Concern England, 2004, 2006), in Germany (Heckhausen & Lang, 1996), and in Spain (Fernandez-Ballesteros, 1992; Santamarina, López de Miguel, Ugarte, & Abrisqueta, 2002) also concur with this mixed vision of older people. In Portugal, studies conducted until date also point in this direction (although this issue needs to be further explored). We will explore this topic further when we introduce Studies 1, 2 and 3. For now, what is more important to retain is this overall idea that old age is a vast category, with great perceived variability. The emphasis on one or the other subgroups may have differentiated effects on individuals' attitudes and behaviours regarding older people. At this point, one important question remains: does the activation of these different representations of old age affect older people themselves in a different manner?

The effects of aging stereotypes on older people

Being part of a culture renders individuals with the common knowledge regarding the representations associated with the different age groups. Hence, there is no doubt that older people know the content of prevailing aging stereotypes and maybe even endorse them (Hummert et al., 1994). Hence, one important question remains: What effects do these stereotypes have on older people's perceptions and behaviours?

There are several evidences showing that older people's performances are affected by the automatic activation of aging stereotypes. However, the direction of this effect is not consensual among researchers. Rothermund and Brandtstädter (2003), advanced the idea that there are two rival assumptions in the literature regarding the role that aging stereotypes may have on older people's responses. The first one is the *assimilation hypothesis*. According to this hypothesis older individuals are subject to the same evaluation as the group. In support of this prediction, Rothermund and Brandtstädter cite the influential studies of Levy and collaborators (Hausdorff et al., 1999; B. Levy, 1996, 2000; B. Levy et al., 1999-2000; B. Levy et al., 2000). Based on the idea that older stereotypes have a "mixed" content, Levy (1996) primed older people with more negative or more positive traits of the older stereotype in a subliminal manner. Supporting the assimilation hypothesis, these studies yielded consistent results showing that older people who were primed with negative traits of the aging stereotype had lower performances regarding several measures than older people who were primed with positive traits. For instance, in an influential study, Levy (1996) subliminally primed older people with positive (e.g., wise) or negative (e.g., senile) traits of aging and measured their memory performance as a dependent variable. Her results showed that, consistent with the assimilation hypothesis, older participants primed with negative traits had lower memory performance in four memory tests than those primed with positive traits. Afterwards, this result was replicated also in other domains such as handwriting (B. Levy, 2000), cardio-vascular stress (B. Levy et al., 2000) and speed of walking (Hausdorff et al., 1999). For instance, Levy, Ashman and Dror (1999-2000) found that subliminal aging priming influenced basic needs such as individual's will-to-live. In fact, replicating the previous pattern, results showed that older participants primed with the negative age stereotypes tended to refuse life-prolonging interventions, whereas older participants primed with positive traits tended to accept the same interventions. All these studies point in the same

and one direction: when aging stereotypes are automatically activated, older people act in conformity. However, there are some contradictory evidences in the literature.

According to Rothermund and Brandtstädter (2003), the second assumption regarding the effects of aging stereotypes refers to the *contrast hypothesis*. This hypothesis assumes that older individuals cope with aging stereotypes by separating themselves from the group (and this seems to particularly true for negative stereotypes). For instance, the work by Pinguart (2002) seems to favour this explanation. In this study, elderly participants received written statements containing age-stereotypical information supposedly reflecting the opinion of younger persons who had previously participated in the study. Self-views and views of older people in general were assessed before and after the presentation of negative or neutral age-stereotypical information. Consistent with the contrast hypothesis, results showed that exposition to negative stereotypes led to enhanced self-views and simultaneously worsened overall perceptions of older people (neutral information had no effects on evaluations of self and others). According to Pinguart (2002), the improved self-views indicate a contrast effect resulting from a downward comparison against a lowered reference standard of the generalized older person. A similar point has also been made by Coudin (2002). This author suggested that negative aging stereotypes serve as comparison standards that are used by older individuals as anchors to improve their own perceptions and performances.

Recently, in an attempt to reconcile both these perspectives, Hess, Hinson and Statham (2004) advanced the idea that the occurrence of assimilation or contrast depends on the way stereotypes are activated. The main idea is that that assimilation effects occur when participants are unaware of stereotype activation (e.g., as happens, for example, when researchers use subliminal priming procedures), whereas contrast appears when they are aware (e.g., as happens, for example, when researchers use supraliminal priming procedures). As we already described in some detail in the section “Stereotypes: Being the target” the basic idea is that being aware of stereotype activation makes older individuals react to these activated images. Hess and colleagues (2004) conducted two studies where they measured older individuals’ memory performance. In these two studies they showed that when older participants were primed in a subtle manner, there was an assimilation effect to the aging stereotype similar to Levy’s (1996) results: performance was lower in the negative stereotypes condition than in the positive stereotype condition. However, when they were primed in a more “blatant” manner, there were no significant differences between negative and positive stereotype activation. Given these results, Hess et al. assume that being aware of prime was enough to override the effects of stereotype activation. However, although these results seem

compelling these studies had several limitations that questioned this role given to prime awareness. For instance, although there were no significant effects in the blatant condition in Studies 1 and 2, it seems that these occurred due to different reasons. In Study 1, older adults' performance in both blatant priming conditions was similar to performance levels in the positive prime in the subtle condition. This led Hess et al. to conclude that older adults were able to counteract the "bad" effects of negative aging stereotype in the blatant condition. However, in Study 2, older adults performance in both blatant priming conditions were similar, not to the positive subtle prime condition as in Study 1, but to the negative subtle prime condition. Hence, it seemed that in Study 2, blatancy was not having such a "good" effect. In fact, in this case, Hess et al. advances the explanation that blatancy may have caused a feeling of "threat" which elicited the contrast effect in the positive blatant stereotype condition. Due to the fact that Hess et al. used different procedures, with different operationalizations of blatancy in the two studies, it is difficult to understand the processes at hand. Hence, although they found that different modes of stereotype activation seem to lead to differences in older people's performances, we can not know for sure which factors matter the most. However, for the sake of brevity, we do not wish to develop this point in detail here. In fact, we have already written extensively about this issue in the section "Stereotypes: being the target". Moreover, we will address this issue once again and in further detail when we introduce the section of Studies 4, 5 and 6. For now, we would like to make some final comments regarding the literature about the effects of aging stereotypes on older people.

First of all, we would like to indicate that the studies just described (Hausdorff et al., 1999; Hess et al., 2004; B. Levy, 1996, 2000; B. Levy et al., 1999-2000; B. Levy et al., 2000; Pinquart, 2002) follow a stereotype priming perspective. Hence, stereotypes are supposed to affect older people's responses in an automatic manner, following the *trait-behaviour* route typical of stereotype priming effects and described in detail by Dijksterhuis and Bargh (2001). However, we believe that these studies do not defend the traditional "cold" perspective of stereotype priming effects. In fact, we think that they emphasize a "motivated" perspective in the sense that they try to incorporate the role that the "self" may play in these processes and the effects of more emotional variables such as perceived anxiety.

Secondly, research regarding the effects of aging stereotypes on older people's behaviours has always questioned the role that *age identity* plays in these processes. Since her seminal study, Levy (1996) assumed that self-relevance, that is, application to the older individual's identity played a crucial role in stereotype priming effects. In support of this prediction, she showed that although the memory performance of older people (for whom the stereotype was

self-relevant) was affected by subliminal activation of the aging stereotype, performance of younger people (for the stereotype was not self-relevant) was not affected. Later she replicated this same pattern using the will-to-live measure (B. Levy et al., 1999-2000).

Recently, based on the idea that self-relevance played an important part in stereotype priming effects in the aging domain, O'Brien and Hummert (2006) found that the degree of age identification had a significant moderator effect in this process. Their results showed that higher identified middle-aged individuals were more influenced by aging stereotype activation than low identified individuals.

Secondly, the work by these authors, particularly those who explore contrast effects (Hess et al., 2004; Pinguart, 2002) has questioned the role that more emotional variables such as perceived threat and anxiety plays in stereotype priming effects on older people. For instance, in Study 2, Hess et al. (2004) attributed the failure in memory performance in the blatant positive priming condition to an enhanced feeling of threat that caused "choking under pressure" to perform. In fact, Hess et al. even explicitly added a measure of state anxiety (STAI-S) in their study to control whether this variable mediated priming effects. However, he did not find any significant effects.

Hence, it is true that, compared with other studies conducted within the stereotype priming approach (Bargh et al., 1996; Devine, 1989), the studies of older stereotypes' effects on older people adopt a much more "motivated" perspective (Fiske & Taylor, 1991). However, we believe that this path is still in the beginning. In fact, none of the studies conducted so far give a definitive answer to the role played by more "motivational" factors. Hence, we argue that, in line with our argumentation in the previous chapter (Stereotypes: Being the target) great advances would be made if the priming perspective on aging stereotypes incorporated the knowledge from other perspectives regarding the effects of stereotypes on targets such as the *social identity approach* (Tajfel & Turner, 1986) and the *stereotype threat perspective* (Steele & Aronson, 1995).

As far as we know there are no specific studies that address the effects of aging stereotypes on older people adopting a social identity approach. However, we think that general evidences regarding the role of social identity in stereotype effects on targets may shed some light regarding this matter. For instance, contrast effects to negative aging stereotypes may be interpreted as a strategy of social mobility (Tajfel & Turner, 1986). In fact, this result would be expected from a social identity perspective, particularly in the case of low identified individuals (Spears, Doosje et al., 1997). The social identity approach has a vast knowledge regarding "group identification" processes and should be explicitly

considered when researchers address these issues. Recall that this has not been the common practice so far. Similarly to what happen in other domains, research in aging has tended to be heavily influenced by one line of research without much interest in the incorporation of findings from other lines of research. However, it seems obvious to us that, when they are addressing similar issues researchers should recur to different fonts of knowledge.

On the other hand, contrary to what happen regarding the social identity approach, there are some studies that have specifically explored the effects of aging stereotypes on older people from a stereotype threat perspective (Abrams et al., 2008; Abrams et al., 2006; Desrichard & Köpetz, 2005; Hess et al., 2003).

These studies have two major differences from research conducted within the stereotype priming perspective. First of all, they use a manipulation which aims to activate in an explicit manner stereotypes of aging, to make sure that older people become aware of the detrimental effects of the negative aging stereotype. In fact, according to Hess (2003) “threat is thought to be associated with conscious apprehension of stereotype-relevant cues resulting in an awareness of stereotype implications of the situation, including the diagnostic value of performance context for the stereotype-relevant ability” (p. 4). Secondly, they also investigate the role of potential “emotional” mediators of stereotype threat effects such as anxiety levels (Abrams et al., 2008; Abrams et al., 2006; Hess et al., 2003).

As expected, all these studies found significant effects of stereotype activation: in fact, older people who were in conditions that maximized threat showed significant lower performance than older adults who did not experience threat. However, these studies were inconsistent regarding the role that anxiety plays in these processes. On one hand, there are some studies which do not address specifically the role of anxiety (Desrichard & Köpetz, 2005). On the other hand, even within studies who do explore the role of anxiety, we find mixed evidences. For instance, Hess and colleagues (2003) did not find a significant effect of stereotype activation on older people’s anxiety levels. However, Abrams (2008; 2006) found consistent significant mediator effects of this variable, particularly in participants with less positive intergenerational contact (hence, this was a significant moderator of stereotype threat effects in these studies). According to Abrams (2006) there are some fundamental differences between these studies which may explain the inconsistency in this pattern of results. Whereas Hess et al. (2003) measured anxiety in general terms (MIA- Anx scale), Abrams used a specific measure of anxiety regarding performance levels (e.g., including items such as “to each extent did you feel “under pressure” while answering the test questions?”) (Osborne, 2001). Abrams found a similar significant effect of anxiety either when anxiety was

measured after performance (Abrams et al., 2006) or before performance (Abrams et al., 2008). Hence, his results support stereotype threat's idea (Steele & Aronson, 1995) that "hot" factors such as anxiety have an important role determining performance levels. However, despite these interesting results, we believe that the role that anxiety plays in stereotype threat effects still needs to be further investigated.

From our point of view, what seems interesting is that these studies show that, even if we use more explicit methods of stereotype activation (such as stereotype threat manipulations) we can still have assimilation effects to the negative aging stereotype and there are some evidences suggesting that this effect may be mediated by an increase in anxiety levels. These evidences question the idea that mere "awareness" of stereotype activation would be enough to make older people contrast from negative stereotypes of aging. Moreover, they also emphasize that more "emotional" variables may play an important role in these processes and should be further investigated.

Similarly to what we defended in more general terms in the chapter "Stereotypes: Being the target" we believe that incorporating the knowledge offered by other perspectives would help us greatly increase our understanding about the way aging stereotypes affect older people's behaviours. Only then we could really achieve a "motivated" perspective (Fiske & Taylor, 1991) on priming effects.

Conclusions

In this chapter we reviewed the literature regarding ageism, aging stereotypes and the effects of aging stereotypes on older people. This literature review allowed us to reach some main conclusions.

First of all, it is important to acknowledge that there is no doubt that, similarly to what happens with other social markers, age plays a fundamental role in the organization of our societies. Age categorization is an important determinant of the roles people occupy in our societies and living in a society renders individuals with a common knowledge regarding the segmentation of the life course and the representations associated with different age groups. These social representations are heavily influenced by the cultural background and motivational variables such as, for instance, the age group of belonging. In our modern societies, the beginning of old age is usually marked around sixty or sixty five, which is usually the retirement age in most countries (INE, 2002). However, these age "barriers" seem

to change in certain degree according to individual's own age group. In fact, older people seem to postpone the beginning of "old age" to a later age than younger individuals. The basic explanation for this is that individuals react against being categorized as "older people". This leads us to our second grand conclusion.

In our contemporary societies, similarly to what has happened also in other historical moments, old age is considered a devalued category in comparison with young and middle-age. However, it is important to recognize also that, in spite of being considered an overall low status category, old age is still perceived to be a highly variable category and that older people are represented in mixed manner, with stereotypes of aging include both positive and negative traits. These different representations seem to affect older people in a different manner. Our third and final conclusion has to do exactly with this topic.

There is evidence suggesting that older people are affected by the activation of aging stereotypes. However, the results of these studies are still unclear about the expected direction of these effects. For instance, on one hand, there are several studies (B. Levy, 1996, 2003) showing that older people assimilate to the old age stereotype in the sense that they have lower performances when negative traits are activated than when more positive contents are activated. However, on the other hand, other researchers suggest that older people are able to contrast from these stereotypes, particularly the negative ones; hence they show that older people engage in the use of downward social comparisons strategies, perceiving themselves in a more valuable manner than they perceive the overall group of older people (Pinquart, 2002). However, the reasons for these divergent results still needs to be further explored. Some authors have advanced the idea that maybe "awareness" of stereotype activation plays an important role in these processes suggesting that subtle stereotype activation should result in assimilation effects, whereas more blatant modes of stereotype activation would result in contrast effects (Hess et al., 2004). However, unfortunately, these studies have several limitations and are still unclear about the processes at hand. Adopting a more "motivated" perspective, some authors argue that "hot" variables such as age identity and anxiety levels may help shed some light on this issue. However, this is a relatively new topic of research and stills needs to be further investigated.

In this dissertation, we will try to further explore these issues. Specifically, our main goal is to investigate the role that priming of aging stereotypes has on older people's health perceptions, particularly in the way they estimate risks of aging illnesses and use a particular type of strategy called "comparative optimism". In this work, we will follow a general stereotype priming perspective. However, we will also try to explore the role of possible

moderator and mediator variables. In our studies, we will give special emphasis to the role played by prime awareness (Studies 5 and 6) and the role of age identification (Studies 7 and 8). Moreover, in all studies where we manipulate stereotype activation we will also explore the effect that state anxiety plays in these processes (Studies 4 to 8). Whenever advisable, we will interpret our results in line with previous findings not only within the stereotype priming perspective, but also taking in consideration evidences from work developed within the social identity approach and stereotype threat perspective. We hope this would allow us to have a richer perspective about aging stereotypes' effects on older people. Next, we introduce the main goals of this dissertation.

Main goals of the studies

In this dissertation we have one major goal: **to explore the effect that the activation of different contents of the aging stereotype (positive or negative) has on older people's use of comparative optimism regarding typical illnesses of aging.** In order to achieve this goal, we conducted eight studies, organized in three different parts.

Part 1: Aging stereotypes in Portugal

This section aims to explore the content of the age categories in Portugal, particularly old age. This is a relatively neglected topic in our country hence we felt the need to explore this issue in more detail. In this part of the dissertation we introduce the first three studies.

Study 1 aims to evaluate the overall age boundaries, age status and overall stereotypes associated with old age. We believe that this work allows us to understand better the content of the old age category in Portugal and compare it with other countries.

Study 2 aim to collect in an extensive manner the stereotypes associated with younger and older people in Portugal. We conducted this study asking both younger and older individuals. The results of this study have been already published elsewhere; hence, in this dissertation we present only part of this work (Marques, Lima, & Novo, 2006).

Finally, the goal of Study 3 is to validate the paradigm of stereotype activation originally used by Levy (1996; 1999-2000) to the Portuguese context. Particularly, our goal is to replicate Levy et al study (1999-2000). These authors used a subliminal priming methodology and showed that older people who are primed with positive traits of the aging stereotype have higher will-to-live scores than older people who are primed with negative traits.

We believe that these studies provide a good support to accomplish our next studies which aim to explore more specifically the main goal in this dissertation.

Part 2: The effects of aging stereotypes on comparative optimism regarding illness

This section aims to explore the specific goal of this dissertation. In this part we conducted also three studies.

Study 4 aims to enhance our knowledge regarding the use of comparative optimism towards illness in older people. Our goal is to evaluate several aspects related with the perception of typical illnesses of aging in order to construe the dependent variable to use in the subsequent experimental studies.

Studies 5 and 6 aim to explore the effects that the activation of more positive or negative contents of the aging stereotypes have on older people's use of comparative optimism regarding typical illnesses of aging. The procedure for these two studies is very similar with one major difference: stereotypic priming in Study 5 is conducted in a subliminal manner whereas in Study 6 it is conducted in a supraliminal way. By using different methods of stereotypic priming we hope to uncover the role that "prime awareness" has on these type of effects. Moreover, this allows us to generalize the result obtained with different methods of stereotype activation.

Part 3: The effects of aging stereotypes on comparative optimism regarding illness: the role of age identification

This is the final part of the empirical section in this dissertation and aims to explore the role that old age identification plays in stereotype priming effects on older people's use of comparative optimism. In these studies, our goal is to explore the effect of two different characteristics of age identification: the *degree* and *salience* of old age identification.

To achieve this goal we conducted two final studies. Study 7 and 8 are very similar and use the same procedure. In both studies, besides our valence manipulation of the aging stereotype, we also manipulated age identity salience by asking participants to fill the age identification measure before or after stereotype activation.

We believe that old age identification plays a major role in these type of effects and that this type of manipulation helps understand better the contours of possible reactions of older people to contextually activated stereotypes of aging.

Finally, we think that the results of these studies have important implications not only from an applied point of view (i.e., by uncovering the importance of aging stereotypes on older people's health perceptions), but also from a theoretical perspective (to understand better stereotypes effects and possible moderator variables).

EMPIRICAL PART

Aging stereotypes in Portugal

Studies 1, 2 and 3

In this part of our dissertation, we conducted three studies. In each of these studies our samples were constituted both by younger and older adults.

Study 1 was a preliminary study and aimed to explore the age limits associated with age categories in Portugal and old age representation according with the Stereotype Content Model (Fiske et al., 2002). Our goal was to evaluate perceived status associated with the different age groups in our society and their evaluation according with the “competence-warm” dimension.

In Study 2, our goal was to further explore the content associated with the young and old age category in our country. To measure these stereotypes, we used a mixed methodology in two phases. In Phase 1 we asked participants to freely indicate the contents associated with young and old individuals of each gender. In Phase 2, we asked a different sample of participants to evaluate in a previous given check-list (built based on information gathered in Phase 1) in which degree each trait was associated with the younger and older age group. This study has already been published elsewhere (Marques et al., 2006) Here, we present an English translation of the main contents of this study.

Finally, in Study 3 our goal was to construe the subliminal priming paradigm proposed by Levy (1996). Hence, our goal was to replicate one of her studies (B. Levy et al., 1999-2000) using the content of aging stereotypes in Portugal. Similarly to Study 2, the content of this study has already been published elsewhere (Marques, Lima, & Novo, 2007). Here, we present only part of this study.

After this brief introduction, we will now describe each study in detail. We hope this may be a valid contribution to enhance our knowledge regarding age and aging representations in our culture.

Study 1 – Social status and age stereotypes: Do younger and older individuals differ in their perception of aging?

The objective of this study is to explore the representations of younger and older individuals living in our culture regarding age boundaries, old age status and stereotypes. As far as we know this is the first time such a study is conducted in our context. Moreover, even in a broader scenario, we believe that this study also shed some light regarding some topics of research in ageism. For instance, research regarding the perception of social status of age categories is relatively scarce. As far as we know, only one more study has explored this issue and it was in the American context (Garstka et al., 2004). Moreover, research regarding the evaluation of old age according with the Stereotype Content Model (Fiske et al., 2002) has been traditionally mostly concerned with the perception of younger individuals. Hence, the present study has also the merit of measuring also older people's perceptions regarding this issue. As far as we know, there is just one more study that has addressed this topic in a similar manner and it was in the English context and at around the same time as our study (Age Concern England, 2004, 2006) After this brief introduction we can now summarize our hypothesis for this study.

We have three main hypotheses:

H1a) *Age segmentation of the life course*: According with previous evidences in other cultural contexts, we expect younger and older individuals to have similar perceptions regarding the segmentation of the life course, with minor differences. H1b) In this regard, we expect older people to indicate a higher inferior limit for the old age category than younger individuals (Cameron, 1969; Drevenstedt, 1976).

H2a) *Perceived social status*: we expect old age to be rated as the lowest status category in comparison with young and middle age categories. H2b) However, we expect older individuals to perceive the status of old age higher than younger individuals.

H3a) *Stereotype of the old age group*: We expect older people to be perceived in a warm and incompetent manner. H3b) However, similarly to the other measures, we expect these ratings to be lower for older participants. Finally, and in accordance with Fiske et al. (2002) hypothesis, we expect competence ratings to be significantly associated with the perception of social status of the old age category (H3c).

Method

Participants

This study included 194 participants: 97 older adults ($M_{age}= 71.3$ years, $SD=5.6$) and 97 younger adults ($M_{age} =21.2$ years; $SD=2.8$). Participants were in majority females (older=60.8%; younger=61.9 %) and lived in urban areas (older=71.1%; younger=72.2 %). The majority of older adults was married (67 %) and lived independently in the community in their own residences (99 %). They had, at least, 9 years of education (68.1%) and were mostly retired from work (76.3%). The majority of younger participants was single (89.7%) and lived with their families (81.4 %). They had, at least, 9 years of education (99%) and were mostly full time students (84.5 %).

Materials

Age segmentation of the life course. To measure the perception of age segmentation we used an adapted version of the measured proposed by Cameron (1969). In this sense, we instructed participants to indicate their opinion regarding the inferior and superior age limits of younger, middle-age and old age group.

Perceived social status. To measure perceived social status of younger, middle-aged and older age groups we adapted Garstka et al (2004) scale. Participants rated each age group on a 1 (low status) to 7 (high status) Likert scale in response to the following question; “What is the overall status of the following groups, in general, in Portuguese society?” Both younger and older participants provided three ratings of age group status, one of each of the three age groups.

Content of the stereotype of old age group. To measure the stereotype of old age group participants rated younger and older age groups in scales reflecting competence and warmth traits in accordance with the abbreviated questionnaire proposed by Fiske and collaborators (2002, study 3). To measure perceived competence, we instructed participants to answer in a scale ranging from 1 (not at all) to 5 (extremely) the degree in which they thought younger/older individuals were considered confident and competent in Portuguese society. To measure warmth, we instructed participants to answer in the same scale the degree in which they thought younger/older individuals were considered sincere and warmth in Portuguese society. Factorial analysis revealed that these were in fact two factors (explaining 70% of total data variance) with good psychometric qualities (Cronbach alpha competence =.60; Cronbach alpha warmth =.60). Either for competence and warmth, we computed a summary score by averaging scores across the two items related to each dimension.

Procedure

Both older and younger participants were recruited in several locations and asked to participate voluntarily in an inquiry regarding perceptions of aging. They were delivered a questionnaire and then they were asked to fill it individually in a quiet location and return it after to the researcher either personally or by mail.

Results

Age segmentation of the life course

In Table 1 are the mean limits of age that younger and older participants associate with young, middle-age and old age categories. Also, we present the planned t-tests conducted to investigate if younger and older participants differed in their perception of age limits. Although younger and older participants agreed in the general age boundaries - young age from early teen's until early 30's, middle-age from late 30's until early 60's, and old age from mid 60's until 90's - there were significant differences among them. Results revealed that older participants perceived that the three age categories began at more advanced ages than younger participants. Also, there were significant differences regarding the superior limit of

old age group with younger participants indicating a higher limit of age than older participants. These results support our H1a and H1b.

Table 1. Mean of Perceived Age Limits for Young, Middle- age and Old Age Target Groups according to Younger and Older Participants

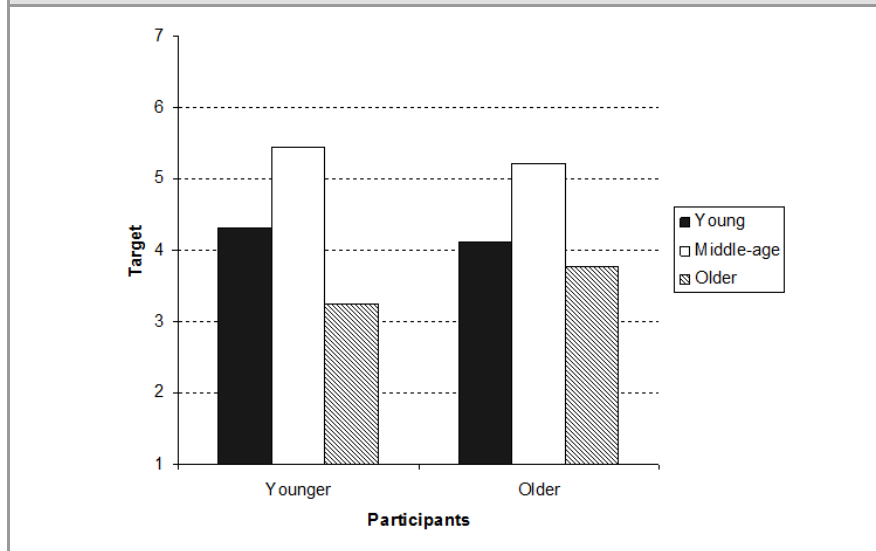
Participants	Target					
	Young age group		Middle-age group		Old age group	
	Inferior Limit	Superior Limit	Inferior Limit	Superior Limit	Inferior Limit	Superior Limit
Younger	12.85	33.34	37.78	60.31	62.98	99.39
Older	16.26	33.60	41.07	60.37	66.05	91.42
df	189	190	191	191	191	142
<i>t</i>	-5.12**	-.47	-3.14*	-1.07	-4.71**	3.78**
* <i>p</i> <.001 ** <i>p</i> <.001						

Perceived social status

To analyse the perceptions of different age group status for older and younger participants we conducted a 3 x 2 mixed ANOVA design. The first factor was the within-subject factor Target, with three levels, which referred to the evaluation of perceived status of younger, middle-aged and older target groups. The second factor was the between-subjects factor Participants, which accounted for the evaluation made by older and younger participants.

The analysis yielded a significant main effect of the within factor Target, $F(2, 378)=110.11, p<.001, \eta_p^2=.37$. Both older and younger participants perceived the middle-aged group as the group with more social status ($M_{\text{younger}}=5.44 (SD=1.07); M_{\text{older}}=5.21 (SD=1.20)$), followed by the young age group ($M_{\text{younger}}=4.30 (SD=1.15); M_{\text{older}}=4.12 (SD=1.17)$) and then the old age group ($M_{\text{younger}}=3.25 (SD=1.23); M_{\text{older}}=3.77 (SD=1.57)$). However, there was also a significant interaction between the factor Target and Participants, $F(2, 378)=5.66, p<.01, \eta_p^2=.03$. To understand this interaction, we conducted planned comparisons and verified that older participants perceived that the old age group had a higher social status than younger participants, $F(1, 189)=6.47, p<.01, \eta_p^2=.03$ (see Figure 1). As we expected, we found confirmation for our H2a and H2b.

Figure 1. Mean of perceived status for young, middle-age and old age target group according to younger and older participants.

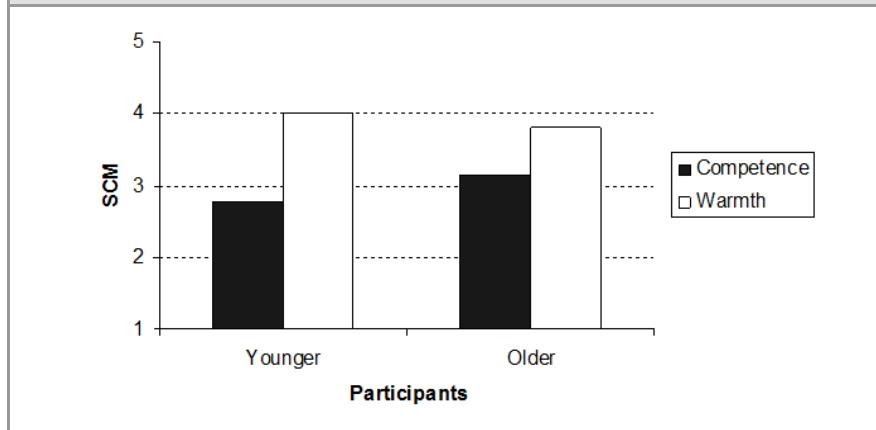


Stereotype of old age group: Perceived warmth and competence of old age (SCM)

In order to analyse differences among older and younger participants regarding the stereotypical images of old age group we conducted a 2 x 2 mixed ANOVA design. The first factor, SC (Stereotype Content), was a within-subjects factor, and had two levels concerning the evaluation of warmth and competence of old age group. The second factor, Participants, was a between-subjects factor, regarding the evaluation made by younger and older participants in our sample.

Data analysis revealed a significant main effect of the within factor SC, $F(1, 191)=208.79$, $p<.000$, $\eta_p^2 = .52$, with both younger and older participants perceiving old age group as more warm ($M_{\text{younger}}=4.00$ ($SD=0.64$); $M_{\text{older}}=3.81$ ($SD=0.64$)) than competent ($M_{\text{younger}}=2.78$ ($SD=0.79$); $M_{\text{older}}=3.13$ ($SD=0.77$)). However, there was also a significant interaction between SC and Participants, $F(1, 191)=17.45$, $p<.000$, $\eta_p^2 = .08$. Planned comparisons revealed that older participants perceived old age target group as more competent, $F(1, 191)=9.46$, $p<.01$, $\eta_p^2 = .05$, and less warm than younger participants, $F(1, 191)=4.64$, $p<.05$, $\eta_p^2 = .02$ (see Figure 2). These results were consistent with H3a and H3b.

Figure 2. Means of perceived competence and warmth of old age target group according to younger and older participants



Relationship between segmentation of the life course, perceived social status and stereotype content

We did not find any significant correlations between segmentation of the life course and perceived social status and content of aging stereotypes. However, we did find a positive and significant correlations between the perception of old age status and competence ratings both in younger participants, $r=.26$, $p<.01$, and in older participants, $r=.21$, $p<.05$. Hence, our results support H3c.

Discussion

The overall pattern of results showed that both younger and older individuals share a consensual general perception between younger and older participants regarding segmentation of the life course, perceived status and stereotypes of old age group. Nevertheless, we also found some significant differences between these two groups that are worthy of consideration.

Regarding age segmentation, although there were significant differences between the exact age attributed to age groups, results showed that both younger and older participants agreed with overall age boundaries of young, middle-age and old age groups. In fact, they both perceived that young age starts at early teen's and ends at early 30's, middle-age starts at late 30's and ends at early 60's, and old age starts at mid 60's and ends at 90's. These results give further support to international studies that show that there is high inter-individual consensus

regarding the ages associated with different phases of life (Heckhausen & Lang, 1996) and support the notion that in Portuguese society, like in other industrialized societies, age categories have an important meaning that is shared by individuals belonging to different age groups. As we already referred, in these societies this age segmentation is a fundamental way of structuring societies' activities like, for instance, attending school or receiving pension funds (Hagestad & Uhlenberg, 2005) so, in this sense, to maintain society cohesiveness it is very important that all members in society share the same representation of the age limits that establish individuals' duties and benefits.

However, as expected, this segmentation of the life course is also accompanied by a devaluation of the old age group in society. In this sense, we verified that, although older individuals had a more positive view, both younger and older individuals perceived the elderly as the group with lower status in society, and that this was significantly related to the fact that they rated older people in a much more warm than competent way. These results have several implications.

First of all, it is important to emphasise that the results of this study give further support to the notion that Portuguese society is an example of the group of modern, industrialized cultures, where older people are subject to ageist perceptions from younger individuals (Cuddy & Fiske, 2002; Cuddy et al., 2005; Garstka et al., 2004). On one hand, the devaluation of old age status replicates the results found in the North-American sample of younger participants described in Garstka et al. (2004). In fact, we found that, in the Portuguese sample, this devaluation was even greater than in the North-American sample, with scores below the middle-point of the scale. This is in accordance with the idea that older people in Portugal may have lower living standards than those that exist in the USA (Marques & Calheiros, 2006).

On the other hand, regarding the stereotypes of aging, evaluations of competence and warmth made by younger Portuguese regarding old age, were similar to the ones verified in the international study conducted by Fiske et al. (1999, 2000). In the Portuguese sample competence ratings were 2.79 out of 5.00 whereas in the international sample it was, in mean, 2.63 out of 5.00. Regarding warmth ratings, younger Portuguese rated 4.00 out of 5.00 whereas younger from other nations rated, in mean, 3.78 out of 5.00.

Secondly, more importantly, these results also showed that these negative perceptions were shared by older individuals themselves. In fact, like in Garstka et al. (2004), older Portuguese participants rated old age as a group with lower social status than middle-age. However, in our sample, older individuals perceived old age status to be lower than in the North-American

sample. Moreover, regarding stereotypes of aging, we showed that older people concur with the evaluation of the elderly as a more warmth than competent group, and that this is related to their low level of social status. In this sense, we showed that these stereotypic perceptions of old age are shared representations, diffused towards both young and old age groups in our culture.

These results seem to favour system-justification explanation in the sense that, it seems that older people seem to be motivated to defend and uphold the *status quo*, even at the expense of their personal and collective interests and esteem (Jost & Thompson, 2000). However, it is important to further analyse the responses of older participants to fully understand the pattern of responses. Analysing in detail the responses of older participants, allows us to verify that devaluation of old age is not as higher as in younger participants. In fact, although older individuals agreed with the overall pattern of responses, they perceived old age category to begin at more advanced age and to have more social status and more positive stereotypes than younger participants did. According to Heckhausen and Lang (1996), these are not unexpected results and reflect the fact that these are not simply “cold cognitions” but that they are, in fact, charged with high self-involvement for older participants. In fact, these responses may resemble those of other members of devalued categories in the sense that they reflect a potential conflict between social-justifying needs and competing motives to enhance their own self-esteem and group status (Jost & Thompson, 2000).

Overall, this study allowed us to explore in more depth the content of age categories in our society. We believe it confirmed the prevalence of ageistic attitudes towards aging in our country showing that older people are perceived to be the lower status group by different age groups. Hence, it constitutes an important contribution to our understanding of this issue. However, although interesting, this study also presented some limitations. First of all, it only measured the representations of old age as a general category. According to Kite and collaborator (2005) this strategy may present some shortcomings in the sense that it neglects the role that “gender of the target” may have on these processes. According with these authors, asking someone to rate the overall “old age” category makes people only think of old men and disregard older women. Hence, it is important that studies regarding the content of aging stereotype control for this effect.

Moreover, this study also measured the stereotype content of age stereotypes in a very narrowed manner. The Stereotype Content Model (Fiske et al., 2002) is a useful tool if we

want to understand the social standing of groups in society. However, it does not offer a detailed description of the stereotypic content of a certain social category.

Finally, it is important to recognize that in this study we failed to measure one important dimension in the Stereotype Content Model and which is the perception of inter-group competition. According to Fiske and collaborators (2002) this dimension is an important determinant of the perception of warmth and should be considered when we analyse representations of social groups.

In the next study, we will try to overcome some of these limitations. We will give special emphasis to the consideration of “gender of the target” (Kite et al., 2005) and to collect a detailed representation of the young and old age stereotypes in our culture.

Study 2 – Stereotypical traits associated with younger and older people in Portugal

The goal of this study is to explore the content of the stereotypes of younger and older people in the Portuguese context. The priming procedure used by Levy (1996) in her studies can be described as a conceptual priming procedure (Bargh & Chartrand, 2000). This procedure assumes the activation of mental representations in one context (i.e., the stereotype of aging) so that it exerts a passive and unintentional influence in unrelated subsequent contexts (i.e., memory tasks). One of the aspects that certify the validity of this type of methodology is related with the type of material which is primed. To guarantee stereotype activation, we need to make sure that the traits that are being activated are, in fact, part of individuals' mental representations (Devine, 1989).

The majority of the studies regarding aging stereotypes' effects were conducted in North-America and use the American stereotypical traits of old age as primes (Brewer et al., 1981; Hummert, 1990; Kite, Deaux, & Miele, 1991; B. Levy, 1996; B. Levy & Langer, 1994; Schmidt & Boland, 1986). Hence, the adaptation of this type of paradigms in other countries must require a previous effort to collect the stereotypical traits associated with age groups in that cultural context (Kite & Wagner, 2002).

As we already referred, Portuguese studies regarding this issue are scarce and present some important limitations (Neto, 1992; Paúl, 2002; Simões, 1985). In this sense, the goal of the present study is to further explore the stereotypical content associated with the group of younger and older people. This way, we hope to contribute to improve our knowledge regarding this issue and create experimental material to use in future studies.

The study of aging stereotypes: methodological recommendations

According to Leyens, Yzerbyt e Schadron (1994), researchers must choose within the variety of methodologies used to measure stereotypes, the one which is in accordance with their chosen theoretical definition of stereotypes. Hence, it is important to consider the

methodological implications related with the theoretical perspective of the studies regarding ageing stereotypes.

The interest in the Social Psychology of Aging has been to measure the *cultural stereotypes* (B. Levy, 1996; Schmidt & Boland, 1986). These authors emphasize the fact that stereotypes are “social” in the sense that they are the collective definition of a social category, deeply shared within and between each category that is, diffused in a cultural background (Amâncio, 1994; Devine, 1989; Leyens et al., 1994; Tajfel, 1978).

In the study of stereotype’s contents, one of the methods used to measure cultural beliefs implies questioning the individual regarding what they think that in their society people think about a certain social group, regardless of their personal belief (Ashmore & Del Boca, 1981; Augoustinos & Ahrens, 1994; Devine, 1989; Hort, Fagot, & Leinbach, 1990; Krueger, 1996). One common methodology consists in asking individuals to rate a list of previous chosen traits according with their degree of stereotypicality and valence (Krueger, 1996). This list is composed by attributes which are associated in minor or major degree with a certain social group and may be created based on “free-response” methods or based in previous studies.

To interpret the results of this methodology, we need to evaluate not only the degree of association between each trait and the target-group (i.e., the degree in which each trait is considered stereotypic and which is evaluated by the mean response of participants), but also the degree of inter-individual consensus (i.e., the degree in which participants agree that each trait is stereotypic of the target category and which is evaluated by the measure of standard deviation). Moreover, we also need to measure the valence associated with each trait (i.e., the degree in which participants’ consider that each trait is positive or negative). This measure will allow us to know whether the stereotype of a certain category is predominantly positive or negative and control, for instance, the differentiated effect of activating each type of information (Levy, 1996).

In the specific case of aging stereotypes, there is one second methodological aspect that should be taken in consideration and which is related with the choice of the target –group subject to the evaluation and the specific group of respondents. In one recent meta-analysis, Kite and collaborators (2005) reviewed 232 studies regarding attitudes towards younger and older adults (and which include the studies about stereotypes which are present in PsychINFO) and conclude that there are two fundamental factors that need to be considered as important moderatos in the evaluation of age groups: “One is the double standard of aging – the hypothesis that older women are evaluated more negatively than older man (e.g., Sontag, 1979). Another is whether younger and older adults view aging trough the same lens”

(p. 5). Hence, according to Kite et al. (2005) it is fundamental that we take the target's gender in consideration when we conduct studies about aging stereotypes. In fact, there are some evidences suggesting that when we use general categories such as "older person" participants tend to consider only elderly men (Matlin, 2004). Hence, studies should control for this variable, asking individuals to evaluate both older men and women. On the other hand, respondents' age should also be taken in consideration. In fact, Kite et al. (2005) indicate that older people show significantly more positive explicit views regarding old age than younger people.

However, controlling for these factors should always be in accordance with each study specific goals. For instance, if we intend to use stereotypical traits in stereotype priming procedures with the goal of measuring the effects of aging stereotypes on both younger and older individuals (B. Levy, 1996), we need to make sure that these traits are valid for both age groups of respondents. Hence, they should represent idiosyncratic characteristics of the cultural stereotype of older people (including both older men and women) and which are shared by both younger and older individuals. One way to control for the effect of "target's gender" is to evaluate in a previous study which attributes are similar and different according to each gender of the old age group. Moreover, the adoption of a complete stereotypical factorial design (Krueger, 1996), in which younger and older respondents evaluate society's perceptions about the targets groups of younger and older people, would allow to analyze which perceptions are shared by these two age groups, as well as distinguish the specific stereotypical characteristics associated with the target group of younger and older people.

The research by Kite, Deaux e Miele (1991), is a good example of a study which controls for these two aspects. These authors asked a group of 100 college students (with a mean age of 22 years) and 100 older individuals (with a mean age of 70 years) to do a free association task regarding one of four targets: 35 year old men, 35 years old women, 65 years old men and 65 years old women. Afterwards, they asked participants to choose from a list of 35 attributes which were typical of the target group. In this research, Kite et al. used a between-subjects procedure in the sense that each individual only rated one of the four targets. Results revealed accordance regarding some attributes of 65 years old men and women: aged, health problems, generous. However, there were some attributes specific of the older men (e.g., stubborn, retired) and some specific of older women (e.g., active in the community, wrinkled). A similar pattern occurred in the case of the younger target groups. This study represents a good example which answers the methodological demands of current research regarding the content of aging stereotypes.

In sum, the advances in international studies regarding aging stereotypes allowed us to establish precise methodological guidelines which should influence research in this area. Hence, we took these suggestions under consideration in the realization of the present study.

The present study

Before we continue we should emphasize that this work has already been published elsewhere (Marques et al., 2006). Hence, here we present only part of the studies.

This study was conducted in two phases. In Phase 1 we asked participants to freely indicate the stereotypic traits associated with these age groups. The main goal was to explore which attributes were commonly referred by both younger and older participants, regarding each gender of the age groups under evaluation. Based on these results, we conducted Phase 2 of our study. In this phase we asked participants to rate the typicality and valence of a previous given list of traits. We believe that the use of this mixed methodology allowed us to maximize the advantages of each specific method while minimizing the costs of its individual utilization (Macrae, Stangor et al., 1994). Hence, the ‘free-response task’ (Phase 1) allowed us to collect the stereotypical attributes which are more central to the description of the four groups in Portugal. This method allowed us to measure inter-individual consensus for each attribute, measured by the percentage of participants that chose each trait. On the other hand, the evaluation of trait typicality and valence (Phase 2) allowed us to measure the association strength of each attribute, verify whether there were new attributes which were not spontaneously referred in the “free-response task”, and evaluate the valence of each specific trait. In Phase 2, we were also able to measure the degree of inter-individual consensus regarding each trait.

Below, we present in more detail each of these phases of research.

Phase 1

In this phase of the study, our goal was to collect the stereotypic characteristics of both younger women and men, and older women and men. We used a procedure based on Kite’s

et al (1991) proposal, introducing three innovations. First of all, instead of using age limits as categories (i.e., 35 and 65 years old), we used the categories “younger person” and “older person”. We think that these labels reflect better the way younger and older people are referred to in our country (INE, 2002). Second, we chose a within-subjects design, in which each participant freely associated the typical characteristics of each group. This is a theoretical option that follows the recommendations of Cinnirella (1998). According to this author, questionnaires that include stereotypicality measures both for the in-group and for the out-group (and not just for one of the groups) increase the effects of inter-group differentiation. In the present study, we thought it would be useful to maximize the differences between the two groups in this phase of free recollection of the stereotypic attributes. Therefore, we thought it would be possible to identify the attributes which are highly consensual between genders, even in a situation that facilitates differentiation.

Method

Participants

Participants were 67 younger individuals ($M(\text{age})=19$ years; $SD=0.7$) and 85 older individuals ($M(\text{age})=76$ years; $SD=0.6$). We considered individuals as “younger” when their were between 18 and 35 years of age and we considered individuals as “older” when they had more than 65 years of age (INE, 2002).

Younger participants were in majority females (74.6%), single (98.5%), students (84.8%), had at least 12 years of education (100%) and lived in urban neighbourhoods (89.9%). On the other hand, older participants were in majority females (54.5%), widows (46.4%) or married (45.2%), retired from work (95.2%), had at least 4 years of education (67.1%) and lived in urban neighbourhoods (97.6%).

Younger people were college students from the Instituto Superior de Arte e Design (IADE) that were invited to participate in the study. Older people were recruited in a leisure centre (Associação Comunitária para Reformados, Pensionistas e Idosos de Sacavém (ACRPIS)), specifically in the day care centre (41.2% of the total older participants) and house service support (29.4% of the total number of older participants). A percentage of older participants were contacted directly at their homes (29.4%).

Materials and Procedure

To obtain the attributes typically associated with younger men and women and older men and women we used a procedure based on Schmidt e Boland (1986). We presented participants with the following instructions:

We are interested in the characteristics that people in general use to describe members of different age groups. Please write everything that you think that is typically thought, heard, or read about the presented groups. Include every aspect that you think that is typically associated with these groups, regardless of whether these are positive or negative aspects or if you believe them to be true or not. Indicate as many characteristics as you find necessary to transmit the overall impression that people in general have of these groups. Remember, there are no right or wrong answers. We are interested in your opinion about what people generally think about these groups.

After this introductory text, we left some blank spaces in the response sheet so that participants could describe the typical attributes associated with each target group: younger women, younger men, older women, and older men.

In the case of younger participants, questionnaires were answered by themselves in a classroom of Instituto Superior de Arte de Design (IADE). In the case of older participants, due to their low educational level, questionnaires were filled during an interview. These interviews were conducted in two locations: i) in a room of the day care centre of ACRPIS; and ii) in participants' own residences. In all cases, the interviews were conducted individually and took place in quiet locations.

Results

Attributes typically associated with younger women, younger men, older women and older men.

We followed several steps in order to obtain the attributes typically associated by younger and older participants in a consensual manner to both younger men and younger women, on one hand, and to older men and older women, on the other hand. First, we needed to simplify the terms freely referred by participants, eliminating redundant terms. Hence, the stereotypical

attributes were codified both by the author of this dissertation and an independent judge. We got an agreement index of at least 85% in the coding of attributes for the four groups. Disagreements were resolved through open discussion. After this initial step, we analyzed the answers of younger and older participants regarding each target group. This analysis allowed us to identify the attributes that were simultaneously considered by both groups of participants as typical of the four target groups under analysis. In this first phase of the study, we chose not to present the results by group of participants since we consider that this is a complex analysis which can be done in a more complete manner in Phase 2 of the present study. In fact, it is important to note that the attributes that were generated in Phase 1 were presented as part of the list evaluated regarding stereotypicality and valence in Phase 2. As we will refer in more detail afterwards, results obtained in Phase 2 allowed us to understand not only which attributes are typically associated with each target group according to each group of participants (i.e., younger and older participants), but also the main similarities and differences in typicality and valence rating of those attributes.

In Annex 1 we present the first 15 attributes that were referred both by younger and older participants regarding each of the four target groups. Results indicated that participants tend to attribute the same traits to individuals of the same gender and age. Table 2 presents a summary of the attributes with higher frequency, highlighting the similarities and differences between the attributes referred for both genders of each age group.

Table 2. Attributes that younger and older participants consider as culturally associated with younger men and younger women and with older men and older women: similarities and differences.				
	Younger women	Younger men	Older women	Older men
Similar attributes		Beautiful Active Irresponsible Hardworking Fun Independent Take care of appearance		Ill Old Wise Miserable Physically unable Intellectually unable Lonely
Different attributes	Joyful Indiscreet Sexually active	Drinkers Disrespectful Immature	Take care of grandsons Sad Worry about their health	Like to play cards Kind Have white hair

Discussion

This first phase of the study allowed us to obtain some meaningful results regarding the content of aging stereotypes in Portugal. Results showed that participants perceive some traits as unique of a certain gender of an age group. However, there is also a significant percentage of attributes which are common between genders. These results replicate those obtained by Kite et al (1991) regarding American stereotypes and emphasize the importance of controlling the variable “gender of the target” in the study of aging stereotypes.

However, it is important to note that this study had some methodological shortcomings which we need to address in the future. Namely, we used a different method in the case of younger and older participants. In one case, participants answered themselves directly the questionnaire (younger participants) whereas in the other case they answered the questionnaire in the context of an interview (older participants). Although this fact was justified due to the differences in educational level between the samples, it should be avoided in future studies. In fact, there are differences between these two methods of data recollection. For instance, some evidences suggest that self-administered questionnaires, while being anonymous and confidential, foster more honesty in responses (Kerlinger & Lee, 2002).

Based on the results found in this phase of the study we advance to Phase 2.

Phase 2

In this phase, our goal is to further explore the content of cultural stereotypes of younger and older people. The specific goal is to find the attributes that both younger and older individuals consider typically associated with the group of older and younger people. Moreover, we are also interested in studying the valence of these attributes, that is, whether they are perceived in a more positive or negative manner. Hence, this study allows us to obtain the following measures: strength of association between the attributes and each age group, their valence and between-subjects consensus. In this phase, we will also explore differences and similarities between younger and older participants.

Method

Participants

Participants were 62 younger individuals ($M(\text{age})=21.6$ years; $SD=2.0$) and 62 older individuals ($M(\text{age})=70.4$ years; $SD=4.7$).

Younger participants were in majority females (64.5%), single (95.1%), students (90.3%), had at least 12 years of education (100%) and lived in urban neighbourhoods (91.9%). On the other hand, older participants were also in majority females (64.5%), but almost all married (66.1%), widows (82.2%) or single (45.2%), had at least 12 years of education (66.1%) and lived in urban neighbourhoods (96.7%). All demographic variables were maintained in Phase 1 and Phase 2 with the exception of educational level. In Phase 2 we tried to match the degree of education between younger and older participants. We thought this factor was determinant to guarantee that the questionnaire could be answered by participants themselves, without the need to conduct an interview.

Younger participants were college students from the Faculdade de Psicologia e Ciências da Educação da Universidade de Lisboa (FPCE-UL) and the Escola Superior de Educação de Setúbal (ESE de Setúbal) that were invited to participate in the study. Older people were recruited through personal contacts.

Materials and Procedure

A questionnaire was built that included some items regarding demographic variables and the typicality and valence of the attributes associated with each category. To evaluate the degree of typicality and valence of these attributes we used a procedure based on the one used by Brazão and Garcia-Marques (2004). In this task, we aimed to evaluate two aspects: i) the degree in which each attribute was associated with the group; and ii) the degree in which they were perceived as positive or negative. We built a list with 56 attributes which were evaluated regarding these two factors. This list contained the following set of attributes: 1) attributes collected in Phase 1, and which referred to traits consensually indicated by younger and older participants regarding both the male and female gender of the younger and older age group; 2) attributes referred in the most representative study regarding age stereotypes in our country Neto (1992); and 3) attributes of age stereotypes in the USA (B. Levy, 1996). Since one of the

goals of this work is that these stereotypic attributes can be used in priming procedures similar to what has been done in America, we thought that would be important to verify whether the content of the American and Portuguese stereotypes share common traits.

To evaluate typicality, the list of attributes was presented twice, one for each age group (younger and older) in a random order. Participants were asked to evaluate, in an 11 point scale, the degree in which they thought that people in the Portuguese society associated each characteristic to the groups of younger and older people (0=not at all associated until 10=completely associated). Afterwards, we asked participants to evaluate the valence of each attribute. Hence, we presented once again the same list of attributes and asked participants to evaluate in an 11 point scale the degree in which they thought that people in the Portuguese society considered each attribute as positive or negative to evaluate a person in general (0=Totally negative a 10=Totally positive).

Younger participants answered the questionnaire by themselves in a classroom of their universities (i.e., in FPCE-UL or in ESE). On the other hand, older participants answered the questionnaires also by themselves at their homes and returned the questionnaires to the researchers either personally or by mail.

Results

Typicality and valence of the attributes

We analyzed typicality and valence ratings for the younger and older age group for each group of participants. In Annex 1 we present the total list of attributes with the typicality and valence ratings. For each attribute we present the mean, confidence intervals at 95% (CI 95%) and the standard deviation.

To analyze the strength of association of each attribute with the age group we used a procedure based in Brazão e Garcia-Marques (2004). These authors proposed the following criteria: if the CI 95% for a certain attribute does not include the value 5 and the mean for the same attribute is above 5, we could state with a degree of 95% of confidence that the attribute is considered to be stereotypical by the specified population. The same criteria is used in the case of valence: Accordingly, in the case of valence: if the CI 95% for a certain attribute does not include the value 5 and the mean for the same attribute is above 5, we could state with a

degree of 95% of confidence that the attribute is considered to be positive by the specified population. If the mean for that attribute is below 5, we infer with a degree of 95% of confidence that the attribute is considered by the specified population to be negative.

To analyze between-participants consensus we used the standard deviation measure for each attribute. According to Krueger (1996), higher between-participants consensus is associated with lower standard deviations regarding a specific attribute.

Results showed a high percentage of attributes which were consensually shared both by younger and older participants as being typical of the target age groups (younger and older participants share in mean 78.5% of attributes). This list included several of the attributes referred in Phase 1 (63.3% of the attributes referred for the younger age group and 60% for the older age group); 90% of the attributes referred in previous studies conducted in the Portuguese context (Neto, 1992); and 37.5% of the attributes based on the American studies (B. Levy, 1996).

Regarding the analysis of valence, results showed that the majority of the attributes consensually referred by both groups of participants regarding the younger age group was evaluated in a positive manner (85.7%). This result contrasts with the ones found for the older age target group. In fact, results showed that less than half of the attributes consensually referred by both groups of participants regarding the older age group was considered to be positive (42,1%). Table 3 and Table 4 summarize the stereotypical attributes that were referred by both younger and older participants regarding the two age groups under analysis. Results presented in these tables were obtained using a two-stage procedure. First, based on the criteria proposed by Brazão & Garcia-Marques (2004), we selected the attributes that both younger and older participants considered to be typical of each age group. Secondly, we conducted a new analysis of the typicality and valence of these attributes considering the overall sample of participants (i.e., composed by the 62 younger and 62 older participants).

Table 3. Evaluation of attributes that both younger and older participants consider to be associated with the younger age group (by decreasing values of typicality).				
Stereotypical attributes of the younger age group	Typicality		Valence	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Take care of appearance	8.073	1.970	7.336	1.772
Healthy	7.718	2.210	8.467	1.892

Adventurous	7.629	2.090	6.008	2.192
Active	7.528	1.880	7.908	1.751
Quick	7.516	1.790	6.983	1.836
Beautiful	7.431	2.080	7.700	2.236
Fun	7.306	1.590	7.898	1.702
Sociable	7.303	1.520	7.739	1.69
Smokers	7.049	2.130	2.832	2.282
Outgoing	6.951	1.640	6.420	1.857
Hasty	6.846	2.150	3.150	1.836
Creative	6.782	1.820	7.593	1.77
Willingness to improve	6.347	1.950	7.748	1.791
Educated	6.089	2.020	8.025	1.881

Table 4. Evaluation of attributes that both younger and older participants consider to be associated with older people (by decreasing values of typicality).

Stereotypical attributes of the older age group	Typicality		Valence	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Grandparents	8.593	1.683	6.412	2.576
Retired	8.435	2.278	4.342	2.140
Experienced	8.129	1.706	7.925	1.764
Mature	8.008	1.474	7.700	1.886
Conservative	7.983	1.609	4.600	2.290
Counsellors	7.787	1.801	7.025	2.019
Wise	7.382	1.753	7.629	2.062
Old	7.361	2.641	3.479	2.396
Lonely	7.260	2.265	2.898	2.239
Forgetful	7.153	2.231	2.692	1.860
Dependent	6.774	2.226	3.109	2.166
Superstitious	6.760	2.236	3.661	2.109
Decline	6.758	2.427	2.083	1.977

Ill	6.740	2.339	2.395	2.187
Slow	6.675	2.152	2.992	1.641
Grumpy	6.411	2.267	2.525	1.856
Calm	6.179	2.012	7.058	1.929
Sociable	6.124	1.926	7.739	1.690
Sage	6.000	2.066	7.017	2.008
Intuitive	5.807	2.387	6.407	2.047

Discussion

The goal of this study was to evaluate the typicality and valence of the attributes associated with younger and old age categories, controlling for the age group of participants. Results revealed that: 1) there is a significant percentage of traits that are shared between younger and older people regarding the two age groups under analysis; 2) these traits are systematically evaluated both in national (Neto, 1992) and international (Levy, 1996) studies as stereotypical of younger and older categories; and 3) the stereotypic content culturally associated with the younger age group is more positive than the stereotypic content associated with the older age group.

Theoretically, it is important to note that, although we found some differences in the way younger and older participants evaluate the stereotypic content associated with age categories, there was high degree of similarity in the attributes referred by the two groups of participants. To understand this result we need to consider two factors. First, we need to consider that cultural stereotypes are social representations, social construed in a society, diffused in a culture and, hence, known by the members of different age groups. (Amâncio, 1994; Hogg & Abrams, 1988; Vala, 1997). Secondly, we need to acknowledge that when we are measuring what “the participant thinks that people in society thinks about a social group” we are increasing the salience of a higher level of self-categorization – the cultural level - which might diminish differences between the perceptions of member of the two age groups, turning their views about groups more homogenous (Spears, Oakes, Ellemers, & Haslam, 1997).

General discussion

This study allowed us to collect the perceptions of both younger and older individuals about the stereotypic attributes of the younger and older age group in the Portuguese society. We think that these results represent a meaningful contribution regarding this topic and provide useful material to be used in future studies. First of all, this study allowed to discriminate between the stereotypic attributes associated with the two genders of each age group. Secondly, they considered, for the first time, the perceptions of older people in our national context. Finally, it allowed us to obtain a vast list of attributes which have been evaluated regarding several dimensions (i.e., stereotypicality, valence and consensus) and which are fundamental to select materials to use in future studies such as those using sub or supraliminal priming procedures (e.g., Levy, 1996) or studies measuring stereotype's accessibility (e.g., Perdue & Gurtman, 1990).

However, this study also had some limitations. For instance, having in consideration that our goal was to describe the cultural stereotypes of younger and older age groups (i.e., what is shared in the Portuguese culture about these groups) it is very limited to ask just a particular sample of younger and older individuals. In reality, these results only reflect what younger and older people in our sample think about society's perceptions about younger and older people. Regarding this issue, some authors suggest that a complete study of cultural stereotypes should include several different facets. To achieve this goal one would need, for instance, a representative inquiry of the Portuguese population controlling for several variables (i.e., race, gender, age). Moreover, it would also be suitable to use different methodologies such as press analysis and observational methods (Breakwell & Canter, 1993). Hence, given the limited scope of the present study, we recommend the validation of these attributes in the specific populations to use in future studies.

Study 3 – The effects of subtle activation of aging stereotypes on older adults' will-to-live: A cross cultural replication

The goal of this study is to replicate Levy, Ashman and Dror (1999-2000) study in the Portuguese context. This research showed that only older individuals, but not younger ones, primed subliminally with positive stereotypical traits of old age had higher will-to-live scores than those older individuals primed with negative traits.

Will-to-live is the psychological expression of the basic instinct to continue one's existence. This reflects the desire and commitment to life and is an important indicator of well-being and survival among older individuals (Carmel, 2001). According to several studies this *will-to-live* has a motivational component and can be affected by several kinds of beliefs. For example, it is much more likely that elderly people die after an important religious celebration (e.g., Passover for Jewish individuals and Harvest Moon Festival for Chinese American) than before it (Phillips & King, 1988; Phillips & Smith, 1990). In their study, Levy, Ashman and Dror (1999-2000) operationalized will-to-live as the acceptance of a medical treatment in a terminal illness condition and found that it was affected by the subtle activation of aging stereotypes. We wish to find a similar pattern of results using the Portuguese traits of aging stereotype.

Method

Participants

This study included 115 participants: 54 older adults ($M_{age}= 71.1$ years, $SD=5.9$) and 61 younger adults ($M_{age}=20.1$ years; $SD=3.3$). Within the older adults group, 35.9% were female and 64.1% were male. Within the younger adults group, 61.8% were female and 38.2% were male. As we can see in more detail below, 10 individuals of each age group were included in a condition to evaluate perception-without-awareness. So, in the test conditions, the actual number of participants was 44 older adults and 51 younger adults. Participants in the perception-without-awareness and test conditions did not differ regarding the whole sample's demographic characteristics.

Younger adults participated in this study as part of a Research Methods course in the 1st year of a Psychology degree, and received credits for it. Older adults were recruited by word-of-mouth by these students and agreed to participate voluntarily in the study. The majority of older adults were living independently in the community with their families (55.7%) or by themselves (37.7%).

The two criteria for inclusion in the study were being native Portuguese speakers, ability to read and write Portuguese, and inability to consciously recognize any of the words that were flashed on the computer screen during the priming task.

The older and younger participants differed in gender, $\chi^2(1)=4.15$, $p<0.05$ and years of education, $t(112)=5.40$; $p<0,00$. Older participants were mostly men and had significantly less years of education ($M=8.50$; $SD=4.91$) than younger participants ($M=12.00$; $SD=0.00$). None of these variables significantly correlated with will-to-live scores.

Apparatus and Materials

Development of the implicit stereotyping paradigm. This paradigm was similar to the one used in Levy et al.'s studies (1996; 1999-2000). The priming words were selected based on the results of a previous study conducted to assess the content of old age stereotype (Marques, Lima & Novo, 2006). The 12 selected positive words were wise, sage, accomplished, advice, insightful, astute, calm, mature, experienced, grandparent, sociable, and fun. In fact, the first six words were the same used in Levy et al.'s (1999-2000) study. The selected 12 negative words were decline, dependent, forgetful, confused, ill, superstitious, lonely, slow, grumpy, miserable, boring and unable. In this case, the first five words were used in Levy et al.'s study (1999-2000). The positive and negative words match in degree of stereotypicality, mean length (mean of eight letters per word) and mean level of frequency in Portuguese language (Nascimento, Casteleiro, Marques, Barreto & Amaro, 1995).

The computer priming method was developed on E-Prime software Version 1.1. Participants were told to identify whether a flash occurred above or below a bulls' eye. They were told to press the corresponding computer key that either displayed an up arrow or a down arrow as soon as they noticed the flash. The stimuli could randomly appear on the computer screen on two halves of the screen: either 1 cm above or below the bulls' eye.

All participants completed 20 practice trials where the practice stimuli appeared progressively faster on the screen. The practice stimuli appeared at speeds that allowed awareness so that participants understood the task better (B. Levy, 1996; B. Levy et al., 1999-

2000). The first five practice trials flashed for 250 ms, the next five flashed for 200 ms, the next five flashed for 150 ms, and the last flashed for 100 ms. To avoid participants expecting to see words in the test trials, the practice trials consisted of meaningless strings of letters.

Selection of proper speed for test trials that allowed perception-without awareness was done according to speed levels described by Levy (1999-2000), adapted to the properties of our computer and aimed that participants could see a flash without recognizing actual words (i.e., could perceive without awareness). Individual adjustments were the following: 45.5% performed the task at 50 ms, 39.5% performed the task at 83 ms, 8.1% performed the task at 100 ms, and finally 11.4% performed the task at 133 ms.

After performing the task, the experimenter asked all participants to describe what they saw and if they have recognized any of the words. All older participants included in the analysis of test condition reported that they could only see flashes and blurs.

In the case of young individuals, we used the speed of 33 ms. Previous pre-tests have revealed that this speed allowed young individuals to see the flash without recognizing the actual words. All young participants included in the analysis of test conditions later reported they had only seen flashes and blurs.

The words were flashed in black on a white background. To increase the possibility of perception without awareness, a patterned mask thoroughly covers over the afterimages of the primes. The masks remained until participants pressed a key. The interstimuli intervals lasted 2-7 s.

The two priming conditions consisted of five blocks, each containing 20 words. Each block began with one of two category words: either old or senior. After the category word, the next 19 words (including the other category word) were randomly presented by the computer. Word location was counterbalanced: if a word appeared above the bulls' eye in one block, it would appear below it in the next block.

Following the ratios proposed by Levy et al. (1996; 1999-2000), 80.0% of the words were stereotype-related words, and 20.0% were neutral or non stereotype-related words. The neutral words consisted of high-frequency words matched in length to the stereotype-related words (Nascimento et al., 1995). The same neutral words were presented in the positive and negative condition. Those words were: also, number, some, and different.

To increase priming power (Devine, 1989; Levy et al., 1996, 1999-2000), two words were repeated within blocks. In the positive condition, the words were wise and experienced. In the negative condition, the words were miserable and unable. In sum, each block consisted of 2 category words plus 14 different stereotype-related words plus 4 neutral words.

Perception-without-awareness control conditions. Ten old and ten young participants individually participated in the guess and in the recognition tasks. In the guess condition, participants were asked to keep their gaze on the bulls' eye in the centre of the screen and repeat out loud each of 100 words that flashed on the screen. Participants were encouraged to use a low-guessing criteria, with indication that word free association after the flashing was better than not guessing at all. Half of the young and old participants were exposed to the positive condition and the other half to the negative condition. After the guess condition, there was a recognition task. Each participant was given a paper with a 34-word list that included the two category words, the 12 stereotype and 4 neutral words which they had been exposed to. The control words included the 12 stereotype priming words from the other priming condition and 4 additional control words. Participants were asked to check the words that they thought might have appeared on the computer or that felt familiar in any way.

Will-to-live. Will-to-live was measured with an adaptation of Levy et al.'s (1999-2000) questionnaire. Participants were asked if they would accept medical treatment (1=refusal to 7=acceptance) if they were to die with terminal illness. They were instructed to think of a hypothetical situation where the treatment was very expensive and required most all of their own savings and a considerable portion of his/her family's savings. Then they had to answer three items considering that they would have different chances of recovering after the treatment: 25%, 50% or 75%. This three-item scale revealed good psychometric properties (Chronbach alpha = 0.89) and was used in subsequent analyses. A summary score was calculated by averaging scores across the three items.

Procedure

All participants were individually tested in a quiet room of the psychology laboratory. Participants first answered some background questions. Next, they were informed by the experimenter that they were to participate in two separate and unrelated studies: the first study's main objective was to measure visual perception and memory, whereas the second study was to be a validation of a translation of an English questionnaire.

In the first study participants performed the computer priming task (half in the positive condition and half in the negative condition). In the 'second study' older participants filled in a questionnaire including the will-to-live measure.

At the end of each session, all participants answered a pos-experimental questionnaire regarding what they thought these studies were about and whether they had recognized

anything in the computer screen in the first study. Finally, the experimenter debriefed participants, and asked them to sign a consent statement regarding their participation in the study.

Results

Validity of the implicit stereotyping paradigm

Perception-without-awareness checks

As in Levy (1996) both older and younger participants had hit rates for the guess condition significantly below the chance level. As expected, recognition hit rates were higher than in the guess condition. Nevertheless, they were also below chance levels for both older and younger participants (see Table 5).

Table 5. Hit rates for the guess and the recognition task for older and younger participants.

Participants	Guess task			Recognition task		
	Overall ^a	Stereotypical ^b	Neutral ^c	Overall ^d	Stereotypical ^e	Neutral ^f
Older	15.2%	16.0%	13.3%	42.7%	35.7%	55.0%
Younger	5.2%	4.7%	5.3%	22.7%	22.1%	25.0%

^a total number of words as denominator. ^b total number of stereotypical words as denominator. ^c total number of neutral words as denominator.

The relatively high guess and recognition hit rates in the case of older participants was obtained mainly due to two participants. It is probable that if they had participated in the priming intervention study they would have been excluded from the sample because they would state that they could recognize the words being flashed.

Following Levy’s (1996) procedure, we concluded that the combined results from the guess and recognition task suggested that participants were not aware of the prime content and that the priming paradigm successfully allowed perception-without-awareness.

It is also important to note that none of the participants revealed any understanding of the relationship between the computer task and the answer to the questionnaire. Hence, we think it is safe to say that, in this study, participants were unaware of the stimulus that was presented and the possible effects of these stereotypical stimulus and their answers.

Accuracy and reaction times measures

We analysed the measures of reaction times and accuracy for the positive and negative stereotypical traits. We conducted two 2 (positive vs negative prime) x 2 (older vs. younger participants) factorial ANOVAs with Reaction time and Accuracy as dependent variables. We found that younger participants were significantly faster to answer the computer task than older participants, $F(1, 104)=92.05, p<.001, \eta_p^2= .47$. However, results indicated that younger adults were also significantly less accurate than older participants $F(1, 104)=3.17, p<.08, \eta_p^2= .03$ (albeit at a marginal level of significance). We did not find any significant effects of stereotypical valence.

Effect of stereotype priming on will-to-live of older and younger participants

In order to analyse the effects of stereotype priming on will-to-love we conducted a 2 (positive vs.negative prime) x 2 (older vs. younger participants) factorial ANOVA. We found a significant main effect of priming, $F(1, 91) = 6.44, p<.01, \eta_p^2= .07$, and the expected interaction between prime and age group, albeit at a marginal level of significance, $F(1, 91) = 3.13, p<.08, \eta_p^2= .03$. Planned comparisons revealed that, as expected, priming had significant effects on older participants, with individuals in the positive condition showing higher will-to-live scores than those in the negative condition, $F(1, 91) = 8.62, p<.001, \eta_p^2= .09$. Also, as expected, there were no significant effects of priming on younger participants scores, $|F| < 1$ (see Table 6).

Participants	Prime			
	Positive		Negative	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Older	6.2 _a	1.2	4.8 _a	2.2
Younger	5.6	1.5	5.4	1.4

Note: Means in a row sharing the same subscripts are significantly different. Higher means indicate higher will-to-live scores.

Discussion

This study replicated, for the first time, the result of Levy *et al* (1999-2000) in another cultural background. As expected, we showed that older Portuguese individuals were influenced by subliminally activated stereotypes of aging, showing higher will-to-live when they were primed with positive traits than when they were primed with negative traits. Besides, these results favour the interpretation that *self-relevance* plays an important role in this process, due to the fact that, as in the study of Levy *et al* (1999-2000), we did not find effects on younger participants responses, for whom the stereotypes were not self-relevant.

We believe that these results validate the robustness of the effect of implicit aging stereotypes, showing that this seems to be a widespread phenomenon that is not dependent of specific cultural contents. Hence, we think is safe to use a similar procedure in the following studies in this dissertation.

Main conclusions of Studies 1, 2 and 3

This set of studies allowed us to enhance our knowledge regarding the content of the aging stereotype in our culture. This was a very important first step to inform the experimental research conducted in the following studies. Overall, these studies reveal striking similarities between aging stereotypes in Portugal and the USA (where most of the studies regarding the content of aging stereotypes were conducted). Hence, these studies reveal that younger and older individuals share a similar vision of old age (although older people perceive this category in a slightly more positive manner). According with our participants, after the mid sixties, people start to be considered as old. This seems to be a negative state in the sense that old age is perceived as the lowest status category in the Portuguese society. However, and similarly to what has happened in other cultural backgrounds (Schmidt & Boland, 1986), old age is perceived to be a highly variable category including mixed positive and negative attributes which may affect individuals in a different manner. In fact, in replication of the North-American study conducted by Levy, Ashman and Dror (1999-2000) we found that older people primed with more positive traits of the Portuguese aging stereotype showed

significantly higher will-to-live than those primed with negative traits of the Portuguese aging stereotype. We believe that this is an important result and gives firm support to our intention to extend the study of these effects in other domains. Next, we describe Studies 4, 5 and 6 of this dissertation.

The effects of aging stereotypes on comparative optimism regarding illness

Studies 4, 5 and 6

The main goal of this section of studies is to explore the effects that aging stereotypes have on older people's health perceptions. In this context we will give special emphasis to one type of health perception which is the risk perception regarding aging illnesses and, particularly, to a phenomenon named *comparative optimism*. However, before we present the specific objectives of the studies we need to introduce some background perspective regarding our main dependent variable. Hence, after a brief description of the nature of the comparative optimism phenomenon, we present our approach to this topic (i.e.; the psychosocial perspective and the role of stereotypes) and only afterwards we introduce the specific goals of Studies 4, 5, and 6.

Risk perception of illness: the use of comparative optimism strategies

First of all, one needs to ask: why is risk perception of aging illnesses important? There is no doubt that health risks are a threat to active aging. In fact, according to the World Health Organization (WHO, 2002) "as individuals age, noncommunicable diseases (NCDs) [heart diseases, cancer...] become the leading causes of morbidity, disability and mortality in all regions of the world...NCDs, which are essentially diseases of later life, are costly to individuals, families and the public purse" (p.14). Hence, in an aging society, understanding health risks in advanced ages is no doubly a primary concern which needs to be dealt with having in consideration its multiple determinants, considering not only the biologic component, but also the psychological and social ones (WHO, 2002).

One important thing about risks, and risks of illnesses is no exception, is that it does not matter only what the *objective* risk is. In fact, models studying the adoption of health behaviours always consider that the way individuals *perceive*²³ this risk is also be an important determinant of their conduct (Janz & Becker, 1984; Lima, 2005; Schwarzer, 1999; Weinstein & Sandman, 1992). Hence, although there are some contradictory evidences regarding the relationship between risk perception and behaviour, there is currently some consensus in the health psychology literature indicating that risk perception has a very important role at least in the initiation of health behaviour (Lima, 2005).

The relationship between risk perception and behaviour seems to be, however, influenced by several factors. One that is been consistently studied in the literature is the *comparative*

²³ We can define risk perception as "the way as non-specialists (usually referred as lay people) think about risks, and refers to the subjective evaluation of the potential threatening degree of a certain event or activity" (Lima, 2005, p.2).

optimism phenomenon. Comparative optimism refers to the tendency to perceive one's future more positive than for others (Weinstein, 1980). In fact, there are several evidences showing that when asked to compare their risk to the "average" person or comparable others (e.g., in terms of age, gender, and educational background), individuals tend to estimate their risk of experiencing a negative event as below average (Harris, Griffin, & Murray, 2008; van der Pligt, 1996)²⁴. This effect is widespread and has been shown regarding a vast variety of subjects such as car accidents (McKenna, 1993), crimes (Perloff & Fetzer, 1986), and terrorism (Lima et al., 2007). This optimism has also been shown regarding a variety of illnesses such as hypertension, heart attack, cancer, AIDS, among others (Bernardes, 2002; Harris & Middleton, 1994; Lima, 2003; Perloff & Fetzer, 1986; Van der Velde, Hooykaas, & Van der Pligt, 1991; Weinstein, 1980)²⁵.

The use of comparative optimism strategies has been pointed sometimes as a barrier against the adoption and maintenance of preventive behaviours. In fact, it seems that if health risks apply more to others than to oneself, there is no reason to take appropriate health behaviours (van der Pligt, 1996). These possible consequences of comparative optimism generated a vast body of research trying to uncover the possible causes of this strategy and its consequences for behaviours.

Most researchers defend that comparative optimism is a multidetermined phenomenon, caused by motivational, affective and cognitive factors (Armor & Taylor, 1998; Bernardes, 2002; Van der Pligt, 1995). From the motivational point of view, one can think that comparative optimism is determined by the goals or end-states that people desire. The basic idea is that people use these kinds of strategies because it allows them to maintain adequate levels of well-being and satisfaction with life (Taylor & Brown, 1988). According to the Theory of Cognitive Adaptation (Taylor, 1983, 1989), comparative optimism may be seen as a "positive illusion" used in a regular basis by normal individuals in order to keep adequate

²⁴ Comparative optimism has also been named unrealistic optimism. This has caused some discussion regarding the actual status of this "unrealism". One of the most hear criticism is that maybe for the individual in question, it's nor unreal that he has lower risk of having a certain illness, for instance. Maybe he is "truly" less subject to the influence of possible risk factors than the average individual. However, this does not deny the prevalence of this phenomenon. In fact, at an individual level this optimism may be realistic or unrealistic. However, if a group of people collectively sees their relative risk as more favorable than of comparable others, the phenomenon is described as unrealistic optimism or optimistic bias (Weinstein, 1980) as everyone cannot be at a less-than-average risk.

²⁵ Across time researchers have discussed the conceptual definition of this *comparative optimism*. One fundamental idea is the following: comparative optimism is a situated social comparison strategy reflecting "specific beliefs about whether positive and negative outcomes are more likely to occur for oneself than for other people" (Shepperd, Carroll, Grace, & Terry, 2002, p. 2). Hence, it distinguishes from other forms of optimism such as *dispositional optimism*, which refers to dispositional general beliefs that one's outcomes will be positive rather than negative (Scheier & Carver, 1985).

levels of mental health. In fact, there are evidences showing that the use of these strategies is positively correlated with the overall level of satisfaction with life, sociability, and working capacity, and that only ill-adjusted and depressed individuals do not use these strategies (see Taylor & Brown, 1988 for a review).

Related with this idea, some authors have emphasized that comparative optimism results from a basic need of self-enhancement (Shepperd et al., 2002). Considerable evidences suggest that how people feel about themselves is governed in part by how they compare to others. Hence, self-worth is determined in terms of one's standing on important dimensions relative to other individuals or groups, and there are evidences showing that people derive considerable satisfaction from favourable social comparisons (Alicke, 1985; Festinger, 1954; Klein, 1997; Weinstein, 1982).

Some authors have sought to explore more cognitive causes of comparative optimism. For instance, Kahneman and Tversky (Kahneman & Tversky, 1972; Tversky & Kahneman, 1973) showed that individuals use heuristics when they think about risk issues, which results in systematic judgments bias. One of the most studied is the *representativeness heuristic* (Kahneman & Tversky, 1972). This involves a decision shortcut in which estimates of likelihood are based on how similar an event or entity is to a person's prototype for that event or entity. The more the traits of a person correspond to people's prototype of a particular category, the more people will assume the person is a member of that category. This is a very useful and powerful shortcut which people seem to use over statistical or base-rate information when they are making judgments. The use of this heuristic may explain comparative optimism effects (Shepperd et al., 2002). Judgments of personal risk and average risk begin with the definition of the average target. The vague nature of this "average" target leaves space for people to create an inappropriate comparison target which assumes the form of a stereotyped exemplar or general prototype of the risk category. This is not the statistical average target; instead the prototype assumes the form of a "high" risk target. Then, when people compare their personal risk with this "high risk" prototype they perceive lower risk for themselves. For example, when people rate the likelihood that the average person will experience a car accident people do not think of the typical driver, but instead of a reckless driver with all its associated attributes (i.e., drives too fast, runs red lights). When asked to evaluate their risk, people compare themselves to the reckless driver attributes. To the extend they find themselves as dissimilar they rate their risk as lower than average.

Other cognitive explanations for comparative optimism are, for instance, the *availability heuristic* (Tversky & Kahneman, 1973) and the *singular-target focus* (Klar & Giladi, 1997,

1999) (for a review see Shepperd et al., 2002). However, it is important to note that looking at comparative optimism just from the cognitive or motivational perspectives alone gives a limited vision of the phenomenon. In a recent paper, Shepperd and collaborators (2002) pointed out that comparative optimism is most likely caused by an interplay of both cognitive and motivational processes. Thus, according to these authors “like other biases, comparative optimism reflects a warm, cognitive-motivational phenomenon, with motivational factors perhaps supplying the desired end-state or goal, and cognitive factors supplying the means of achieving the goal” (p.3).

After analyzing the causes of comparative optimism, one important aspect that we think needs to be taken in consideration is the automatic/controlled nature of this strategy. Although this is a relatively neglected topic of the comparative optimism research, some authors explicitly suggest that this strategy is used in an automatic manner, without participant’s intention and control and in a relatively effortless manner (Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Shepperd et al., 2002). However, this topic is still in need of further clarification.

Now we turn to the next step in this brief literature review and that is to analyze the consequences of use of comparative optimism strategies. Besides from the influence that the use of comparative optimism strategies has on our overall level of well-being and life satisfaction (Taylor & Brown, 1988), this strategy also seems to influence behaviours. However, the pattern is not very clear and still needs further understanding (Bernardes, Lima, & Paulino, 2005). In fact, some evidences suggest that the use of these strategies leads to less adoption of adequate health behaviours. For instance, there are some evidences showing that people who perceive themselves as less vulnerable to risks have lower probability of using contraceptives methods (Burger & Burns, 1988), of taking adequate protection regarding sex behaviours (Sheer & Cline, 1994) and of using seatbelts (McKenna, Stainer, & Lewis, 1991). However, other studies show the opposite pattern in the sense that comparative optimism seems to promote preventive efforts. For instance, Taylor and collaborators (Taylor et al., 1992) showed that comparative optimism was associated with higher preventive behaviours among HIV patients. Either way, despite the specific direction of the effect that comparative optimism has on behaviours, it seems like an important determinant to consider in these processes and should be further investigated.

Finally, we would like to add that researchers have identified several important moderators of comparative optimism strategies (Helweg-Larsen & Shepperd, 2001). In this sense, for instance studies have shown that affective states, such as mood and anxiety seem to influence

the degree of comparative optimism. In this sense, some studies have shown that individuals in negative mood conditions (Abele & Hermer, 1993; Henriques & Lima, 2003; Salovey & Birnbaum, 1989) and with high anxiety (G. Butler & Mathews, 1987; Dewberry & Richardson, 1990) show lower levels of comparative optimism (and this affects particularly personal risk estimates). Other variables that have a significant influence on comparative optimism are perceived control and personal experience with the risk events. In fact, some studies have shown that people show high comparative optimism for events that are perceived as more controllable (Harris, 1996) and with which people have less previous experience (Weinstein, 1980). Finally, a third type of moderators refers to the type of comparison target. In this sense, some studies have shown that people display higher comparative optimism when they are comparing with abstract targets than with closer targets such as personal friends and family (Alicke et al., 1995). In this dissertation we will consider the effects of some of these moderators. We will turn to this issue below when we present the studies. However, before we continue we need to introduce our perspective on comparative optimism and what we think is the role that stereotypes might have in this process.

Psychosocial perspective of comparative optimism: the role of stereotypes

Traditionally, most studies of comparative optimism adopt an individually-based perspective. As we have seen, researchers have uncovered an array of motivational and cognitive factors that explain why individuals use this strategy and its possible consequences for well-being and behaviours. Although these are valuable contributions to understand this phenomenon, we believe that seeing comparative optimism just from an individually-based perspective is still a limited vision. The work by Lima (1997; 2003; 2005) has been influential in defence of a more social perspective of risk perception. According to this author, risk perception is “a type of social constructed thought, that only makes sense in the social context of the individual making risk estimates” (Lima, 2003, p. 228). In fact, when we ask individuals to think about risks we are asking for a difficult task: we are asking people to think in probabilistic terms, about a crucial subject for their well-being and where, most of the times, there is contradictory information available. According to Lima (2005) these are exactly the type of situations where people need to validate their thoughts with others. People do not live in isolation. We live in a society and we belong to certain groups and hence it is inevitable that these factors influence the way we think about risk. In defence of this claim, several authors within the social sciences have developed specific explanations of how these

cultural and institutional forces may influence risk thinking in our contemporary societies (Beck, 1992; Douglas, 1984; Giddens, 1991/1994, 1999).

Assuming a clear psychological point of view, Lima's defends a *psychosocial perspective on risk perception* (Joffe, 1999; 2003; 2005). In this perspective, attention goes not only to the individual factors (Kahneman & Tversky, 1972; Taylor & Brown, 1988) nor only to the macro social aspects (Beck, 1992; Douglas, 1984; Giddens, 1991/1994, 1999) *per se*. Instead, the psychosocial perspective is especially interested in linking these two levels of explanation. In the words of Joffe (1999), the psychosocial perspective on risk "explains the subjective experience of risk, connecting this experience with the broader social factors. It demonstrates how social forces become sedimented in inner experiences, how the 'we' becomes contained within the 'I'" (p. 1).

Lima and collaborators have developed several studies exploring the psychosocial determinants of risk perception. In this context, special attention has been given to the way group and inter-group factors influence the way individuals think about risk (see Lima, 2003 for a review). For instance, one fundamental variable that has been explored in these studies is the role of individual's *social identities*. Consistent with this idea, Lima (1994; 1997) developed several studies showing a significant negative correlation between identification with the place of residence and risk perception regarding earthquakes: the higher the identification with the city (e.g., Lisbon) the lowest is risk perception regarding the occurrence of an earthquake. It seems that, in this case, identification with the city is serving as a "protective" mechanism against threats (however, other studies have shown that this is not the only possible relationship between identification and risk perception).

This psychosocial perspective also makes sense when we think about the comparative optimism phenomenon. In fact, some studies have shown that the use of this strategy is also influenced by psychosocial variables such as, for instance, inter-group contexts. In one influential study, Harris, Middleton and Joiner (2000) asked students to rate their personal risk and then the risk of two targets: the typical student from their university (an in-group target) and the typical student from another similar university (an out-group target). Some participants evaluated the in-group target before the out-group target, whereas other participants evaluated the out-group target before the in-group target. Results showed that comparative optimism regarding the in-group target (the average student of their university) was higher when the in-group target was judged first. According to Harris, Middleton and Joiner (2000), these results are expected according to self-categorization theory (Turner et al., 1987): rating the out-group first would prompt a perception (through a contrast effect) of less

interpersonal distance between the self and the in-group target when participants subsequently rated the in-group target.

In this dissertation we assume this psychosocial perspective on risk perception and we are particularly interested in exploring one specific theme: how do group stereotypes affect the use of comparative optimism strategies among older people?

Within the comparative optimism literature, researchers have thought about the importance of stereotypes in the way individuals construe the comparison target. In his seminal paper, Weinstein (1980) introduced the idea that *stereotype salience* was an important moderator of comparative optimism effects. According to this author, “as long as a stereotype exists of a particular type of person to whom a negative event is likely to happen, people will tend to believe that their own chances are less than average” (Weinstein, 1980, p.808). To test this prediction, Weinstein (1980) asked participants to rate the probability that a list of events would happen to them personally, in comparison with the typical student from their university (he used a direct measure of comparative optimism). Moreover, to measure stereotype salience, he also asked participants to rate all the events according to *salience of high chance group*, that is, the probability that there is a particular type of person to whom the event is likely to happen. According to predictions, results showed that, there was a positive correlation between comparative optimism and higher *stereotype salience*. Recently, Harris, Griffin and Murray (2008) re-tested these prediction and in accordance with Weinstein (1980) initial results, they found that higher stereotype salience was significantly associated with higher comparative optimism scores.

However, in this dissertation we are interested in exploring the role of group stereotypes from a different perspective than has been traditionally done in comparative optimism literature. Our main goal is, following the stereotype priming approach, to explore how the activation of stereotypes may influence the use of comparative optimism strategies regarding risk of illness. Specifically, we aim to follow Levy’s studies (1996; 2003) and test, in an experimental setting, the effects that the activation of different contents of the aging stereotype (more negative or more positive) may have on the use of these strategies by older people. As far as we know, this is the first time such a study is conducted. In fact, we did not find in the literature any studies who explore how the activation of stereotypes (of any group) affects the use of social comparison strategies, and particularly the use of comparative optimism strategies. In this dissertation, we are particularly concerned with aging stereotypes and older people. However, we think these studies represent a contribution to the health

psychology and the stereotype priming literature in general. Below we will elaborate a bit further in our specific goals for these studies.

The present studies: The effects of aging stereotypes on comparative optimism regarding illness

There are several evidences in the literature showing that, similarly to people from other age groups, older people also use social comparison strategies in a systematic manner (e.g., regarding several factors such as physical health, physical appearance, problem solving skills, and quality of family relationships) and that this is strong predictor of their mental health and well-being (Heidrich & Ryff, 1993a; Heidrich & Ryff, 1993b; Kwan, Love, Ryff, & Essex, 2003). In fact, some authors (Bailis et al., 2005) suggest that the use of these strategies represents a form of secondary control over threats inherent to aging and found empirical evidences that it determines crucial outcomes such as lower odds of hospitalization and death over the near future.

According to Schulz e Heckhausen (1996), aging involves several situations that may represent a threat to balanced functioning. Individuals may deal with these threats in two ways: i) primary control strategies: involve acting in the context, through direct actions to change the conditions that cause lack of control; or ii) secondary control strategies: involves changes in the *self*, by using mental strategies through which individuals try to adjust to the new life conditions. According to Schulz and Heckhausen (1996), as individuals age, opportunities to use primary control strategies diminish and are restricted to some fundamental contexts. Hence, secondary control strategies, such as positive social comparison strategies – like comparative optimism strategies - are essential to guarantee successful aging.

One relevant threat to older people's well-being is the risk of illness (WHO, 2002). Given the importance of this topic, some authors have sought to understand how older people cope with this factor and there are some studies (Madey & Gomez, 2003; Renner et al., 2000) showing that, similarly to what happen with children, teenagers (Bernardes et al., 2005) and younger adults (Shepperd et al., 2002), older people also use comparative optimism strategies when they think about risks. These evidences suggest that comparative optimism is an important coping strategy used trough out the life course and that contributes to guarantee adequate levels of self-esteem and well-being.

From a *psychosocial perspective of risk perception*, there are some evidences showing that comparative optimism in older age is also influenced by more “social” factors. For instance,

Renner, Knoll and Schwarzer (2000) showed that the use of this strategy is dependent upon the group belonging of the comparison target. In fact, when older people think about risks of aging illnesses, they only show comparative optimism regarding an older age target, but not regarding a younger age target. In a related vein, Madey and Gomez (2003) showed that older people showed lower comparative optimism in the case of age-related illness than in the case of non-age related illnesses (i.e., illnesses related not with age but with a general life style). These evidences suggest that the use of comparative optimism is determined by the group of belonging of the individual that makes risk estimates, the group of belonging of the comparison target, and the type of risks that are being evaluated (e.g., if they are seen as typical of the group that is making the evaluation). People, and older people are no exception, take in consideration their group of belonging, and the characteristics of that group, when they make risk estimates (hence, they are aware that, although they may have less risk of having an heart attack than the “typical older individual”, they have more risk than “the typical younger individual”). Given these evidences, we can now ask our question: Do stereotypes of aging play a role in these processes?

The idea that stereotypes of aging may influence the use of social comparison strategies such as comparative optimism has been defended by some authors. For instance, according to Coudin (2002) negative aging stereotypes that portray older people as “ill” and “dependent” may cause older individuals to self-categorize less with the older age group promoting the use of social comparison strategies. Hence, older people judge their health as much more positive than other older people and this contributes to maintain adequate levels of well-being. However, this idea that aging stereotypes influence older people’s use of social comparison strategies still needs to be empirically proven.

In this section of studies our goal is to test this idea in the context of one specific type of social comparison strategy: comparative optimism regarding risk of illness. To achieve this goal we conducted three studies. Study 4 aims to explore the use of comparative optimism regarding risk of illness in older people. Hence, it is a preliminary study which helps us to construct the dependent variable to use in the following experimental studies. Studies 5 and 6 allow us to explore our goal, that is, to explore the effect that activating aging stereotypes may have on the use of comparative optimism strategies in older people.

To understand our specific hypothesis for these studies we need to recover some of the evidences that we cited in the introductory chapters of this dissertation. Specifically, we need to remember the main evidences regarding the effects that aging stereotypes may have on older people’s performances.

As we referred before, Rothermund and Brandtstädter (2003), advanced the idea of two rival assumptions in the literature regarding the role that aging stereotypes have on older people's responses. The first one is the *assimilation hypothesis*. According to this hypothesis older individuals are subject to the same evaluation as the group. In support of this prediction, Rothermund and Brandtstädter cite the influential studies of Levy and collaborators (1996; 2003) showing that older people who are subliminally primed with negative traits of aging stereotype have lower performances regarding several measures (e.g., memory, speed of walking, will-to-live) than when they are primed with positive stereotypes. On the contrary, the second assumption is called the *contrast hypothesis*. According to these authors, older individuals cope with aging stereotypes (particularly negative ones) by separating themselves from the group. Hence, the contrast hypothesis follows Coudin's idea (2002) that negative aging stereotypes serve as comparison standards that are used by older individuals in order to use optimistic strategies and increase their own performances (Heckhausen & Krueger, 1993). In this perspective, one could even think that negative aging stereotypes are having "a good effect" in older people (Pinquart, 2002).

In an attempt to reconcile both these perspectives, recently Hess, Hinson and Statham (2004) advanced the idea that the occurrence of assimilation or contrast depended on the way stereotypes are activated. The main idea is that that assimilation effects occur when participants are unaware of stereotype activation (e.g., subliminal priming), whereas contrast appears when they are aware (e.g., supraliminal priming) of its activation. However, despite its merits, this study presented some important limitations that still needed to be further clarified (please see the chapter "Stereotypes: being the target" for a discussion on this topic).

In Study 5 and Study 6 we aim to test these predications using comparative optimism regarding risk of illness as the main dependent variable. Our goal is to follow Levy's (1996) stereotype priming paradigm, which we validated to the Portuguese context in Study 3. Hence, we wish to compare the effects of activating more negative or more positive contents of the aging stereotype on the use of comparative optimism strategies. Moreover, we also wish to test the role of *prime awareness* by using more subtle and blatant manners of stereotype activation. In fact, Studies 5 and 6 are very similar in their procedure. However, in Study 5 we prime stereotypes in a subliminal manner, whereas in Study 6 stereotypical priming is conducted in a supraliminal way. It is important to note that in both cases the relationship between stereotype activation and the answers to the dependent variables is implicit (i.e., participants are not aware that there is any influence). However, in Study 5,

participants are also unaware of the priming stimulus, whereas in Study 6 they can read the stereotypical words. We will specify our hypothesis for these studies in the following pages.

However, before we continue we would like to add one comment. We believe that using comparative optimism regarding risk of illness as a dependent variable has several advantages. First of all, there are obvious implications to understand the factors that affect the way older individuals perceive aging related risks. This is an important contribution for the aging literature and has many practical implications in interventions regarding health issues in older ages. Secondly, it contributes to the debate in health psychology literature regarding the factors that affect comparative optimism. The adoption of a clear psychosocial perspective through the use of classical socio-cognitive methodologies such as the stereotype priming represents an innovation and helps us increase our knowledge regarding this topic. Finally, we believe that this study also contributes to enhance our knowledge in the stereotype priming domain within the socio-cognitive mainstream. In fact, as we have reviewed in our introductory chapter “Stereotypes: being the target” results regarding the effects of stereotype activation on targets are still confuse and need to be further investigated. For instance, the role that awareness plays in assimilation and contrast effects is still unclear: is awareness of the priming stimulus *per se* which cause contrast effects (Shih et al., 2002)? Or is the awareness of the relationship between stereotype activation and the dependent variable which really matters the most (Bargh, 1992)? We think that by conducting two studies, one using a subtle methodology and the other a more blatant one may contribute to this debate. Specifically, because we are using comparative optimism as our dependent variable we are measuring, for the first time, a social comparison process between ratings of the self (risk for self) and of the in-group (risk for the typical older individual). We think the use of this measure allows us to better understand assimilation and contrast effects to the aging stereotype and represent a fruitful contribution to understand these effects.

After this brief literature review, now we turn to the description of Studies 4, 5, and 6.

Study 4 - Aging and comparative optimism regarding illness

The goal of this study is to explore the use of comparative optimism regarding typical aging illnesses among older people. Our final objective is to find the best items that operationalize comparative optimism in order to use this measure in the following experimental studies. Our specific hypotheses for this study are as follow:

H1) Based on previous evidences (Renner et al., 2000) we expect older people to show comparative optimism regarding typical older illnesses

However, we expect some variables to influence the degree of comparative optimism:

H2) We expect a significant effect of the comparison target. Hence, we expect older people to show higher comparative optimism regarding typical aging illnesses when they are comparing with an older target than when they are comparing with a younger target.

H3) We expect a significant effect of perception of control regarding each specific illness. According with previous findings (Helweg-Larsen & Shepperd, 2001) we expect comparative optimism to be higher when perceived control is higher.

H4) Finally, we expect a significant effect of previous experience with each illness. In accordance with previous findings (Helweg-Larsen & Shepperd, 2001) we expect comparative optimism to be lower when previous experience is higher.

In order to test these hypotheses, we interviewed a group of older people. First, we conducted a preliminary study where we asked a group of older individuals to freely indicate a list of illnesses that were associated with the older age group in different degrees. Then, in the actual study, we asked a different group of participants to rate these illnesses according with their typicality regarding the older and younger age group, perceived risk for self, an older and an younger target, and degree of perceived personal control and personal experience.

Method

Participants

This study included 100 older adults ($M_{age} = 80.6$ years, $SD=9.6$). Participants were in majority females (77%) and lived in a nursing home (51%) or independently in the community in their own residences (41 %). They had 4 years of education (30.2%) or less than 4 years of education (30%) and were mostly retired from work (95%). Participants were recruited in several locations and asked to participate voluntarily in an inquiry regarding perceptions of aging.

Materials

Illnesses typicality. In order to create the illnesses typicality measure first we conducted a preliminary study ($n=85$, $M_{age} = 76$ years, $SD=0.6$) to determine which illnesses older people freely associated with different age groups. Based on the results of this preliminary study, we created a list of illnesses typically associated in different degrees with the older and younger age group (we considered illnesses indicated at least by five people). This list was composed by the following illnesses: Rheumatism, Hypertension, Stroke, Heart attack (illnesses freely associated with older people in the preliminary study), Drug addiction, AIDS and Flu (illnesses freely associated with younger people in the preliminary study), and Cancer (illnesses freely associated with older and younger people in the preliminary study).

In the present study, participants were presented with this list and asked to rate in which degree they thought each illness was typically associated with the older and the younger age group in a scale from 1 (not at all associated) to 9 (completely associated).

Comparative optimism. To measure comparative optimism we used the indirect method proposed by Armor & Taylor (1998) in which each participant is asked to judge risks separately for himself and for a given target. We included the same list of illnesses used in the typicality measure. First, participants rated the probability of personally having each illness (RPself): “Do you think that in your future (10 years from now), you might have...?” (1=won’t have for sure to 9=will have for sure). Afterwards, the same question was asked twice. First, for an older person (RPolder) and afterwards for a younger person (RPyounger)

of the same sex as the participant: “Do you think that this older/younger person, in his future (10 years from now) might have...?”

Perceived control. Following the proposal by Bernardes (2002) we asked participants to rate the degree in which they thought they could avoid each illness presented in the list: “Do you think you can avoid having...” (1= I can’t avoid for sure to 9=I can avoid for sure).

Personal experience. To measure personal experience we followed Bernardes (2002). For each illness in the list, we asked participants to answer whether they currently suffer or have suffered from any of these conditions in the past.

Procedure

All participants were individually interviewed by the experimenter in a quiet room. First they answered some background questions. Then they answered a questionnaire that included the measures of Illness typicality, Comparative optimism, Perceived control and Personal experience. Finally they were thanked and debriefed.

Results

Illnesses typicality

To analyze illnesses typicality we followed the same criteria used in Study 2. Hence, following the proposal by Brazão and Garcia-Marques (2004) we considered a given illness typical of the older (or younger) age group when rating was higher than 5 and the confidence interval (CI 95%) did not included 5. On the other hand, we considered an illness not typical of the older (or younger) age group when rating was inferior to five and the confidence interval (CI 95%) did not included 5.

Results revealed that participants rated the following illnesses as more typical of old age: Rheumatism, Stroke, Heart attack, Hypertension, Flu and Cancer. All these illnesses were considered exclusive of old age in the sense that none was rated as typical of younger age. In fact, only AIDS and Drug addiction were considered as typically exclusive of young age (see Table 7).

Table 7. Illnesses typically associated with the older and younger age group.								
Illnesses	Target:Older				Target:Younger			
	CI 95%				CI 95%			
	<u>M</u>	- 95%	+ 95%	<u>SD</u>	<u>M</u>	- 95%	+ 95%	<u>SD</u>
Drug addiction	2.42	2.07	2.77	1.70	7.13	6.79	7.48	1.69
Rheumatism	6.93	6.64	7.21	1.45	3.21	2.89	3.52	1.59
AIDS	3.14	2.80	3.47	1.61	6.66	6.32	7.00	1.64
Ear ache	4.31	3.89	4.74	2.05	4.85	4.42	5.28	2.03
Stroke	6.43	6.17	6.68	1.30	3.66	3.36	3.97	1.51
Heart attack	6.05	5.79	6.30	1.26	4.07	3.77	4.36	1.48
Hypertension	5.88	5.66	6.11	1.11	4.22	3.92	4.52	1.47
Asthma	4.99	4.67	5.30	1.58	4.94	4.63	5.26	1.55
Cancer	5.29	5.12	5.45	0.84	4.85	4.67	5.04	0.94
Flu	5.55	5.29	5.80	1.29	4.85	4.57	5.12	1.38

Comparative optimism

To analyze the results regarding the Comparative Optimism measure we conducted for each illness a one-way repeated-measures ANOVA with Target (self, older or younger) as the Within-subjects factor and Risk Perception as the dependent variable.

The analysis regarding typical older illnesses (Rheumatism, Stroke, Heart attack, Hypertension, Flu and Cancer) revealed that participants only showed significant comparative optimism regarding a typical older individual in the perception of two illnesses: Heart attack and Stroke. Hence, contrary to our expectations they did not show comparative optimism regarding all typical aging illnesses. Hence, we only found partial support for our H1.

However, in accordance with H2, results revealed a moderator effect of the comparison target. When older people estimate the risks of typical older illnesses, comparative optimism is significantly higher when they compare with an older target than with a younger target (Rheumatism: $t(96) = 15.98$; $p < .001$; Stroke: $t(97) = 11.11$; $p < .001$; Heart attack: $t(97) = 11.47$; $p < .001$; Hypertension: $t(96) = 10.11$; $p < .001$; Flu: $t(96) = 6.21$; $p < .001$). In fact, older people show comparative “pessimism” when they compare with a younger target: RP_{self} and RP_{older} are significantly higher than $RP_{younger}$. The only exception was Cancer, where we found no significant differences between targets.

Finally, although this is not the focus of the present study it is interesting to see that, in the same vein, when older people estimate the risks of typical younger illnesses, comparative optimism is significantly higher when they compare with a younger target than with an older target (Drug addiction: $t(95) = - 21.24$; $p < .001$; AIDS: $t(95) = - 16.75$; $p < .001$) (see Table 8).

Table 8. Risk perception of illnesses for self, older and younger

Illnesses	RPSelf		RPOlder		RPYounger		ANOVA	
	M	SD	M	SD	M	SD	F (2, 198)	η_p^2
Drug addiction	1.34a	0.98	2.43b	1.18	6.14c	1.45	509.10***	0.84
Rheumatism	7.29a	1.78	6.92a	1.21	4.27b	1.34	164.55***	0.63
AIDS	1.56a	1.28	2.76b	1.22	6.07c	1.72	316.07***	0.77
Ear ache	5.05a	1.70	5.26a	1.09	4.84a	1.35	2.83	0.03
Stroke	5.79a	1.07	6.42b	1.40	4.50c	0.97	88.22***	0.48
Heart attack	5.70a	1.23	6.40b	1.31	4.62c	1.02	78.14***	0.45
Hypertension	6.10a	1.67	6.41a	1.33	4.87b	0.91	43.21***	0.31
Asthma	4.68a	1.91	5.43b	0.99	5.07a	1.31	8.65***	0.08
Cancer	5.21a	0.86	5.29a	0.90	5.11a	1.17	1.21	0.01
Flu	6.29a	1.31	6.50a	1.18	5.67b	0.99	16.13***	0.14

Note: η_p^2 = partial effect size
 *** $p < .001$
 Means in a row that do not share the same subscript are significant different

Perceived control

To analyse Perceived Control we used a similar criteria as in the Illnesses typicality measure. Illnesses rated above 5 and which CI 95% did not include five were considered as controllable. On the other hand, illnesses rated below five and which CI 95 % did not include five were considered uncontrollable. In general, participants rated the illnesses listed as uncontrollable. The only two exceptions were Drug addiction and AIDS (see Table 9).

Table 9. Perceived control of each illness.

Illnesses	Perceived control			
	<u>M</u>	CI - 95%	CI + 95%	<u>DP</u>
Drug addiction	8.49	8.21	8.77	1.40
Rheumatism	2.99	2.64	3.33	1.72
AIDS	7.99	7.61	8.36	1.87
Ear ache	3.91	3.55	4.27	1.72
Stroke	3.50	3.21	3.79	1.44
Heart attack	3.54	3.25	3.83	1.44
Hypertension	4.33	3.96	4.70	1.86
Asthma	3.88	3.56	4.21	1.64
Cancer	2.02	1.72	2.31	1.47
Flu	4.64	4.26	5.01	1.90

To analyse whether perceived control was related to the degree of comparative optimism we computed a Comparative optimism index for each illness subtracting RPself from RPolder (RPolder – RPself). After, we correlated this index with Perceived Control for each illness. We found significant correlations for Heart attack, $r=0.25$, $p<.05$, Flu, $r=0.26$, $p<.05$, and Asthma, $r=0.47$, $p<.001$. We found marginal significant correlations for Hypertension, $r=0.19$, $p<.06$, and Cancer, $r=0.17$, $p<.09$. Since we did not find a consistent effect of perceived control, we only found partial support for our H3.

Personal experience

As expected, participants indicated having more personal experience with typical older illnesses than with younger illnesses. In fact, none of the participants referred currently suffering or have suffered either from Drug Addiction or AIDS.

Within the typical older illnesses, the level of personal experience varied significantly. The more experienced illnesses were Flu, Rheumatism and Hypertension, in the sense that over 50% of the participants indicated that they have it or had it somewhere in the past. The least experienced illnesses were Heart attack, Stroke and Cancer, with less than 20% of the sample reporting personal experience with these conditions (see Table 10).

Table 10. Personal experience with each illness (%).		
Illnesses	I have it	I had it
Drug addiction	0	0
Rheumatism	53	9
AIDS	0	0
Ear ache	8	13
Stroke	0	15
Heart attack	1	5
Hypertension	19	46
Asthma	5	4
Cancer	0	1
Flu	1	90

When we analyse the results of Comparative Optimism (see Table 8) we see that Personal Experience seems to relate with the degree in which participants use this strategy. In fact, in the case of the most experienced illnesses (Flu, Rheumatism and Hypertension) we found no significant differences between RPself and RPolder. On the other hand, in the case of the least experienced aging illnesses, such as Stroke and Heart attack, we found the expected comparative optimism pattern; with participants rating risks for self lower than for an older person in general.

To analyse whether Personal Experience significantly moderated the degree of Comparative Optimism regarding the more experienced illnesses we conducted a follow-up analysis. To run this analysis we proceeded in the following manner: First, we computed a Comparative optimism index for each illness subtracting RPself from RPolder. Secondly, we computed an index of Personal Experience for each illness, considering two options: 1 = never had or have a specific illness; 2 = had or have a specific illness. Finally, we conducted independent sample t-tests for each illness using the Comparative Optimism index as the dependent variable and the Personal Experience index as the independent variable. We found a significant effect of Personal Experience on the Comparative Optimism for Rheumatism, $t(98) = -4.91, p < .001$, Hypertension, $t(98) = -2.21, p < .05$ and Flu, $t(95) = -7.49, p < .001$. We also found a marginal significant effect of experience regarding Heart attack, $t(98) = -1.46, p < .08$ (one-tailed). All these effects were in the expected direction. In fact, those who referred having personal experience with these illnesses showed lower Comparative Optimism ($M_{\text{rheumatism}} = -0.88, SD_{\text{rheumatism}} = 1.09$; $M_{\text{hypertension}} = 0.49, SD_{\text{hypertension}} = 1.06$; $M_{\text{flu}} = 0.01, SD_{\text{flu}} = 0.76$; $M_{\text{heartattack}} = 0.00, SD_{\text{heartattack}} = 1.41$) than those who reported having no experience with these conditions ($M_{\text{rheumatism}} = 0.46, SD_{\text{rheumatism}} = 1.64$; $M_{\text{hypertension}} = 1.05,$

$SD_{\text{hypertension}} = 1.39$; $M_{\text{flu}} = 2.62$, $SD_{\text{flu}} = 2.20$; $M_{\text{heartattack}} = 0.75$, $SD_{\text{heartattack}} = 1.20$). These results support our H4.

Discussion

As expected, we found evidences that older people use comparative optimism strategies when they estimate risks of typical aging illnesses. However, this effect did not occur for all aging illnesses; in fact, we only found significant comparative optimism for two illnesses on our list - heart attack and stroke. Hence, we did not find significant differences between personal risk and risk for an older individual in general neither for rheumatism, hypertension, flu nor cancer.

The main variable which explains this difference seems to be the degree of personal experience with these illnesses. In fact, whereas rheumatism, hypertension, and flu are among the most experienced illnesses, less than 20% of the sample has experienced heart attack and stroke. In support of this prediction, we found a significant effect of previous experience in comparative optimism regarding rheumatism, hypertension and flu. As expected, those who had previous experience showed lower comparative optimism than those who did not.

The degree of personal control does not seem to explain these differences in comparative optimism scores for typical aging illnesses. In fact, results indicate that all typical aging illnesses are perceived as “uncontrollable”. Moreover, we found a significant correlation between perceived control and heart attack (an illness for which we found significant comparative optimism) but we also found significant correlation between perceived control and flu (an illness for which we did not find significant comparative optimism). The inconsistency of this pattern of results does not suggest that this variable plays a major role in explaining the differences in comparative optimism scores among heart attack and stroke on one hand, and rheumatism, hypertension, and flu on the other. However, we would like to add one commentary. Perhaps control plays some role explaining the results regarding cancer. This illness seems to be a special case in the sense that, although people report very low personal experience with it (only one person in the sample referred having had it) there are no significant differences among risk estimates for *self*, older and younger target. We think that this may be caused by the fact that cancer may be viewed as an “uncontrollable” illness not only for self, but for everyone. Hence, in this case one would expect no differences in risk estimates. Hence, people might think: “it is as likely for me to have it, as it is for other older

or younger person”. On the other hand, in the case of the other aging illnesses, if we had included adequate measures we would probably find differences in the perception of control for *self* and the other targets. Hence, although they are perceived as uncontrollable for the *self*, we think that they would be perceived as more “uncontrollable” by other older targets and this could relate to differences in personal and target risk estimates. In support of this prediction, Bernardes (2002) found similar results in a sample of children and adolescents. For illnesses where she found significant comparative optimism scores, perceived control for self was also higher than for others. However, for cases where there was no significant comparative optimism such as for the evaluation of flu, she also did not find differences in perceived control for *self* and others. This “illusion” of control is a significant predictor of comparative optimism scores.

Finally, we would like to add that we found evidences for our main idea that comparative optimism estimates are affected by psychosocial factors such as group and inter-group contexts. In fact, we found that when older people are estimating risks for typical aging illnesses, they show significant higher comparative optimism when they are comparing with an older target than when they are comparing with a younger target. In fact, they show comparative “pessimism” when they are comparing with a younger target. This result show that risk estimates are made taking in consideration individual’s group of belonging and of the comparison target: older people think that they have lower risk than an older individual in general of having certain aging illnesses such as a stroke or a heart attack. However, they know that they have higher risk than a younger individual. Interestingly, however, these results do not reflect an overall pessimism regarding “youth” in general. In fact, we found that when older people estimate risks of typical younger illnesses such as AIDS and drug addiction, they estimate risk for themselves and for other older people lower than for a general younger target.

The results of this study are interesting in the sense that they allowed us to explore the use of comparative optimism strategies regarding typical aging illnesses in older people. Based on these results, we could identify the main typical aging illnesses and the main variables which seem to influence risk estimates. This is valuable information that we need to take in consideration when we use this dependent variable in the following studies.

Study 5 - The effects of subliminal aging stereotypes on comparative optimism regarding illness

The goal of this study is to explore the effects that subliminal activation of different contents of the aging stereotype may have on older people's use of comparative optimism strategies regarding typical aging illnesses. In this study, we will use an adapted version of the stereotype priming paradigm originally created by Levy (1996) and validated by us to the Portuguese context in Study 3. This will allow us to explore the differences between comparative optimism when older people are primed subliminally with positive or negative traits of the aging stereotype. As far as we know, this is the first time such a study is attempted.

In the present study we introduced one important difference in the experimental procedure which we believe allows us to test the role of self-relevance in a better manner. Recall that in Study 3 we compared the effects of subliminal priming of aging stereotypes in two different samples: the older age group (target group) and the younger age group (non-target group). Consistently with the original study (B. Levy et al., 1999-2000) we found that priming effects on the will-to-live measure only occurred in the older age group and not in the younger age group. This gave support to the idea that self-relevance plays an important role in these processes and to the idea that "targets of stereotypes, for whom the priming stimuli are self-relevant, are more sensitive to such stimuli and show a lower threshold of activation for such stimuli than do nontargets" (Shih et al., 2002, p. 640).

In the present study, we aim to test the role of self-relevance in a different manner. Instead of comparing priming effects in targets and non-targets of the aging stereotype, our goal is to prime only older people with stereotypes of either the older or the younger age group. We expect that, if self-relevance is an important variable to consider in these studies, priming effects on comparative optimism regarding typical aging illnesses will only occur when older people are primed with the older stereotype. In fact, if this is the case, being primed with the younger stereotype should not have any influence in comparative optimism estimates regarding older illnesses.

Having in consideration this change in the priming procedure, our experimental design is thus a 2 (Stereotype valence: positive or negative traits) x 2 (Age group: older and younger

traits) factorial design, where both Stereotype valence and Age group are used as between-subjects factors. Our main dependent variable in this study is comparative optimism regarding typical aging illnesses. We expect that the different conditions of stereotype priming will have different effects on the use of these strategies.

As we already referred, subliminal priming of aging stereotypes should result in assimilation effects (Rothermund & Brandtstädter, 2003). Hence, we expect older people's use of comparative optimism to be in accordance with the content of the aging stereotype. Previous findings (B. Levy, 2003) have shown that when older people are primed with negative contents of the aging stereotype, they have lower performances in several domains than when they are primed with positive contents. For instance, they have lower memory performance (B. Levy, 1996), higher cardiovascular rates (B. Levy et al., 2000), and less will-to-live (B. Levy et al., 1999-2000). In accordance with these predictions, we expect that priming older people with negative aging traits should decrease the use of comparative optimism strategies. Importantly, however, we do not expect any significant differences between the positive younger stereotype condition and the younger negative stereotype condition.

Finally, after this brief introduction, we think we are able to formulate the specific hypothesis that will test in the context of this study:

H1) Since we are expecting assimilation effects to the aging stereotype, we expect Comparative Optimism to be lower in the negative older stereotype condition than in the positive older stereotype condition.

H2) We do not expect any effects of the younger stereotype.

Method

Participants

This study included 51 participants ($M_{age} = 75$ years, $SD = 6.13$). 62.7% were female and 37.3% were male. The majority of participants were living independently in the community

by themselves (58.8%) or with their spouses (31.4%). The majority had at least 6 years of education (55%) and were retired from work (88.2%).

Participants evaluated their health in a medium level ($M=4.22$, $SD=0.86$; scale varied from 1 “Terrible health” until 7 “Excellent health”). When asked about their personal experience with illnesses they reported the following conditions: Hypertension (33.3%), illnesses related with the heart in general (13.7%), illnesses related with the bones in general (13.7%), Asthma (5.9%) and Rheumatism (2%). None of the participants referred having personal experience with Heart attack or Stroke.

Participants were recruited in two institutions for older people: One Senior University and one Leisure Centre. The two criteria for inclusion in the study were being native Portuguese speakers, ability to read and write Portuguese, and inability to consciously recognize any of the words that were flashed on the computer screen during the priming task. We eliminated from further analysis two participants that said that they could recognize words in the computer screen.

Materials

Development of the implicit stereotyping paradigm. This paradigm was similar to the one used in Levy et al.’s studies (1996; 1999-2000) and in our Study 3. However, we introduced some differences. In Study 3, each priming condition (older positive and older negative) consisted of five blocks with 20 words each: 2 category words (old and senior), 4 neutral words and 12 stereotypical words, positive or negative according to the experimental condition (2 words were repeated). In the present study, our goal was to create two further matching conditions to prime the young positive and negative stereotype. However, the results from our previous studies (Study 2) indicated that we needed to make some adjustments. Study 2 showed that we could only identify 4 different negative traits of the young age stereotype. Hence, it was not possible to create a negative young stereotype condition with the required 12 different stereotypical words according to the original paradigm (B. Levy, 1996). Faced with this limitation, and in order to maintain the same degree of stereotypicality and valence in the older and younger priming conditions, we chose to include only 4 traits in each of the four conditions and repeat them. Hence, in the present study, we used the following words: i) older positive words: *wise, mature, calm* and *sociable*; ii) older negative words: *forgetful, dependent, slow* and *ill*; iii) younger positive words:

healthy, creative, educated and *alert*; and iv) younger negative words: *smokers, hasty, irresponsible* and *dug addicts*. In sum, in each condition, each block consisted of 2 category words plus 14 stereotype-related words (2 repeated 3 times and 2 repeated 4 times) plus 4 neutral words. The positive and negative words of both old and young stereotype match in degree of stereotypicality, mean length (mean of eight letters per word) and mean level of frequency in Portuguese language (Nascimento, Casteleiro, Marques, Barreto & Amaro, 1995).

Selection of proper speed for test trials that allowed perception-without awareness was done according to speed levels described by Levy (1999-2000) and in Study 3. In the present study, individual adjustments were the following: 3.9% performed the task at 50 ms, 39.2% performed the task at 67 ms, 29.4% performed the task at 83 ms, 7.8% performed the task at 100 ms, and finally 19.6% performed the task at 133 ms.

We analysed the measures of reaction times and accuracy in the computer task. We conducted two 2 (Stereotype valence: positive or negative traits) x 2 (Age group: older and younger traits) randomized-groups ANOVA, with Reaction time and Accuracy as the dependent variable and Valence and Age group as between subjects factors. We did not find any significant effects on Reaction times, $F < 1$. Regarding Accuracy, we found a main effect of Stereotype valence, $F(1, 47) = 5.12$, $p < .05$, $\eta_p^2 = .10$, showing that participants were significantly more accurate in the negative stereotype condition ($M = 0.92$; $SD = 0.10$) than in the positive stereotype condition ($M = 0.98$; $SD = 0.10$). Although we did not find this effect on Study 3, we think that this result is not surprising. In fact, it concurs with the general idea that individuals are more “vigilant” when they are evaluating negative events than positive events (Ric & Niedenthal, 2007). Either way, this effect did not interfere with the answers to the dependent variables since we did not find any significant correlation between Accuracy levels and the answers to the Comparative optimism, Anxiety nor Mood measures.

Comparative optimism of typical aging illnesses. To measure comparative optimism regarding typical aging illnesses we used the same measure as in Study 4 (Armor & Taylor, 1998). However, in this study we chose to include only the four most typical aging illnesses identified in Study 4: Rheumatism, Hypertension, Stroke and Heart attack. Moreover, we also asked participants to estimate risks only for themselves (RPself) and risks for older people in general (RPolder) (so, we excluded the “younger individual” as a comparison target). By using this method we hoped to create four indexes of Comparative Optimism regarding older people by subtracting RPself from RPolder (RPolder – RPself) for each of the four illnesses.

Procedure

All participants were individually tested in a quiet room. Participants first answered some background questions. This questionnaire included demographic questions, one item to assess overall Perceived Health and a free response question regarding Personal Experience with illness (“What illnesses have you been diagnosed with?”).

Next, they were informed by the experimenter that they were to participate in two separate and unrelated studies. The first study’s main objective was presented as a measure of visual perception and memory, whereas the second study was presented as validation of a translation of an English questionnaire. In fact, the first study consisted in the stereotype priming task where participants performed the computer priming task (they were randomly distributed across the four experimental conditions). The ‘second study’ was truly a questionnaire measuring the dependent variables of interest: the Comparative optimism measure.

At the end of each session, all participants answered a pos-experimental “Awareness assessment questionnaire” regarding what they thought these studies were about and whether they had recognized anything in the computer screen in the first study. Finally, the experimenter debriefed participants, asked them to sign a consent statement regarding their participation in the study, and gave them a participation certificate that aimed to activate positive stereotypes of aging.

Results

Validity of the implicit stereotyping paradigm

From the whole sample, only two participants were eliminated because they indicated that they could see words flashing in the computer screen. The remaining participants indicated that they could see something flashing in the computer, but they could not recognize any words. Moreover, none of the participants indicated being aware of any relationship between the “two” studies. Similarly to what happened in Study 3, we think is safe to say that participants were not aware of the priming stimulus, or of the relationship between the priming task and the dependent measures.

Comparative optimism regarding typical aging illnesses

First, we conducted a preliminary analysis of the effects of demographic variables, Perceived Health and Personal Experience with illness on Comparative Optimism ratings. Regarding the effects of demographic variables, we only found a significant effects of gender on Comparative Optimism regarding Hypertension, $t(49)=2.12$, $p<.05$, In fact, women ($M = 0.85$; $SD = 2.60$) showed higher Comparative Optimism than man ($M = - 0.84$; $SD = 2.89$).

The analysis of the effects of health related measures showed a significant effect of Perceived Health, $r= 0.28$, $p<.05$, and Personal Experience with Heart illnesses, $t(49) = -2,04$, $p<.05$, on Comparative Optimism regarding Rheumatism. We also found an effect of Personal experience with Hypertension on Comparative Optimism regarding Hypertension, $t(49) = -4.55$, $p<.001$. In these cases, these effects were in the expected direction, in the sense that those which perceived poorer health and had experience with some illnesses were those who showed less use of Comparative Optimistic strategies.

To evaluate the effects of priming we run separate analysis for each illness. We conducted a 2 (Stereotype valence: positive or negative traits) x 2 (Age group: older and younger traits) randomized-groups ANOVA, with Comparative Optimism as the dependent variable and Valence and Age group as between subjects factors. When necessary, we used the variables identified in the preliminary analysis as covariates. Afterwards, we conducted planned comparisons in order to test directly for the hypothesized effects of the younger prime and the older prime. In Table 11 we present the means of comparative optimism scores for each illness by priming condition²⁶. Below we describe the results of the analysis for each illness.

The analysis of Rheumatism, $F < 2$, and Hypertension, $F < 1.7$, revealed no significant effects of priming on comparative optimism scores.

The analysis of Heart attack revealed no significant main effects or interactions. However, planned comparisons revealed the expected pattern. In the older prime, we found a marginal significant higher comparative optimism in the positive than in the negative condition, $F(1, 47) = 2.52$, $p<.07$ (one-tailed), $\eta_p^2 = .05$. However, we did not find significant effects of the younger prime on comparative optimism scores, $F < 1$.

The analysis of Stroke revealed a similar pattern than Heart attack. We did not find any significant main effects or interactions. However, planned comparisons revealed the expected

²⁶ In Annex 2 we present the descriptive values separately to RPself and RPolder for each illness.

pattern. We found significant differences in the older prime, $F(1,47)=3.37$, $p<.05$ (one-tailed), $\eta_p^2 = .07$, but not in the younger prime, $F < 1$.

Table 11. Means scores of comparative optimism regarding aging illnesses as a function of the prime

Comparative optimism scores	Younger stereotype				Older stereotype			
	Positive		Negative		Positive		Negative	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Rheumatism	1.00	1.48	- 0.33	2.67	1.46	2.33	0.57	0.57
Hypertension	- 0.08	3.26	1.41	3.02	0.00	2.16	- 0.21	2.72
Heart attack	0.92	1.31	0.92	1.78	1.00a	1.63	0.00b	1.75
Stroke	0.16	0.57	- 0.08	1.62	0.92a	1.03	0.14b	0.95

Note: Means in a row that do not share the same subscripts are significantly different. For all measures higher means indicate higher comparative optimism scores.

These results give only partial support for H1. In fact, we only found the expected pattern on two of the four aging illnesses considered: Heart attack and Stroke. Regarding these illnesses our results show lower use of comparative optimism in the negative older stereotype condition than in the positive older stereotype condition. However, regarding the more experienced illnesses, Rheumatism and Hypertension, we did not find any significant effects of Stereotype Valence.

Importantly, we did find support for our H2 in the sense that we did not find any significant effects of the younger stereotype. This results seem to indicate that self-relevance plays a critical role in these type of effects.

Discussion

In this study we explored, for the first time, the effects that subliminally priming positive and negative contents of the aging stereotypes may have on older people's use of comparative optimism strategies regarding aging illnesses. We only found partial support for our hypothesis. In fact, contrary to our expectations we only found significant effects of the older stereotype in two illnesses: Heart attack and Stroke. Hence, we did not find significant effects on both Rheumatism and Hypertension. It is interesting to note that these differences in

priming effects occurred in two different types of aging illnesses. According to the results of Study 4, Heart attack and Stroke were less experienced illnesses among our older participants, whereas Rheumatism and Hypertension were among the most personally experienced. In the present study, our preliminary analysis revealed that this pattern is also true in the case of these participants: they have significant personal experience with Hypertension and Rheumatism and bone illnesses in general. However, not only one of them has had any personal experience with Heart attack or Stroke. These results are interesting because they show the limits of stereotype effects. It seems that, in relatively unknown aging illnesses, with which older people do not have any prior experience, risk estimates are much more prone to be affected by the contextual activation of aging stereotypes. On the other hand, risk estimates for more experienced illnesses seem to be unaffected by the subtle contextual activation of aging stereotypes. This idea that there are limits to the effects of automatic stereotype activation is in line with the more recent perspectives within the stereotype priming approach (Blair, 2002).

In accordance with the assimilation hypothesis (Rothermund & Brandtstädter, 2003) in the cases of Heart attack and Stroke, the pattern of results was as expected. In fact, older people showed lower use of comparative optimism in the negative than in the positive stereotype condition. This effect on comparative optimism is in line with other detrimental effects of subtle activation of negative aging stereotypical traits like, for instance, lower memory performance (B. Levy, 1996), higher cardiovascular rates (2000), less will-to-live (B. Levy et al., 1999-2000), slower gait (Hausdorff et al., 1999), and poorer calligraphy (B. Levy, 2000). In fact, these results show that the activation of the negative older stereotype is actually affecting the use of a crucial adaptation strategy - comparative optimism - with important effects on well-being maintenance (Taylor & Brown, 1988).

Interestingly, in accordance with previous findings and with our results of Study 3, self-relevance seems as an important variable to consider. In fact, we found no significant effects of the younger stereotype activation in comparative optimism scores of typical aging illnesses. It seems that older people answers are only affected by the activation of aging stereotypes. Hence, the effects we found can not be just attributed to an effect of the mere “valence” of the traits. Older people are not affected by positive or negative activation *per se*. They are affected by the activation of self-relevant traits, by the positive and negative activation of the aging stereotype. These results give extra support to studies that assume the importance of self-relevance as an important variable to consider in priming studies (Hess et al., 2004; B. Levy, 1996; Shih et al., 2002).

Study 6 - The effects of supraliminal aging stereotypes on comparative optimism regarding illness

In this study our goal is to replicate Study 5 using a supraliminal procedure of stereotype activation. There is a live debate in the stereotype priming literature about the role that prime awareness may have on targets. Some authors have argued that whereas targets assimilate to subliminal activated stereotypes, they contrast when stereotypes are primed in a supraliminal manner (Shih et al., 2002). Hess, Hinson and Statham (2004) imported this idea to the aging domain arguing that these effects also occur in older people. However, as we reviewed elsewhere these results still ask for further clarification. In fact, these studies present important limitations which we think may be resumed in three main points (for a deeper discussion on this topic please see the chapter “Stereotypes: being the target”): 1) *Mixed findings regarding the effects of supraliminal priming*: although subliminal priming seems to lead inevitably to assimilation effects, results regarding supraliminal priming are not so clear. For instance, sometimes it seems that they have harmful effects on performance, hindering the effects of positive stereotypes (Hess et al., 2004, Study 2; Shih et al., 2002). However, in other occasions, blatant priming leads to an increase in performance caused by contrast against the negative stereotype (Hess et al., 2004, Study 1); 2) *Awareness of the stimulus vs. awareness of its influence*: none of the studies conducted in this domain provides a good explanation that helps us understand the processes at hand. First of all, we are not sure whether contrast effects were caused by supralimilarity of the stimulus per se, or if participants were actually aware of the possible influence that priming was having on their performances. The study by Shih et al. (2002) did not include a proper awareness assessment questionnaire that would allow us to distinguish between these two options. On the other hand, the study by Hess et al. (2004) did include an awareness assessment questionnaire. However, they only present results indicating that participants said that they were unaware of the stimulus in the subliminal priming condition and that they could see the traits in the supraliminal priming condition. However, they do not give any extra information regarding whether participants were aware of the possible influence that priming was having on their performances. In fact, as we shall see in more detail below, relatively to this issue some authors argue that correction efforts after stereotype activation only occur when individuals

are aware of the possible influence of stereotypes on their behaviours. Hence, supralimilarity of the stimulus per se is not sufficient to cause contrast effects. (Bargh, 1992; Lepore & Brown, 2002); 3) *Supraliminal primes and the role played by motivational factors*: in these studies, researchers explain contrast effects due to supraliminal priming by referring to motivational factors such as perceived threat. For instance, Shih et al. (2002) explained the diminishing performance in the positive supraliminal condition due to feelings of “choking under pressure” to perform. In the same vein, in Study 2, Hess et al. (2004) assume that contrast effects in the blatant positive condition occurred due to an increase in perceived threat resulting from stereotype activation. However, neither of these studies included any proper measure that could confirm this hypothesis. Hence, it is difficult to accept their explanation for these results.

We believe that the idea that different methods of stereotype activation may cause distinct effects on target’s performances is important and should be further explored in stereotype priming effects. Most of the studies regarding the effects of aging stereotypes on older people were conducted using subliminal priming procedures (Hausdorff et al., 1999; B. Levy, 1996, 2000, 2003; B. Levy et al., 1999-2000; B. Levy et al., 2000). However, despite the merits of this work, we think that it is very important to further explore the effects of aging stereotypes using also supraliminal priming procedures. In fact, according to Bargh (1992) there are two reasons why we should not be restricted to the study of the effects of subliminally activated stereotypes. The first one is that in real contexts it is very difficult to imagine the occurrence of an act of subliminal perception. In fact, according to Bargh (1992) “it is difficult to imagine a naturally occurring social situation in which an act of subliminal perception would actually occur – much less go on to influence judgment and behaviours. For a person to be unaware of the occurrence of another person’s behaviours, gesture, facial expression, or utterance, it must occur under very dim illumination or exceptionally fleetingly or at very low sound volume, and so on. And whereas it is possible to imagine scenarios in which such effects might occur (e.g., whispering of the next couple at a party), I think it safe to assert that they are very infrequent and therefore not likely to be major players in phenomena of interest to social psychologists” (p. 236). Hence, in the domains of social psychology and particularly of stereotyping the study of sublimarity per se should not be the main goal. Secondly, there are several evidences showing that we can have similar effects using subliminal and supraliminal

priming procedures. For instance, there are several studies that individuals assimilate to stereotypes when they are primed in a subliminal manner (e.g., Devine, 1989) and in a supraliminal manner (e.g., Bargh et al., 1996). Hence, according to Bargh (1992) what makes the real difference is not that participants are aware of the primed stimulus per se, but of its possible influence. Only then they can engage in corrective control efforts. Then, one can ask, why are subliminal methods so common in social psychology and why are they interesting? According to Bargh (1992) social psychology has use subliminal presentation as a tool in research, as means to an end and not as an end in itself. This methodological tool is used for two basic reasons: 1) to rule out the possibility that subjects would become aware of the presented stimuli and subsequent dependent variables; 2) to study preconscious processing (i.e., the ways information is interpreted, categorized, and evaluated prior to the outputs of these analyses assess conscious awareness) (Zajonc, 1980). According to Bargh (1992) as long as we are sure that participants have no awareness of the effects that supraliminal priming stimulus is having on their performances we have no reason to suspect that there would be any differences between subliminal and supraliminal priming methodologies.

In the present study, our goal is to explore the effects that supraliminal activation of positive and negative contents of the aging stereotype has on the older people's comparative optimism regarding typical aging illnesses. It is important to note that in this study we will use an implicit priming procedure in the sense that, although participants would be allowed to read the stereotypic words, they will not be able to understand the relation between tasks. Hence, in our procedure, we are only referring to "awareness of the stimulus".

We think that this study may help us to understand the processes behind the effects of supraliminal stereotype activation. First of all, besides its value as an applied study to understand its influence in older people's perceptions of illness risks, we think that the use of comparative optimism as dependent variables has the major advantage of allowing us to measure possible contrast effects between rating of the self and of the group. Moreover, in this study, we will try to overcome some of the limitations identified in previous studies (Hess et al., 2004; Shih et al., 2002). Similarly to what we did in Study 5, we will include a proper awareness assessment questionnaire that will allow us to validate our awareness manipulation.

Before we introduce the specific goal for this study we would like to add one final comment. This study has some differences regarding Study 5. First of all, we will not test the role of self-relevance. We believe we have already showed that self-relevance plays an important role in these processes in Studies 3 and 5. Hence, this time we will only prime older

participants with the older stereotype (however, we will return to this issue again in Studies 7 and 8 from a different perspective).

After this brief introduction we are now able to introduce the specific goal for this study (we refrain from making specific hypothesis in this case because we think that, given the evidence of contradictory results (Bargh, 1992; Hess et al., 2004) this is still an issue under exploration):

G1) Our main goal is to explore the effects that supraliminal activation of positive or negative contents of the aging stereotypes has on older people's use of comparative optimism strategies.

Method

Participants

This study included 41 participants ($M_{age}= 72$ years, $SD=6.35$). 70.7% were female and 29.3% were male. The majority of older adults were living independently in the community with their spouses (43.9%), with their families (24.4%), or by themselves (22%). The majority had at least 6 years of education (56.1%) and was retired from work (68.3%).

Participants evaluated their health in a medium level ($M=4.22$, $SD=0.82$; scale varied from 1 "Terrible health" until 7 "Excellent health"). When asked about their personal experience with illnesses they reported the following conditions: illnesses related with the bones in general (22%), Hypertension (9.8%), respiratory illnesses (7.8%), Rheumatism (2.4%), Stroke (2.4%), illnesses related with the heart in general (2.4%) and other illnesses (61%). None of the participants referred having personal experience with Heart attack or Stroke.

Older adults were recruited in several institutions for older people including Senior Universities and Leisure centres. The two criteria for inclusion in the study were being native Portuguese speakers, and ability to read and write Portuguese.

Materials

Stereotype activation. To activate the aging stereotype we asked participants to collaborate in a fictitious market study regarding a leisure centre that was about to open. Participants were presented with a brochure advertising the centre (see Annex 3) and asked to give some opinions: In what degree do you find this brochure interesting? (1= not at all to 7 = totally); would you consider being a user of this institution? (1=not at all to 7=totally); and would you recommend this institution to your friends? (1=not at all to 7=totally). Our aim was to create a cover story that would allow stereotypes to be activated in a supraliminal way (i.e., participants could read the text), but without participants explicitly recognizing stereotype activation.

We created two versions of this brochure: one that activated the negative stereotype and one the positive stereotype of aging. These brochures were identical, except in one part that included a text that activated either the four negative or the four positive traits of the aging stereotype. The negative and positive traits were the same used in Study 5: the negative traits were *forgetful, dependent, slow* and *ill*; the positive traits were *wise, mature, calm* and *sociable*. Below we present the two versions of the text included in the brochure:

Negative stereotype

“Our philosophy is to promote the well-being of seniors in several aspects. This way, we aim to promote well-being, improving illness conditions and reducing dependency levels. We offer several programs adapted to a slow pace, if you like. In the leisure centre Quality Time, older people will not feel forgotten”

Positive stereotype

“Our philosophy is to promote the well-being of seniors in several aspects. This way, we aim to promote well-being, through the promotion of social relations between our users. We offer several programs adapted to a calm and mature pace, if you like. In the leisure centre Quality Time, we respect the wisdom of older people”

Comparative optimism. We used the same measure as in Study 5 (Armor & Taylor, 1998).

Procedure

All participants were individually tested in a quiet room. Participants first answered some background questions. This questionnaire included demographic questions, one item to assess overall Perceived Health and a free response question regarding Personal Experience with illness (“What illnesses have you been diagnosed with?”).

Next, they were informed by the experimenter that they were to participate in two separate and unrelated studies. In the first study, they were asked whether they could participate in a market study for a new fictitious Leisure Centre; in the second study, they were asked whether they would collaborate in the validation of a translation of an English questionnaire that was being conducted by our university.

In the ‘first study’, participants were randomly assigned to the positive or negative stereotype condition, and were given the respective brochure advertising the fictitious Leisure Centre. They were asked to read it carefully during 2 minutes, and to answer some questions for the market study. In the ‘second study’ older participants filled in a questionnaire including the Comparative optimism measure.

Finally, at the end of each session, all participants answered an Awareness assessment questionnaire regarding what they thought these studies were about and if they could remember the text that was in the brochure. Afterwards, the experimenter debriefed participants, asked them to sign a consent statement regarding their participation in the study, and gave them a participation certificate that aimed to activate positive stereotypes of aging.

Results

Manipulation check and awareness assessment questionnaire

Results regarding the final awareness assessment questionnaire revealed that none of the participants understood the true objective of the study. Specifically, none of them reported knowledge that the older stereotype was being activated by the brochure and none of them

referred any understanding of the relationship between the “two” studies. These evidences support the idea that, in spite older stereotypes were activated in a supraliminary manner (participants were aware of the stimulus), they were activated in an implicit way. In fact, their answers to the final questionnaire showed that, even if they were aware of the stimulus, they were not aware of the effects that stereotype activation was having on their answers to the questionnaire and the behavioural measure.

Another important methodological issue is to understand whether there is, in fact, the activation of different contents of the older stereotype. We think that indirect support for this idea is given by the results of the “Market study”. According to what we expected, participants in the positive stereotype condition ($M=4.86$; $SD=1.86$) rated the fictitious Leisure Centre as more interesting than those in the negative condition ($M=4.15$, $SD=1.04$), $t(39)=2.15$, $p<.05$. Moreover, participants in the positive condition also indicated that they would be more willing to be a user of the future centre ($M=4.80$; $SD=1.36$) than participants in the negative condition ($M=3.90$; $SD=1.29$), $t(38)=2.14$, $p<.05$. In this sense, behind the obvious practical implications of this result²⁸ it seems important to show that different stereotypic contents of the older stereotype seem to be, in fact, activated by the different versions of the brochure.

Comparative optimism regarding typical aging illnesses

We conducted a preliminary analysis of the role played by demographic variables and by Perceived Health and Personal experience with illness. We did not find any significant effects of these variables on Comparative Optimism scores.

Similarly to what we have done in Study 5, we evaluated the effects of priming on Comparative Optimism regarding each illness. In Table 12 we present the means of comparative optimism scores for each illness by priming condition and the respective significance tests²⁹. Below we describe the results of the analysis for each illness.

Similarly to Study 5, results revealed that priming had a significant effect only on Comparative Optimism regarding Heart attack and Stroke. As expected, Comparative Optimism in the negative stereotype condition was lower than in the positive stereotype

²⁸ The fact that participants’ choice regarding a Leisure Centre is influenced by our subtle manipulation of the text presented in the brochure shows how these types of materials may have a significant influence in the way older people act in their daily life choices.

²⁹ In Annex 2 we present the descriptive values separately to RPself and RPolder for each illness.

condition. However, once again we did not find significant effects on Comparative Optimism regarding Rheumatism and Hypertension.

Table 12. Means scores of comparative optimism regarding aging illnesses as a function of the prime

Comparative optimism scores	Older stereotype				df	t
	Positive		Negative			
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>		
Rheumatism	0.10	2.68	- 0.15	3.06	38	0.29
Hypertension	0.95	2.91	0.16	2.71	37	0.88
Heart attack	0.75	1.44	- 0.25	2.19	38	1.70*
Stroke	1.20	1.75	0.17	1.72	36	1.82*

* p<.05, one-tailed. For all measures higher means indicate higher comparative optimism scores.

Discussion

Similarly to Study 5 we found a significant effect of Stereotype Valence on older's people use of comparative optimism regarding typical aging illnesses. However, also replicating previous results, these effects were only significant in the case of risk estimates of Heart attack and Stroke. In fact, in these conditions, results showed a significant decrease in comparative optimism in the negative than in the positive older stereotype condition. We think that these results show once again the limits of stereotypes' automatic effects: activating more positive or more negative contents of the aging stereotype only seem to have a significant effect on less personally experienced illnesses.

Importantly, these effects show that supraliminal stereotype priming is not causing different effects on comparative optimism than subliminal stereotype priming. In fact, although older people could read the descriptions in the brochure, they indicated that they did not understand the relationship between the "Market study" and the following questionnaire. Hence, although they were aware of stereotype stimuli, they were subject to its automatic influence much like in the subliminal priming study. This result is interesting and favours Bargh (1992) hypothesis that merely being aware of the stimulus is not enough to cause contrast effects.

Main conclusions of Studies 4, 5 and 6

We think these three studies allowed us to enhance our understanding regarding the factors that affect older's people use of comparative optimism strategies. Study 4 allowed us to explore the use of comparative optimism regarding typical aging illnesses and the moderating role of the comparison target, perceived control and personal experience with illness. Based on typicality measures we were able to build a list of illnesses associated with aging in varying degrees and then measure comparative optimism regarding each one of them. We found that older people perceived Rheumatism, Hypertension, Heart attack, Stroke, Flu and Cancer as the more typical illnesses of aging. However, they did not show equal use of comparative optimism strategies regarding all these illnesses. In fact, we only found significant comparative optimism when older people compare with an older target and when they thought about Heart attack and Stroke. One factor that seemed to explain these differences in comparative optimism scores was the degree of personal experience with each aging illness. Hence, whereas in the case of the least experienced illnesses (Heart attack and Stroke) we found significant optimism comparative, we did not find differences in comparative optimism scores for the more experienced illnesses (Rheumatism, Hypertension and Flu).

Study 4 also allowed us to prove the value of a psychosocial perspective on risk perception. We showed that when older people evaluate typical aging illnesses, there is significant more optimism when they compare with an older target than with a younger target. On the other hand, the pattern reverses when they evaluate typical younger illnesses (AIDS, Drug addiction). In this case, comparative optimism is significantly higher when they compare with a younger target than with an older target. We think these results support the idea that the inter-group context plays a determinant role in risk estimates.

The next studies aimed to explore the effects that the activation of aging stereotypes had on the use of comparative optimism strategies in older people. In Study 5 we followed the traditional perspective within ageism research (B. Levy, 1996, 2003) and primed stereotypes using a subliminal procedure. In this study we explored the use of comparative optimism regarding the more typical aging illnesses and when the comparison target is a typical older person. Interestingly, results showed a significant decrease in comparative optimism

regarding Heart attack and Stroke in the negative older stereotype condition in comparison with the positive stereotype condition. Hence, they reflect an *assimilation* effect to the aging stereotype. According with results found for other performances (B. Levy, 2003), negative aging stereotypes are having a bad effect also in risk perception: older people cease to use one of the most fundamental adaptation human strategies which is positive social comparison. This probably has pernicious consequences on their levels of well-being and in their behaviour. Interestingly, we did not find any significant effects of the younger stereotype in older's people comparative optimism regarding for aging illnesses. Hence, it seems that this effect is restricted to the self-relevant stereotype, that is, when older people are primed with the aging stereotype.

It is important to note that these priming effects were not generalized to all aging illnesses. In fact, automatic effects of the aging stereotype only seemed to affect risk estimates of least experienced illnesses. Hence, we found no significant effects of stereotypes for both Rheumatism and Hypertension.

Study 6 aimed to be a replication of Study 5 but using a supraliminal priming procedure. We primed older people using a fictitious brochure of a leisure centre where we varied the text that older individuals read. We replicated the pattern of results found in Study 5. In fact, when the brochure activated more negative traits of the aging stereotype, older people used significantly less comparative optimism strategies regarding Heart attack and Stroke than when the brochure activated more positive contents. Similarly to Study 5, we did not find a significant effect of priming on the more experienced illnesses (Rheumatism and Hypertension).

These results indicates that supralimilarity of the aging stereotype *per se* does not lead to contrast effects. In fact, stereotypes showed exactly the same *assimilation* pattern than in the subliminal study revealing that these effects are occurring in an automatic manner, without participant's intentionality.

We think these results represent a valid contribution to the literature on ageism and health psychology and allow us to better understand general stereotype priming effects. From an applied point of view, these results show that the mere activation of negative aging stereotypes in materials which are very common and often present in older's people daily lives such as, for instance, an advertising brochure, may have important effects on the way they perceive illness, and in the way they feel and behave. These effects seem to happen in an automatic manner, without older people noticing it. We think these results should be seriously taken in consideration and that proper intervention should be made in the settings usually used

by older people (ex. institutions, leisure centre). We will develop this point further in the General discussion in this dissertation.

On the other hand, we think these results also give a significant theoretical contribution. In the health psychology domain, they emphasize the need to incorporate a psychosocial perspective in risk perception. In fact, psychosocial factors such as group stereotypes may influence risk estimates in an automatic, unintended manner. Finally, in the stereotype priming domain, we think these results contribute to understand the role that self-relevance and prime awareness play in the way automatic stereotype activation affects targets.

In the following two studies, our goal is to further enhance our knowledge regarding the psychosocial determinants of comparative optimism strategies in older people. Studies 7 and 8 will address a specific topic: which role does age identification play in these priming effects? We will turn next to the discussion of this issue.

The effects of aging stereotypes and comparative optimism regarding illness: the role of age identification

Studies 7 and 8

As we made it clear before, some researchers (Dijksterhuis & Bargh, 2001; Dijksterhuis et al., 2007; Hess et al., 2004; B. Levy, 1996; Shih et al., 2002) have argued that *self-relevance* is an important moderator of stereotyping priming effects, at least when they are primed in a subtle manner. This idea rests on the argument that targets of stereotypes have a lower threshold of activation for in-groups stereotypes and are more prone to be affected by their subliminal activation than are non-targets. We found some consistent results with this idea in this dissertation. In fact, we replicated the pattern previously found by Levy (1999-2000) showing that only older's, but not younger's people, will-to-live scores were significantly affected by the subliminal activation of the aging stereotype (Study 3). Moreover, we also showed that older people's comparative optimism ratings were only significantly affected by subliminal activation of the older stereotype, and not of subliminal activation of the younger stereotype (Study 5)³⁰.

Related to this idea that self-relevance plays an important role in stereotype priming effects, some authors have questioned the role that *group identification* plays in these processes (B. Levy, 2003; O'Brien & Hummert, 2006). For instance, according to Dijksterhuis and Bargh (2001) "stereotype priming effects on the behaviour of a member of the stereotyped group...are likely to be larger (and easier to obtain) because for group members there are two routes, not just one, to the representation of that kind of behaviour. The first is the activated stereotype, but the second is the person's self-representation or social identity, which constitutes a second and strong source of activation of the particular trait concept representation. Nongroups members have just one route, through the activated stereotype (or perceived behaviour)" (p. 21).

The idea that age identification plays a role in stereotypes effects on older people has been one of the cornerstones of ageism research since the beginning. According to Levy (2003), identifying with old age is a fundamental step in the fact that aging stereotypes become self-stereotypes. First, when an individual reaches an age formally defined as old, there is an external imposition that categorizes that person as old. In this sense, age stereotypes become self-stereotypes that are imposed given a formal belonging to the old age group. However, joining the aged reference group involves a second step that imposes that the individual believes that he/she is old, that is, involves identification with others in the same category. It

³⁰ Our idea in these studies is not to question prior evidences showing that people can also be influenced by the activation of "other-stereotypes" in their impressions of others (Devine, 1989) or in their more basic behaviors (Bargh et al., 1996). However, there is more or less consensus in the literature that priming effects are stronger and easier to obtain in targets of the stereotype. Hence, subliminal priming effects are easier to obtain in targets than in non-targets.

is only then that aging stereotypes become truly *self*-stereotypes of aging. Although the length of this processes would vary as a function of the negativity of aging stereotypes, with individuals taking more time to identify with old age when aging stereotypes are negative (i.e., denying that they are in fact old), social daily pressures (e.g., mass media or health contexts) would soon erode the barrier of denial, creating a sense of self-relevance to the self. In this case, eventually all old formally defined individuals will become identified with old age, especially at more advanced ages (i.e., after 74 years) and will eventually suffer the effects of implicit aging stereotypes activation. In a recent study, O'Brien and Hummert (2006) found some support for this idea that age identification plays an important role in these processes. In fact, according to their predictions, they showed that implicit age identification (i.e., measured by the IAT) moderated the effects of aging stereotypes. As expected, middle-aged participants with higher degree of identification with the old age group showed worst memory performance after being primed with the negative aging stereotype than participants with lower degree of identification.

However, we think the role given to age identification still needs to be further investigated. First, there are contradictory evidences regarding this moderator role of group identification in general priming effects. For instance, in a recent study Hall and Crisp (2007) studied the effects of the younger stereotype on younger people and did not find evidences of a significant moderator effect of age identification. Secondly, there are some doubts regarding older's people level of identification with the older age group. In fact, according to Hummert et al. (2002) even the oldest individual identifies implicitly more with youth than with old age. This leaves some doubts regarding the role of old age identification in the process by which implicit aging stereotypes affect the responses of older individuals and asks for further clarification.

In this set of studies, our goal is to explore the moderator role that age identification plays in the process by which aging stereotypes affect the use of comparative optimism strategies in older people. In support of the psychosocial perspective on risk perception, there are some studies showing that group identification plays a significant role in risk estimates in general (Lima, 1994, 1997; Lima & Marques, 2005) and particularly in comparative optimism scores (Lima et al., 2007). In this last work, our research team conducted a study where we explored individual's use of comparative optimism strategies regarding urban risks in three different European cities. Results were consistent across countries and showed a significant moderator effect of identification with the city in comparative optimism regarding more serious and uncontrollable risks (i.e., Terrorism and Airplane fall). Consistent with our expectations,

results revealed that high identified individuals showed significant lower comparative optimism regarding the in-group than low identified individuals. However, they showed significantly higher comparative optimism regarding the out-group than low identified individuals. These results showed that high identified individuals were using inter-group competition strategies in order to cope with the threat of severe risks to their city. However, and in accordance with social identity's perspective, they were also more willing than low identified individuals to stick with the group when things go wrong (Spears, Doosje et al., 1997).

The present studies are conducted in the context of ageism research and explore the effects of aging stereotypes and old age identification in older's people use of comparative optimism strategies regarding typical aging illnesses. However, in these studies we are interested in exploring two facets of old age identification. In fact, besides the traditional exploration of the role played by the *degree* of identification (i.e., "how much an older individual identifies with the old age group") our goal is also to uncover the role played by the *salience* of old age identification (i.e., "whether the old age identity is particularly activated in the context").

Traditionally, studies on stereotype priming effects have always asked participants to answer the measure of group identification before stereotypes were activated (Hall & Crisp, 2007; O'Brien & Hummert, 2006). Although this may be defended based on methodological concerns regarding the study of moderator effects (Baron & Kenny, 1986), we think that asking individuals to answer the group identification measure before stereotype activation is having an unwanted effect: it is making salient an identity that might not be naturally salient in all contexts. Hence, identity is having an effect mostly because we are forcing it. In fact, there are some evidences within the priming research that support our perspective. For instance, in an influential study, Spears and colleagues (2004) showed an interesting pattern of results regarding "other-stereotypes" effects. Using a clever within-subjects procedure, they showed that assimilation to an activated stereotype could easily turn to contrast effects if group identification was made salient. Spears et al. (2004) primed a group of students with the "very busy business people" stereotype. According with assimilation effects, students in this condition acted in a much quicker manner than in the control condition. Afterwards, in what was presented as an unrelated task, they asked the same students to fill in a measure of identification with their in-group (the group of students) and measured once again their working speed. Results showed that, after they answered the group identification measure, these students showed not an assimilation effect to the "business" stereotype, but a contrast effect. In fact, more in accordance with the students' stereotype, they become slower. We

think these results provide strong support for the idea that making participants answer the group identification measure before may increase the salience of one social identity which was not available in the first place. Hence, these effects should be controlled when we are exploring the moderator role of group identification in priming effects. Regarding this issue, we need to make one final comment. These results were obtained in the “other-stereotypes” line of research; hence, they still need to be further investigated in the “self-stereotyping” domain. Our studies aim to explore this issue in more detail.

We believe that one way to control for this effect of “identity salience” is to manipulate the order of presentation of the group identification measure: it can be answer before stereotype activation (High age identity salience) or in the very end of all the tasks (Low age identity salience). This way we can explore whether answering the age identification measure before stereotype activation is somehow making this identity salient and influencing results.

Our design for Study 7 and 8 is a 2 (Stereotype valence: positive and negative) x 2 (Salience of old age identification: High or Low) factorial design with Stereotype valence and Salience of old age identification as between-subjects factors. As dependent variables we will measure once again comparative optimism regarding aging illnesses. However, in this study we will only include the least experienced illnesses (Heart attack and Stroke) because these were the ones where we found significant use of comparative optimism.

Finally, we would like to add that Study 8 aims to be a replication of Study 7, but using a different method of supraliminal stereotype activation. Hence, it follows basically the same hypothesis. Next, we will present the specific goals for these studies.

Study 7 – Am I old? How age identification moderates the effect of aging stereotypes on comparative optimism regarding illness

The overall goal of this study is to explore the role of aging stereotypes and old age identification on the use of comparative optimism regarding typical aging illnesses. In this study we will only study the effects on the two least personal experienced illnesses - Heart attack and Stroke - since these were the ones where we found consistent significant comparative optimism in previous studies.

In this study we have three specific hypotheses:

H1) we expect a significant main effect of stereotype valence in the same direction as we found in Studies 5 and 6: lower comparative optimism regarding Heart attack and Stroke in the negative stereotype condition than in the positive stereotype condition.

H2) we expect a significant main effect of the degree of age identification, showing that comparative optimism is lower in high identified individuals than in low identified individuals.

H3) we expect a significant interaction between stereotype valence and the degree of age identification, showing that priming effects are stronger in high than in low identified individuals.

We also have one more exploratory goal:

G1) we wish to explore whether Age Identity Salience plays a moderator effect on the way aging stereotypes affect the use of comparative optimism regarding typical aging illnesses.

Method

Participants

This study included 60 participants ($M_{age}= 72$ years, $SD=11.16$). 83.3% were female and 16.7% were male. The majority of older adults were living independently in the community by themselves (50%), with their spouses (40%), and with their families (10%). The majority had at least 4 years of education (75%) and above 50% had more than 6 years of education. Almost all participants were retired from work (85%).

Participants evaluated their health in a medium level ($M=4.27$, $SD=1.00$; scale varied from 1 “Terrible health” until 7 “Excellent health”). When asked about their personal experience with illnesses they reported the following conditions: Hypertension (21.7%), illnesses related with the bones in general (18.3%), Rheumatism (3.3%), illnesses related with the heart in general (3.3%), respiratory illnesses (1.7%), ear ache (1.7%), and other illnesses (43.3%). None of the participants referred having personal experience with Heart attack or Stroke.

Older adults were recruited in several institutions for older people including Senior Universities and Leisure centres. The two criteria for inclusion in the study were being native Portuguese speakers, and ability to read and write Portuguese.

Materials

Stereotype activation. To activate the older positive and negative stereotype we adapted the method proposed by Macrae et al. (1994) and Dijksterhuis and colleagues (Dijksterhuis & Van Knippenberg, 1996, 1998). This task was presented to participants as a test of “Episodic memory”. For each stereotype condition we presented participants with the four positive or negative stereotypical traits and asked them to imagine a typical older person and to list a behaviour for each trait. Positive stereotypical traits were the same as in Studies 5 and 6 (*wise, mature, calm* and *sociable*). However, we introduced a change in the set of negative traits. Previously we have used the following four traits: *ill, dependent, forgetful* and *slow*. We think the use of the “ill” trait may cause some problems in the sense that effects on the Comparative optimism measure may be the result of the direct activation of the trait “ill” instead of the activation of the negative part of the older stereotype in general. In fact, the Comparative

optimism measure asks participants directly about their perceptions of risks of illnesses and hence should be sensible to the activation of trait such as “ill”. To overcome this limitation, we substituted “ill” by “alone” which is a similarly typical trait of older people. Hence, we think that now is safe to say that priming effects are not only due to the activation of the a specific trait but to the activation of the negative part of the older stereotype (Bargh et al., 1996; Devine, 1989).

Old age identification. We used a measure based on Abrams, Eller and Bryant (2006). In this scale participants were asked to indicate in which degree they agreed with the following sentences (1=*strongly disagree* to 5=*strongly agree*): “I identify with the old age group”, “I have a strong sense of belonging to the old age group”, and “I am pleased to be a member of the old age group”. This scale revealed good psychometric qualities (Cronbach alpha=0.86).

Degree of age identification was measured by the value obtained in this scale (higher values indicate higher identification with the old age group). *Saliency of age identification* was manipulated by asking participants to answer this scale before stereotype activation (High identity saliency condition) or after all the tasks (Low identity saliency condition).

Comparative optimism. We used the same measure as in previous studies (Armor & Taylor, 1998). However, in this study we only included Heart attack and Stroke and computed an overall index by considering both illnesses. First we computed two indexes: RPself_(Heart attack + Stroke) (Cronbach alpha = 0.75) and RPolder_(Heart attack + Stroke) (Cronbach alpha = 0.91). Afterwards we computed the Comparative Optimism measure by subtracting RPself from RPolder (RPolder – RPself). This index was used in subsequent analysis.

Procedure

Each participant was individually tested in a quiet room of the leisure centres or Senior Universities. They were asked to participate in three different studies. Participants were told that one of these studies was a task aimed to measure “Episodic memory”. The other two studies were presented as a pre-test of questionnaires to use in future studies. Participants were informed that they would be presented with each of these three studies in a random order and they were asked to choose from a bag a paper that indicated which questionnaire they were supposed to answer next. The idea of this procedure was to make sure that participants did not understand the relationship between the three tasks.

However, in fact, the order of presentation was not random. In the “High age identity salience” condition, each participant was presented first with a questionnaire containing the old age identification measure. Afterwards they were asked to participate in the “second study” which was presented as the “Episodic memory” test and aimed, in fact, to activate the stereotype of aging. They were randomly assigned to the positive or negative stereotype condition, and were given the respective questionnaire to fill. Finally, they were presented with the “third study” which consisted of the questionnaire including the Comparative optimism measure. On the other hand, in the “Low age identity salience” condition, participants were presented with the “Episodic memory test” first, than the questionnaire including the Comparative Optimism measures and finally with the questionnaire containing the old age identification measure.

At the end of each session, all participants answered an Awareness assessment questionnaire. This time we asked participants several specific questions: 1) they were asked to freely indicate what they thought these studies were about; 2) they were explicitly asked whether they perceived any relationship between the tasks (1=yes; 2=no) and to freely indicate their opinions regarding this matter; finally 3) they were asked if they could remember the words that were written in the episodic memory task.

After they completed the awareness assessment questionnaire, the experimenter debriefed participants, asked them to sign a consent statement regarding their participation in the study, and gave them a participation certificate that aimed to activate positive stereotypes of aging.

Results

Manipulation check and awareness assessment questionnaire

Results regarding the final awareness assessment questionnaire showed that none of the participants revealed any understanding of the true objective of the study. In the “free response” question, none of them reported knowledge that the older stereotype was being activated by the “episodic memory” task and none of them referred any understanding of the relationship between the “three” studies. When asked explicitly if there was any relationship

between the “three” studies, 77.8% said “yes” and 22.2% said “no”. However, when asked what they thought the relationship between the studies was, none of the participants who answered “yes” to the first question revealed any understanding of the true objective of the study. The majority did not say anything about the true objective of the study (67.5%). However, a significant percentage of participants said that they did not know the objective of the studies (17.5%) or they said that they generally referred to older people (27.5%) or health (20%). We found no significant differences in the number of people who answered “yes” or “no” in the different experimental conditions. These results indicate that the priming effects are happening in an implicit manner, without participants’ intentionality.

The analysis of memory of words that were presented in the “episodic memory” task showed that the majority of participants (78.3%) adequately remember one or more of the stereotype words that were presented according with each experimental condition. We found no significant differences between experimental conditions in the number of participants we could or not recall the words.

Overall we think the results of the Awareness assessment questionnaire show that although the majority of participants are aware of the presented stereotypical words, they are unaware of the relationship between the tasks. Hence, once again we think is safe to say that priming effects are occurring without participant’s intentionality.

Comparative optimism regarding typical aging illnesses

We conducted a preliminary analysis of the role played by demographic variables and by Perceived Health and Personal experience with illness. We did not find any significant correlation of these variables with Comparative Optimism scores.

To analyze the effects of our manipulations on Comparative Optimism scores first we conducted a regression analysis, that allowed us to test for the three-way interaction between Stereotype valence*Saliency of age identification*Degree of identification. In order to do so, we created two orthogonal contrasts: the first contrast compared the Positive priming (-0.5) to the Negative stereotypical priming (0.5) and the second contrast compared the condition with High age identity saliency (-0.5) with the condition with Low age identity saliency (0.5). We also created three two-way interaction terms by multiplying each of the contrast coded variables between themselves and with the Degree of identification (that was centred) and one

three-way interaction term by multiplying the two contrast variables and the Degree of identification (J. Cohen, Cohen, West, & Aiken, 2003).

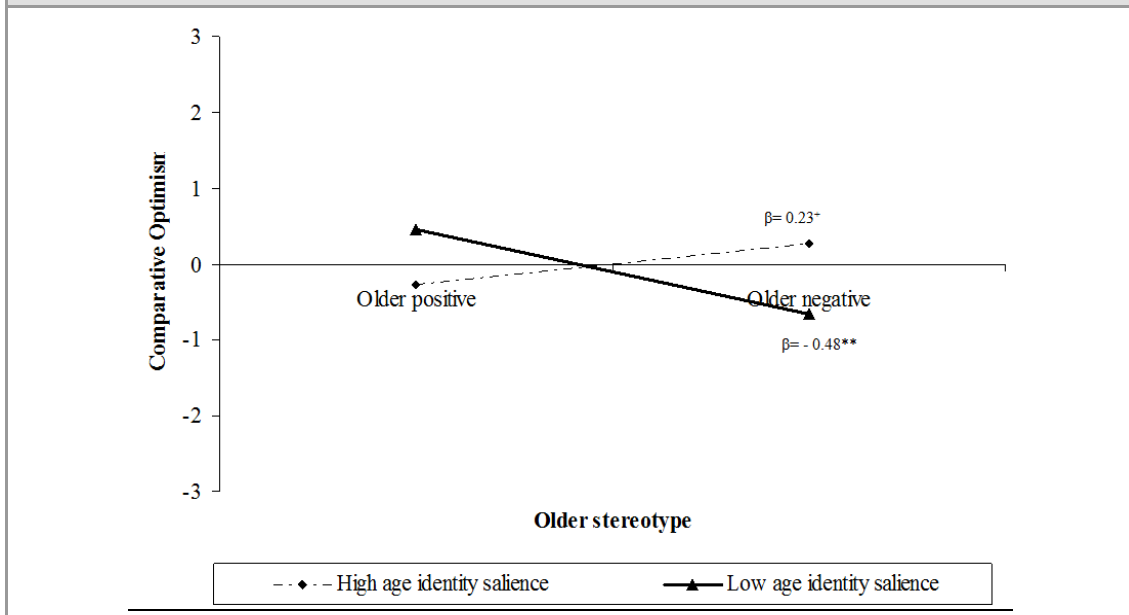
The analysis revealed that the overall regression was significant, $R=0.59$, $R_{adj}^2=0.27$, $F(7, 52)=4.05$, $p < .001$. We found a significant effect of Stereotype valence*Saliency of age identification, $b = - 1.64$, $SE=0.57$, $t = - 2.86$, $p<.01$, and a significant effect of Stereotype valence*Degree of age identification, $b = - 0.65$, $SE=0.31$, $t = - 2.08$, $p<.05$ (see Table 13).

Table 13. Results of regression analysis for Comparative Optimism on Stereotype valence, Saliency of identification and Degree of identification			
Variables	<u>b</u>	<u>SE</u>	<u>β</u>
Stereotype valence	- 0.28	0.29	- 0.12
Saliency of age identification	- 0.10	0.29	- 0.04
Degree of identification	- 0.24	0.16	- 0.21
Stereotype valence x Saliency of age identification	-1.64	0.57	- 0.36**
Stereotype valence x Degree of age identification	- 0.65	0.31	- 0.26*
Saliency of age identification x Degree of age identification	0.18	0.31	0.08
Stereotype valence x Saliency of age identification x Degree of age identification	0.36	0.62	0.08
<i>Note: Degree of age identification was centred at its mean</i>			
<i>* $p<.05$ **$p<.01$</i>			

Next we tested separately for the significant two-way interaction. Simple slopes analysis revealed that, replicating the effects found in Study 5 and 6, when age identity saliency is low, there is significant less comparative optimism in the negative stereotype condition than in the positive stereotype condition, $b = - 1.10$, $SE=0.43$, $t = - 2.57$, $p < .01$ (one-tailed). However, when age identity saliency is high, the pattern reverses and there is higher comparative optimism in the negative than in the positive stereotype condition (albeit at a marginal level of significance), $b = 0.54$, $SE=0.38$, $t = 1.42$, $p < .08$ (one-tailed) (see Figure 3)³¹. These results give partial support to our H1. In fact, we did not find a main effect of Stereotype Valence; in fact, in this study, this effect is significantly moderated by Saliency of age identification.

³¹ In Annex 2 we present the descriptive values separately to RPself and RPolder for each illness.

Figure 3. Effects of Stereotype Valence and Salience of Age Identification on Comparative Optimism.

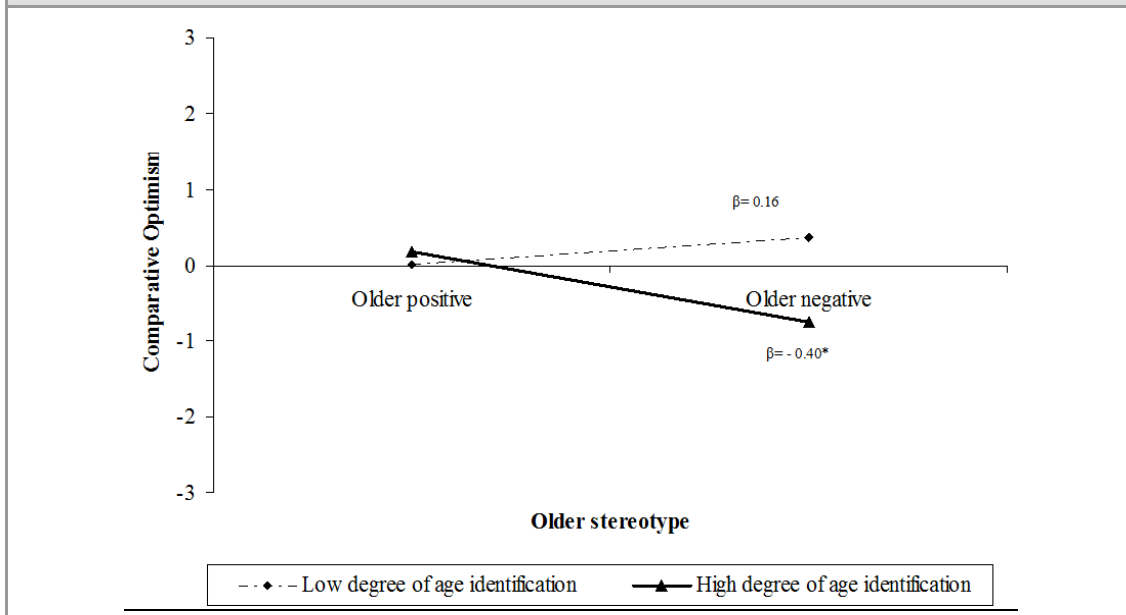


Next we examined the Stereotype valence*Degree of age identification. The simple slope for the effect of Stereotype Valence on Comparative Optimism was significant for people with high identification with the age group, $b = -0.93$, $SE=0.41$, $t = -2.28$, $p < .05$. However, we did not find significant effects of Stereotype Valence on Comparative Optimism ratings of low identified individuals, $b = 0.36$, $SE=0.43$, $|t| < 1$ (see Figure 4).

It is important to note that these results do not support our H2 in the sense that they do not show the expected main effect of degree of age identification in Comparative Optimism scores. In fact, the effect of Degree of identification interacts with the stereotypic condition: results show that the degree of identification does not seem to matter in the case of positive stereotype in the sense that high and low identifiers do not differ. However, in the negative stereotype condition, high identifiers show lower CO than low identifiers.

Finally, our results seem to support H3 in the sense that they show stronger priming effects in the case of high than in the case of low identified individuals.

Figure 4. Effects of Stereotype Valence and Degree of identification on Comparative Optimism



Discussion

The results of Study 7 show that the priming effects found in Study 5 and 6 on Comparative Optimism only occur when old age identity is not salient in the context. In fact, only when older people are primed with the aging stereotype *and* are not particularly aware of their age group, do they act in line with the stereotypic content that has been activated. In these conditions, they show the same pattern as in Studies 5 and 6: lower use of Comparative Optimism in the negative than in the positive stereotype condition. However, making old age identity salient before stereotype activation has a significant effect on older people's answers. In fact, it seems that this condition is enough to turn the pattern all around, with older people showing significantly higher comparative optimism in the negative than in the positive stereotype condition.

A deeper analysis of these results showed that this pattern was caused by two concurring effects: while comparative optimism increased significantly in the negative condition, at the same time it decreased in the positive condition. Hence, it seems that identity salience was having simultaneously two effects. The first one is that older people were able to counteract the effects of negative older stereotypes by increasing comparative optimism. However, the second one is that they also lose the advantages of positive stereotype activation because

they were making less use of the favourable adaptation strategy which is comparative optimism. In a way, it seems that there was a complete reversal of the pattern of results.

One possibility to explain this pattern of results is that the increase in social identity salience is causing older people to engage in strategic behaviours much like those advocated by the social identity approach. Interestingly, we think this idea concurs with Spears and colleagues (2004) results in the “other-stereotypes” domain. Recall that in this study, Spears et al. found that assimilation effects could easily turn to contrast effects if individuals answered a group identification measure before performance. According to these authors, making group identity salient was causing participants to engage in inter-group competition and contrast from out-group stereotypes. In the present study, we found similar results using a self-stereotyping procedure. If individuals answer a group identification measure before stereotype activation there is a change in priming effects. However, in our case, this change considers stereotype valence: older people contrast the negative stereotype, but join the positive stereotype of aging.

The overall idea that making group identity salient may activate the adoption of strategic behaviours is also in line with the Social Self-regulation model (SSR) proposed by Abrams (1990; 1994; 1996). In fact, according with this model, increasing attention to the self is associated with increased compliance with personal and social standards for behaviours, and is an important process in the regulation of social behaviours causing a feedback control system to engage (Carver & Scheier, 1981). In this case, a “supervisory attention-full system” (Shallice, 1988) becomes responsible for managing the complex processes responsible for behaviours and sets behavioural targets in accordance not only with the salient categorization, but also considering other self-relevant information such as individuals broader goals and motives (e.g., self-image preservation, survival, etc.). Hence, our idea would be: when we make older people answer an age identification measure we are increasing attention to their belonging to the old age group. We believe that this may be sufficient to activate a regulatory mechanism which influences behaviours. Hence, older’s people responses do not just reflect activated stereotypes; they also reflect individual’s needs to preserve a positive social identity. This explains how older people would assimilate to the positive stereotype, while contrasting from the negative image. How this regulatory system works, for instance, if there are any “hot” motivational variables involved or whether it is a resourceful system (i.e., if it needs cognitive resources) is still unclear to us at this point. The only thing we can be sure about at this point is that it seems to act without participants’ awareness or intention. In fact, we should recall that the results to the “awareness assessment questionnaire” allowed us to

conclude that all effects, even the “strategic” ones, were occurring in an automatic manner, at least without participant’s intentionality and awareness. Hence, we believe that identity motives were being automatically activated when older people answered the group identification measure and affected priming effects. We find support for this idea in recent motivated perspectives of priming effects (Bargh, 1990; Fitzsimons & Bargh, 2004; Förster, Liberman, & Friedman, 2007; Kunda & Spencer, 2003).

We think that this study may help us to understand some of the results obtained in stereotype priming literature regarding contrast effects. In fact, given these results, we believe that general situations that increase identity salience probably foster the typical contrast effects found in the stereotype priming literature. Recall that in these studies there were evidences that blatant priming seemed to lead both to a decrease in performance in the positive stereotype condition (Hess et al., 2004, Study 2; Shih et al., 2002), and to an increase in performance in the negative stereotype condition (Hess et al., 2004, Study 1). We think that maybe the factor which was promoting these contrast effects was not supralimilarity of the stereotype stimulus *per se* (as argued by the authors) but the fact that probably the manipulations used to induce stereotype activation were somehow also making identity salient. Hence, identity salience is a main factor to consider when we analyze self-stereotyping effects and should be seriously taken in consideration in future research regarding this theme.

It is important to consider that in this study, we also found a significant interaction between stereotype priming and the degree of age identification. In fact, according with previous evidences (O'Brien & Hummert, 2006) we found that priming effects were stronger in higher than in lower identified individuals. Interestingly, the pattern of results show that whereas we found no differences between low identified individuals comparative optimism in the positive and negative stereotype condition, high identified individuals decrease in a significant manner the use of Comparative Optimism in the negative stereotype condition. We believe that these results support social identity’s predictions and show that high identified individuals tend to stick with the group, particularly when their group identity is threatened (Spears et al., 1999a). In fact, these results show that, when negative aging stereotypes are activated high identified older people reveal, in fact, comparative “pessimism”. Hence, these results support the idea that, despite the role that identity salience may have on these processes, high identifiers will more likely stay with the group in both “good” and “bad” situations”.

We believe that the results of this study are relevant and allow us to reach some important conclusions. First of all, they reinforce once more our previous evidences showing that, when older people are subject to the activation of the negative aging stereotype they show lower use of comparative optimism regarding less experienced illnesses (Heart attack and Stroke) than when they are in situations that activate the positive stereotype of aging. However, importantly, this study shows that both the salience and the degree of old age identification play a significant effect in these processes, emphasizing the need to further explore the role played by these factors in the future.

Given the novelty of these results, we felt the need to replicate this study once more, adding some variables that might help us explain these results. In Study 8 we will address this issue once again.

Study 8 – Replicating the effect of age identification

This study aims to replicate Study 7, with some differences. First of all, in Study 8 we will use a different method of supraliminal stereotype activation. In fact, in this study we will use again the same method as we used in Study 6, activating positive and negative stereotypes of aging through the fictitious “marketing brochure”. Our goal is to see whether the obtained effects regarding age identification occur when we use a method of stereotype activation much more common in older people’s everyday settings.

Moreover, in this study we will also like to include two new variables. The first one is Anxiety. As we referred elsewhere, one of the debates around contrast effects from activated stereotypes centres in the role that more motivational “hot” variables play in this process. In this regard, some authors advanced that feelings of anxiety could mediate reactions to the activation of in-group stereotypes (Hess et al., 2004; Shih et al., 2002). However, neither of these studies included any proper measure that could confirm this hypothesis. Hence, we think this is an important issue to clarify. In this study, we will introduce a measure that will allow us to explore the role that this variable plays in the effects regarding comparative optimism scores.

Finally, we will also add a more “behavioural” measure of health practices which we called *Hedonic behaviours*. This measure aims to evaluate those kinds of behaviours which are very pleasurable although they sometimes carry some risks for one’s health, particularly in advanced ages. We included in this measure for instance “The number of glasses of wine one can drink without passing out”, “The number of chocolates one can eat without endangering one’s health” and other items alike. Our goal is to explore the relationships that comparative optimism has with the choice to engage in hedonic behaviours. Our hypothesis is that lower levels of comparative optimism would signal that prevention efforts are needed and would be associated with lower levels of *Hedonic behaviours*.

Method

Participants

This study included 38 participants ($M_{age}= 71.24$ years, $SD=6.37$). 63.2% were female and 36.8% were male. The majority of older adults were living independently in the community with their spouses (68.4%), by themselves (18.4%) or with their families (13.2%). 52.6% had 4 years of education and 47.4% had more than 4 years of education. The majority was retired from work (73.7%).

Participants evaluated their health in a medium level ($M=4.21$, $SD=0.74$; scale varied from 1 “Terrible health” until 7 “Excellent health”). When asked about their personal experience with illnesses they reported the following conditions: Hypertension (13.2%), illnesses related with the bones in general (13.2%), respiratory illnesses (10.5%), Rheumatism (7.9%), Asthma (2.6%) and other illnesses (34.2%). None of the participants referred having personal experience with Heart attack or Stroke.

Older adults were contacted individually at their homes and asked to participate in the study. The two criteria for inclusion in the study were being native Portuguese speakers, and ability to read and write Portuguese.

Materials

Stereotype activation. We used the same method as in Study 6: the “Opinion survey regarding the Leisure Centre for older people” (see Annex 3).

Old age identification. We used the same measure as in Study 7 (Abrams et al., 2006). The scale revealed good psychometric qualities (Chronbach alpha=0.86).

Comparative optimism. We used the same measure as in Study 7 (Armor & Taylor, 1998). As before we computed two indexes RPself (Heart attack + Stroke) (Chronbach alpha=0.83) and RPolder (Chronbach alpha=0.89). Afterwards we computed the Comparative Optimism measure by subtracting RPself from RPolder (RPolder – RPself). These indexes were used in subsequent analysis.

Hedonic behaviours. We asked participants to answer the following questions: “How many glasses of wine (125 ml) do you think are safe for you to drink without loosing

consciousness?”, “How many cod fish cakes³² you think are safe for you to eat in a day without endangering your health?”, “How many sugar spoons you think are safe for you to put in your coffee/tea during the day without endangering your health?”, “How many chocolate bonbons do you think are safe for you to eat in a day without endangering your health?”. The goal of these items was to measure participant’s tendency regarding the prosecution of “hedonic” behaviours. We define “hedonic” behaviours as behaviours that are pleasurable but, when performed in excess may harm one’s health. Principal Component Analysis of these items showed that they all loaded in the same component explaining 52.90% of data variance. Moreover, these items also revealed high internal consistency (Chronbach alpha= 0.70). Given these results, we computed a summary score by averaging scores across the four items. Higher values in this score represent that individuals referred more hedonic behaviours (i.e., drinking more glasses of wine, eating more codfish cakes, using more sugar and eating more chocolate).

State anxiety. We used the STAI-state questionnaire (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) The scale showed adequate reliability levels (Chronbach alpha= 0.93).

Procedure

We used the same procedure as in Study 7, maintaining the same order of presentation in the “high salience of age identification” condition and in the “low salience of age identification condition” previously used. However, in the present study, the “stereotype activation task” was presented as the “Opinion Survey regarding a Leisure Centre for older people”.

Each participant was individually tested in a quiet location in their homes. They were asked to participate in three different studies. Participants were told that one of these studies was an Opinion survey regarding a Leisure Centre for older people. The other two studies were presented as a pre-test of questionnaires to use in future studies. Participants were informed that they would be presented with each of these three studies in a random order and they were asked to choose from a bag a paper that indicated which questionnaire they were supposed to answer next. The idea of this procedure was to make sure that participants did not understand the relationship between the three tasks.

³² Cod fish cakes are part of the typical Portuguese cuisine. Although they are very tasty, they are fried in oil and so they should be eaten with moderation.

However, in fact, the order of presentation was not random. In the “high salience of age identification” condition, each participant was presented first with a questionnaire containing the old age identification measure. Afterwards they were asked to participate in the “second study” which was presented as the “Opinion survey regarding the Leisure Centre”. They were randomly assigned to the positive or negative stereotype condition, and were given the respective advertising brochure. They were asked to read it carefully during 2 minutes, and to answer some questions for the market study. Finally, they were presented with the “third study” which consisted of the questionnaire including the Comparative optimism, Hedonic behaviours and the Anxiety measure. On the other hand, in the “low salience of age identification condition” condition, participants were presented with the “Opinion survey regarding the Leisure Centre” first, than the questionnaire including the Comparative Optimism, Hedonic behaviours and Anxiety measures and finally with the questionnaire containing the old age identification measure.

At the end of each session, all participants answered an Awareness assessment questionnaire. Once again we asked participants several specific questions: 1) they were asked to freely indicate what they thought these studies were about; 2) they were explicitly asked whether they perceived any relationship between the tasks (1=yes; 2=no) and to freely indicate their opinions regarding this matter; 3) they were asked to think about the brochure of the “Opinion survey regarding the Leisure Centre” and to indicate how they thought older people were portrayed in the brochure. In order to do this, each participant was asked to choose, from a list of traits, two traits they thought to be associated with the text presented in the brochure. This list of traits contained two older positive stereotypical traits (wise and calm), two older negative stereotypical traits (forgetful and slow), two positive younger stereotypical traits (creative and alert) and two younger negative stereotypical traits (irresponsible and hasty) which were presented in a random order; 4) finally, each participant was asked to indicate their general impression regarding the positivity or negativity of older people’s image in the brochure (1=very negative until 5=very positive).

After they completed the awareness assessment questionnaire, the experimenter debriefed participants, asked them to sign a consent statement regarding their participation in the study, and gave them a participation certificate that aimed to activate positive stereotypes of aging.

Results

Manipulation check and awareness assessment questionnaire

Results regarding the final awareness assessment questionnaire revealed that none of the participants revealed any understanding of the true objective of the study. In the “free response” question, none of them reported knowledge that the older stereotype was being activated by the brochure and none of them referred any understanding of the relationship between the “three” studies. When asked explicitly if there was any relationship between the “three” studies, 60.5% said “yes”, 28.9% said “no”, and 10.5% did not answer at all. However, when asked what they thought the relationship between the studies was, none of the participants who answered “yes” to the first question revealed any understanding of the true objective of the study. The majority referred that what they had in common was that they referred to older people (56.2%) and that they all referred to illnesses (16%). We found no significant differences in the number of people who answered “yes” or “no” in the different experimental conditions. These results indicate that the priming effects are happening in an implicit manner, without participants’ intentionality.

To assess whether participants were aware of the stereotypic content that was present in the brochure we analyzed their choice regarding the list of 8 stereotypic traits. The only significant effect we found was that, in mean, participants chose more older ($M=1.34$; $SD=0.58$) than younger ($M=0.55$; $SD=0.60$) stereotypic words, $t(38)=4.45$, $p<.001$. However, the analysis showed no significant differences across experimental conditions neither in the mean total number of words chosen, in the mean number of positive and negative older words, nor in the mean number of positive and negative younger words.

These results seem to indicate the activation of the older stereotype. However, they do not show differences in the activation of the positive and negative stereotypic older traits across priming condition. However, once again we think that indirect evidence that these different contents were activated may be given by the results of the “Opinion survey”. We conducted a 2 (Stereotype valence: positive and negative traits) x 2 (Order of identification: before or after) randomized ANOVA with Stereotype valence and Order of identification as the between-subjects factors and “Finding the brochure interesting” as the dependent variable. Results showed a significant main effect of Stereotype valence, $F(1, 34)=5.92$, $p<.05$,

$\eta_p^2=0.15$, showing that participants in the positive condition ($M=5.22$; $SD=0.76$) found the brochure more interesting than those in the negative condition ($M=4.60$; $SD=0.75$).

Overall, what is important to retain is that, when asked to freely report what they thought the content of the studies was, participants were unable to refer any understanding of the “true” meaning of the experiment. Overall, they only understood that these were studies regarding aging issues. Moreover, in spite they showed awareness that the older traits were present in the brochure, they could not relate this activation with their answers to the questionnaire containing the dependent variables (they were aware of the stimulus but unaware of its effects). Hence, given these results it seems safe to say that the effects of our manipulations were occurring in an unintentional manner.

Comparative optimism regarding typical aging illnesses

We conducted a preliminary analysis of the role played by demographic variables and by Perceived Health and Personal Experience with illness. Similarly to previous studies, we did not find any significant correlation of these variables with Comparative Optimism scores.

To analyze the effects of our manipulations on Comparative Optimism scores first we conducted a regression analysis, that allowed us to test for the three-way interaction between Stereotype valence*Order of identification*Degree of identification. In order to do so, we created two orthogonal contrasts: the first contrast compared the Positive priming (-0.5) to the Negative stereotypical priming (0.5) and the second contrast compared the condition with High salience of age identification (-0.5) with the condition with Low salience of age identification (0.5). We also created three two-way interaction terms by multiplying each of the contrast coded variables between themselves and with the Degree of identification (that was centered) and one three-way interaction term by multiplying the two contrast variables and the Degree of identification (J. Cohen et al., 2003).

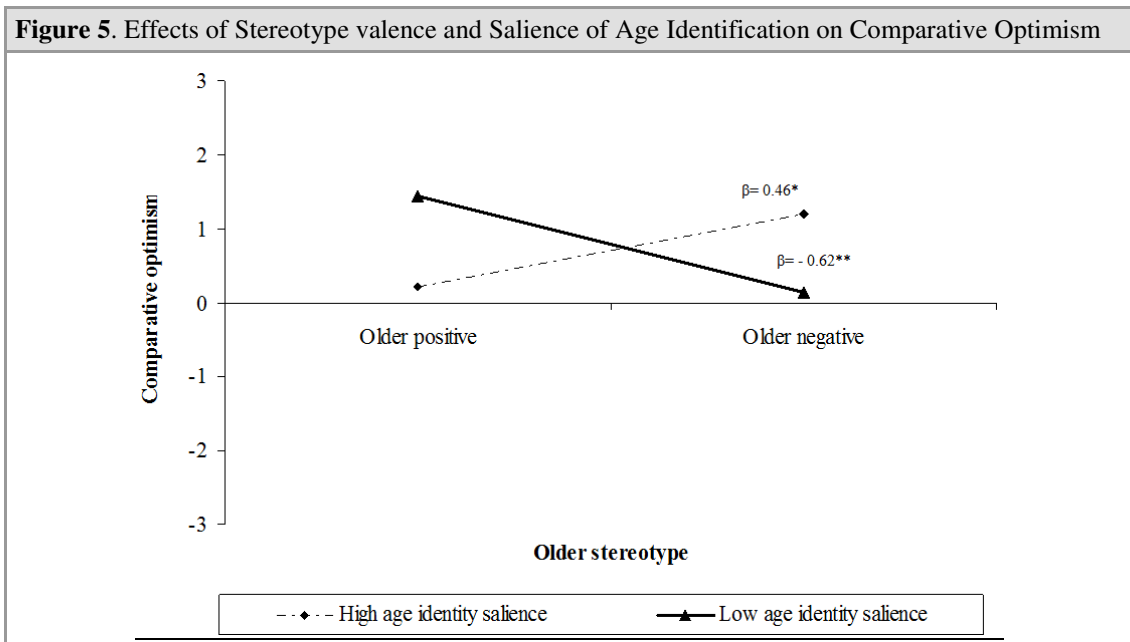
The analysis revealed that the overall regression was strong although not significant, $R=0.55$, $R^2_{adj}=0.14$, $F(7, 30) = 1.83$, $p < 0.11$. Importantly, and replicating the results of Study 7, there was a significant two-way interaction between Stereotype valence*Saliency of age identification, $b = - 2.27$, $SE = 0.77$, $t = - 2.96$, $p < 0.01$ (see Table 14).

Table 14. Results of regression analysis for Comparative Optimism on Stereotype valence, Salience of age identification and Degree of identification

Variables	<u>b</u>	<u>SE</u>	<u>β</u>
Stereotype valence	-0.16	0.38	- 0.08
Salience of age identification	0.08	0.38	0.04
Degree of identification	0.02	0.22	0.03
Stereotype valence x Salience of age identification	-2.27	0.77	- 0.55**
Stereotype valence x Degree of identification	0.56	0.44	0.29
Salience of age identification x Degree of identification	- 0.66	0.44	- 0.32
Stereotype valence x Salience of age identification x Degree of identification	-1.27	0.87	- 0.33

Note: Degree of identification was centered at its mean
 ** $p < .01$

Next we examined the significant two-way interaction between Stereotype valence*Identity salience. Replicating previous findings, the analysis of simple slopes revealed that, when identity salience is low, there is significant lower Comparative Optimism in the negative stereotype condition than in the positive stereotype condition, $b = - 1.30$, $SE=0.54$, $t = - 2.42$, $p < 0.01$ (one-tailed). However, when identity salience is high, the pattern reverses and there is significant higher comparative optimism in the negative stereotype condition than in the positive stereotype condition, $b = 0.97$, $SE=0.54$, $t = 1.78$, $p < 0.05$ (one-tailed)³³ (see Figure 5).



³³ In Annex 2 we present the descriptive values separately to RPself and RPolder for each illness.

However, contrary to what we expected we did not find a significant interaction between Stereotype Valence and the degree of identification.

Hedonic behaviours

To analyze the effects of our manipulations on the Hedonic behaviours index first we conducted a regression analysis, that allowed us to test for the three-way interaction between Stereotype valence*Saliency of age identification*Degree of identification. We used the same procedure as for the Comparative optimism analysis (J. Cohen et al., 2003). The analysis revealed that the overall regression was significant, $R=0.60$, $R_{adj}^2=0.21$, $F(7, 30)=2.45$, $p < .05$.

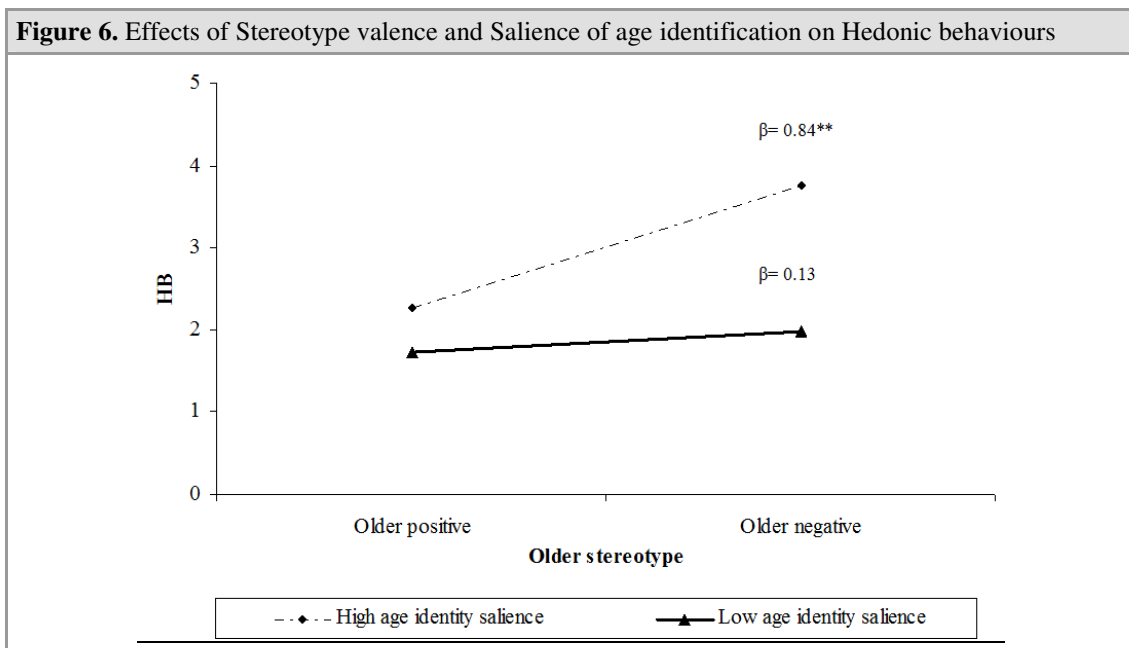
We found a significant effect of Stereotype valence, $b = 1.93$, $SE=0.70$, $t= 2.77$, $p<0.01$, showing that those in the negative stereotype condition showed more willingness to adhere to Hedonic behaviours than those in the positive condition. Moreover, we also found a significant effect of Saliency of age identification, $b = - 1.97$, $SE=0.70$, $t=- 2.83$, $p<0.01$, showing that when identification is measured before participants are more willing to engage in Hedonic behaviours than when identification is measured afterwards. We also found a significant two-way interaction between Stereotype valence*Saliency of age identification, $\beta = - 2.86$, $SE=1.39$, $t=- 2.05$, $p<0.05$, and a marginal significant two-way interaction between Stereotype valence*Degree of identification, $b = 1.37$, $SE=0.79$, $t = 1.72$, $p<0.09$ (see Table 15).

Table 15. Results of regression analysis for Hedonic behaviours on Stereotype valence, Saliency of Age Identification and Degree of identification

Variables	<u>b</u>	<u>SE</u>	<u>β</u>
Stereotype valence	1.923	0.69	0.49**
Saliency of age identification	-1.97	0.69	- 0.49**
Degree of identification	0.47	0.40	0.25
Stereotype valence x Saliency of age identification	-2.86	1.39	-0.36*
Stereotype valence x Degree of identification	1.37	0.79	0.37
Saliency of age identification x Degree of identification	-1.175	0.79	- 0.30
Stereotype valence x Saliency of age identification x Degree of identification	-2.553	1.59	- 0.34

Note: Degree of identification was centered at its mean
 * $p<.05$ ** $p<.01$

Next we tested for the significant two-way interaction. When we analyzed the significant Stereotype Valence*Saliency of age identification interaction, simple slopes analysis revealed that Stereotype Valence only affect Hedonic behaviours scores when age identity is salient. In this case, results show an increase in the number of Hedonic behaviours referred by participants in the negative than in the positive stereotype condition, $b = 3.32$, $SE=0.98$, $t= 3.38$, $p<0.01$. We did not find any significant differences in when identity saliency is low (see Figure 6).



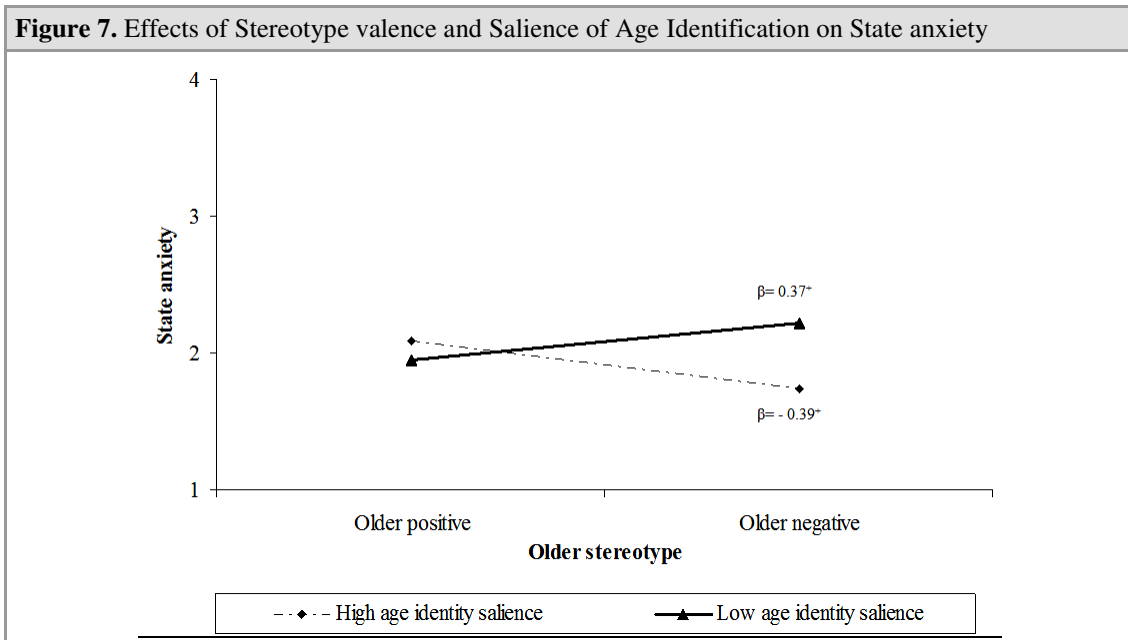
State anxiety

To analyze the effects on anxiety we used the same procedure as for the other measures. Hence, we conducted a regression analysis, that allowed us to test for the three-way interaction between Stereotype valence*Saliency of age identification*Degree of identification. This analysis revealed that the overall regression was strong but not significant, $R= 0.48$, $R^2_{adj}=0.04$, $F(7, 28)=1.22$. However, and more important, we found a marginal significant two-way interaction between Stereotype valence*Saliency of identification, $b = 0.77$, $SE=0.39$, $t= 1.98$, $p<0.06$ (see Table 16).

Table 16. Results of regression analysis for Anxiety on Stereotype valence, Salience of age Identification and Degree of identification			
Variables	<u>b</u>	<u>SE</u>	<u>β</u>
Stereotype valence	- 0.01	0.20	- 0.01
Salience of age identification	0.15	0.20	0.15
Degree of identification	0.05	0.12	0.10
Stereotype valence x Salience of age identification	0.77	0.39	0.39 ⁺
Stereotype valence x Degree of identification	- 0.03	0.25	- 0.03
Salience of age identification x Degree of identification	0.32	0.25	0.34
Stereotype valence x Salience of age identification x Degree of identification	- 0.02	0.49	- 0.01

Note: Degree of identification was centered at its mean
⁺ $p < .06$

To understand the marginal significant interaction between Stereotype Valence*Salience of age identification we analyzed the simple slopes. Results showed that, when age identity salience is low, there is a marginal significant increase of anxiety in the negative stereotype condition, $b = 0.37$, $SE=0.25$, $t= 1.35$, $p<0.09$ (one-tailed). However, when age identity salience is high, there is a marginal significant decrease in anxiety in the negative stereotype condition, $b = - 0.39$, $SE=0.27$, $t= - 1.41$, $p<0.08$ (one-tailed) (see Figure 7).



Relation between comparative optimism and the other variables

First, we analyzed the relationship between Comparative Optimism and Hedonic behaviours. Our results showed no significant correlation between these variables. Hence, contrary to our expectations, it was not possible to assume any effect of Comparative Optimism estimates on health behaviour. However, it is important to note that we did find a marginal significant correlation between Hedonic behaviours and Anxiety, $r = -0.29$, $p < .09$, showing that as Anxiety increases the number of Hedonic behaviours indicated by participants decreases. However, we did not find a significant mediation effects of Anxiety on Hedonic behaviours scores (we also did not find a mediated moderation effect of anxiety on this dependent variable).

Afterwards, we analyzed the relationship between Comparative Optimism and Anxiety. The analysis revealed a significant correlation between these two measures, $r = -0.35$, $p < .05$, showing that as Anxiety increases, there was a significant decrease in CO. Afterwards, we investigated whether Anxiety could mediate stereotype's effect on Comparative Optimism scores.

Previous analysis showed that the effect of Stereotype valence on Comparative optimism scores was moderated by Order of identification (see Figure 5). Hence, we considered that it was important to determine whether Anxiety was playing the same role in both conditions of Salience of age identification. To test this hypothesis we used a mediated moderation procedure according to the suggestion of Muller, Judd and Yzerbyt (2005). There are three fundamental models that underlie mediated moderation. In Step 1, we regressed Comparative Optimism on Stereotype Valence, Salience of age identification and the interaction between Stereotype valence*Saliency of age identification. In Step 2, we regressed Anxiety over the same set of predictors. Finally, in Step 3, Anxiety and the interaction term Anxiety*Saliency of age identification were added as predictors in the model. Table 17 presents the parameters estimated by regression models in each step.

Results show a significant mediated moderation effect. In fact, in the Step 1 and 2, results show a significant interaction of stereotype valence and salience of age identification on both the outcome variable (i.e., comparative optimism) and on the mediator (i.e., anxiety); albeit in this last case at a marginal level of significance. Moreover, in Step 3, results show the expected significant main effect of the mediator (ANS) on comparative optimism, indicating that the greater anxiety, lower optimism. Moreover, we also found a significant interaction effect of the mediator (ANS) by moderator (SI) interaction on Comparative Optimism.

Finally, according to the mediated moderation prediction, we found that the magnitude of the slope associated with the SV*SI variable (which represents the interaction effect) was weaker in absolute value in Step 3. Indeed, the Sobel test showed us that the moderation effect was marginally mediated by anxiety ($Z_{Sobel} = 1.59, p < .06$ (one-tailed)).

Table 17. Regression equations for testing mediated moderation ³⁴						
	Model 1		Model 2		Model 3	
	Criterion CO		Criterion ANS		Criterion CO	
	b	t	b	t	b	t
SV	- 0.41	-1.23	- 0.04	- 0.24	- 0.12	- 0.37
SI	0.21	0.63	0.17	1.01	0.35	1.10
SV*SI	- 1.67	-2.54*	0.64	1.92 ⁺	-1.33	- 2.01
ANS					- 0.74	- 2.23*
ANS*SI					-1.67	- 2.50*

b = unstandardized coefficients; CO = comparative optimism; SV = stereotype valence; SI = salience of age identification (moderator variable); ANS = anxiety (mediator variable); SV*SI = product of stereotype valence and salience of age identification; ANS*SI = product of anxiety and salience of age identification
* $p < .05$ ⁺ $p < .06$

In order to better interpretation this results, we decompose the valence effect in each condition of identity activation. As we can see in Figure 8, when age identity was not salient, the effect of Stereotype Valence on Comparative Optimism was mediated by Anxiety (although the Sobel test did not reach a significance level). In fact, in this condition, the activation of the negative aging stereotype increased older people’s anxiety levels, which in turn diminished Comparative Optimism. A totally different process seemed to have occurred when identity salience was high (Figure 9). As we can see, the activation of the negative stereotype significantly leads to both higher Comparative Optimism and lower Anxiety levels. However, there was no significant relationship between these two variables.

³⁴ The B values in this table for Step 1 and Step 2 present a small difference from previous estimates (see Table 14 e 16) because here we did not include the Degree of identification and the two-way and three-way interaction terms between this variable and SV and SI.

Figure 8. The effects of Stereotype Valence on Comparative Optimism when salience of age identification is low – mediation by Anxiety.

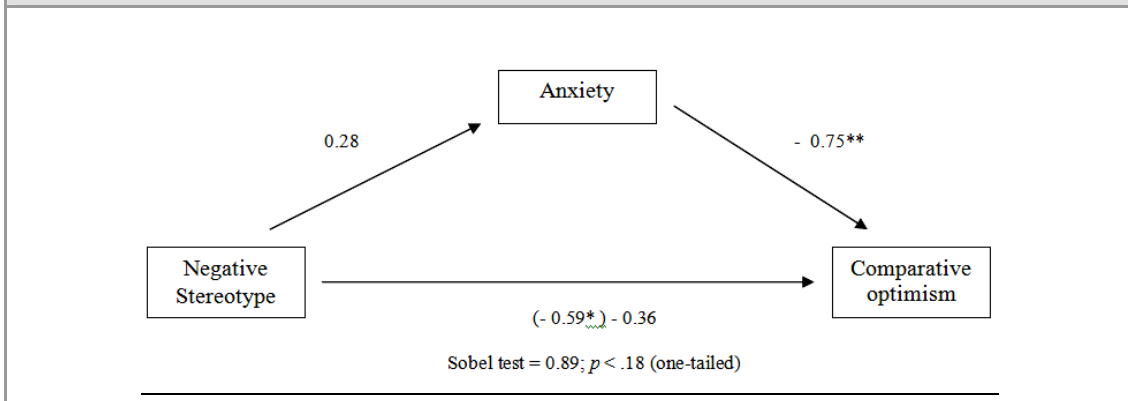
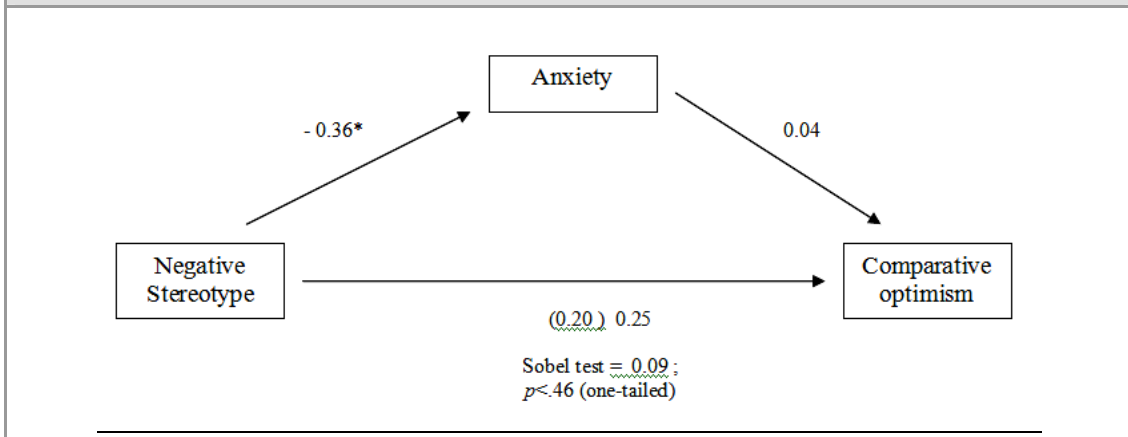


Figure 9. The effects of Stereotype Valence on Comparative Optimism when salience of age identification is high – no evidence of mediation by Anxiety



It is important to note that we also tested the alternative model of mediated moderation where SV was the predictor, CO the mediator variable and ANS the criterion variable. However, this analysis revealed no significant effects on Step 3. Hence, we assume that the role that anxiety is playing in this process is occurring as we described before.

Discussion

Study 8 replicates the results of Study 7: when age identification is not salient, comparative optimism is lower in the negative than in the positive stereotype condition. However, when we make age identity salient, the pattern turns all around: comparative optimism is higher in the negative than in the positive stereotype condition. Hence, once

again, these results support our notion that making age identity salient is an important factor to determine assimilation or contrast to the activated stereotype.

However, in the present study, we also showed that these differences between the conditions of age identity salience seem to be related with anxiety. In fact, we found a significant mediated moderation effect, showing that anxiety plays a different role when age identity is salient or not. Results showed that, when age identity salience is low, the activation of negative aging stereotypes leads to higher anxiety levels, which in turn, leads to a decrease in comparative optimism. However, when we make age identity salient, the activation of negative stereotypes leads both to a decrease in the anxiety levels and an increase in comparative optimism, and these two factors are unrelated. Hence, these results show that age identity salience is having, in fact, an automatic “buffer effect” of the negative stereotype of aging.

These results emphasize a “motivated perspective” of stereotype priming effects, showing that older participants are not affected in a “cold” manner by priming of the aging stereotype. First of all, when they are only primed with the positive or negative content of the aging stereotype, we have shown that the effect on comparative optimism seems to be mediated by anxiety. It is interesting to see that this result is unexpected according to the typical priming studies and is much more in accordance with the expectations of the rival Stereotype threat theory (Steele & Aronson, 1995). Recall that, according with this theory, anxiety plays a major role in the processes by which stereotypes affect targets. However, we have reasons to believe that our results reflect a truly “hot priming effect” and not a “stereotype threat effect”. In this sense, we need to acknowledge that in our study, we did not use the typical procedure used in stereotype threat studies these (e.g., comparison between the performances among groups (Abrams et al., 2008; Abrams et al., 2006). We are aware that it is possible that the use of the “Brochure” method may have caused higher threat than the typical trait priming procedures used in traditional stereotype priming studies (Bargh et al., 1996; Devine, 1989). However, we emphasize that in our case none of the participants reported explicitly feeling any threat posed by the brochure in the final awareness questionnaire. In fact, our participants were completely unaware of the possible effects of activated stereotypes on their answers to the following questionnaires. Hence, we believe that the results of Study 8 favour the point of view of some authors within the literature who defend that priming of negative traits is enough to create the typical negative affective state which usually accompanies a “stereotype threat situation” (Dijksterhuis & Bargh, 2001; Shih et al., 1999; Wheeler et al., 2001).

Priming is affecting not only performance, but also having its effects on emotional states and these two outcomes seem to be interrelated.

Interestingly, we have shown that priming also affect these two types of outcome variables when age identification is salient. However, it happens in a contrary manner. Paradoxically, when age identity is salient, being primed with the negative stereotype of aging leads to lower anxiety and higher comparative optimism than being primed with the positive stereotype of aging. Moreover, these two variables cease to have any relationship among them. Hence, not only performance is better in the negative prime because older people contrast from the negative stereotype and use more the useful adaptation strategy which is comparative optimism, but also individuals seem to be in a better emotional state even if this ceases to have any effects over their performances in other domains. In a way, when age identity is salient, individuals seem to be better off in the negative condition than in the positive condition. This in an unexpected result which reflects the consequences of dealing with an unwanted identity. We should not forget that being a member of the old age group is also being a member of a low status group in society (see the results of our Study 1). If this group is portrayed in a negative manner, the best way to deal with it is to contrast from this image. We believe that this contrast strategy, which happens in an automatic and unintended manner, leads not only to higher comparative optimism, but also to lower anxiety levels. However, if the group is portrayed in a favourable manner, older people have no reason to leave the group, showing lower comparative optimism. However, although they are sticking with a group which is “positive”, they are not decreasing their anxiety levels, at least not as they do when they use contrast strategies. These results question the value of self-categorization as an older person and we will discuss the contours and consequences of these types of effects in more detail in the General Discussion section.

Interestingly, the results regarding the behavioural measure also support the idea that individuals contrast from the negative aging stereotype in the negative condition. In fact, although we could not find any significant relationship between the comparative optimism and the hedonic behaviours measure, we found an interesting pattern of results. Stereotypes appear to affect the prosecution of Hedonic behaviours only when age identity is salient and in the expected direction: older people refer it is safer to engage in Hedonic behaviours in the negative stereotype condition than in the positive stereotype condition. These results show that they are also contrasting from the negative stereotype in a behavioural manner: they think is safer to drink more glasses of wine, eat more codfish cakes and other behaviours alike.

This lack of relationship between the comparative optimism measure and hedonic behaviours is not completely unexpected. In fact, there are contradictory results in the literature regarding the relationship between comparative optimism and behaviour (Burger & Burns, 1988; McKenna et al., 1991; Sheer & Cline, 1994; Taylor et al., 1992). In a radical manner, some authors even assume that comparative optimism is not the major determinant of behaviour. According to van der Pligt (1996), “comparative optimism does not seem to add to the prediction of behaviour over and above perceived (own) risk. It could be that comparative risk appraisal primarily triggers social comparison processes and is not a prime determinant of preventive health behaviour” (p. 40). Hence, in a sense, the use of comparative optimism strategies may be much more important to determine well-being and self-esteem than to actual predict behaviour. Either way we think that this does not diminish the value of using such strategies. Needless to say, however, that this is still an unresolved issue in the literature.

Finally, it is important to add that, contrary to the results found in Study 7, in this study we did not find a significant interaction between stereotype valence and the degree of age identification. It is possible that this was due to the limited number of participants in Study 8. However, we think that this is definitely a topic which should be explored in further detail in the future.

Main conclusions of Studies 7 and 8

These two studies allowed us to explore the role that old age identification plays in the way aging stereotypes affect comparative optimism and behaviour. In both studies we have shown that *salience of age identification* is an important factor to consider in these effects. In fact, when identification is measured before stereotype activation there is a complete reversal in the pattern of results. Our results indicate that, when older people are only subject to stereotype activation they seem to be affected in the expected direction according with previous findings in other domains (B. Levy, 1996; B. Levy et al., 1999-2000): they show lower use of comparative optimism in the negative than in the positive stereotype condition. However, making age identity salient before stereotype activation seems to be making them engage in some type of “strategic” behaviour in accordance with their deeper social identity motives: they leave the negative stereotype and join the positive stereotype of aging which seems to translate into a higher use of comparative optimism in the negative than in the positive stereotype condition.

Interestingly, Study 8 showed that this effect was related with anxiety, thus proving that it is definitely not a “cold” process as predicted by traditional perspectives within the stereotype priming perspective (Bargh, 1999). Hence, we believe that Study 8 was very helpful allowing us to clarify a bit more these results. However, it still leaves some questions regarding the actual processes which are occurring when age identity is salient. In an attempt to explain these results, we assumed a Social Self-regulation model (SSR) (Abrams, 1990, 1994, 1996) perspective and advanced the idea that identity salience plays a major role by increasing self-focus and causing a regulatory mechanism to engage. According with SSR predictions, this system would then act in a unintended manner, without individual’s awareness or control, and would make sure that individuals’ preserve their most deeply inner motives: to maintain a positive social identity. Hence, this regulatory system would be responsible to guarantee that older people assimilate to activated positive stereotypes, while contrasting from negative ones.

However, although this seems an interesting proposal, we believe that there is still much to be explored regarding the actual processes behind the effect of age identity salience (for instance, one which seems particularly interesting is whether this is a resourceful system

which uses many cognitive resources). We believe that these are important questions and we will advance some ideas regarding these issues in the General discussion section of this dissertation.

Now, taking another perspective, it is important to note that in these studies we also had the chance to explore the role that the *degree of age identification* plays in these processes. Unfortunately, however, we found some inconsistencies in the results of Study 7 and 8. In Study 7 we did find some interesting results showing that, according to social identity's perspective, high identifiers seemed to make less use of comparative optimism strategies, particularly in the negative condition. Hence, they seemed to “stick” with the group, even showing “pessimism”. However, in Study 8, we could not replicate these results. In fact, we did not find any effect of the degree of age identification in stereotype priming effects. This difference may possibly be due to differences in the size of the sample that we used in the last study; however, we believe that this is definitely still an unresolved issue which needs to be further addressed in the future.

Finally, it is important to emphasize that in these studies (particularly in Study 8) we also explored priming effects on more behavioural health measures. These results were interesting and gave some support for the hypothesized role that we believe identity salience is playing in these processes. However, since we did not find any significant correlation between the behavioural measure and comparative optimism scores, we assume that our manipulations are having similar effects, but in an independent manner in both these outcomes.

Next, we will introduce the final General Discussion section of this dissertation where we will try to summarize the main results we got in all our studies, exploring in more detail the explanations and potential future avenues for this work.

GENERAL DISCUSSION

Our main goal in this dissertation was to explore, for the first time, the effects of automatic stereotype activation on older people's use of comparative optimism regarding health. We believe that these set of studies allowed us to reach some interesting conclusions, with important implications in theoretical and applied terms. In this General Discussion, we will be guided by the following order. First, we will present the main results we got in the different studies and the general pattern that emerges from this work. Secondly, we will explore the theoretical and applied implications of these studies. Finally, we will end this section by presenting the main limitations of the studies and future directions of research.

Interpretation of the overall pattern of results

The first set of studies (Study 1, 2 and 3) were important because they allowed us to explore the content of aging stereotypes in Portugal. The literature regarding this matter was very scarce; hence, we believe we made a valid contribution to increase our knowledge regarding this issue. The analysis of the results of these studies showed that the Portuguese aging stereotype share many similarities with those of other countries such as, for instance, the USA (Schmidt & Boland, 1986) or the United Kingdom (Age Concern England, 2004, 2006). As expected, we found that old age is perceived as a devalued category, although with a mixed stereotypic image. In fact, our results showed that old age was perceived as the lowest status age group, with middle-age being the reference high status age group. However, we also found an associated mixed stereotypic image of old age. In fact, together with more negative traits such as, for instance boring, ill, and incompetent, there is also an associated positive image of aging with reference to traits such as wise, mature, and warm.

Interestingly, although older people have a slightly more positive view of aging, we found that both younger and older people hold the same "low status - ambivalent stereotypic image of old age". These results emphasize one of the main characteristics of stereotypes (Garcia-Marques & Garcia-Marques, 2003) which is the fact they are frequently shared perceptions among different groups in a society. In this sense, we believe that we can think of stereotypes as a dimension of social representations (Amâncio, 1994; Hogg & Abrams, 1988; Vala, 1997), originating in everyday social interaction and furnishing individuals with a commonsense understanding of their experiences. Older and younger individuals live in the

same cultural background; this renders them with a common background regarding the perception of different age groups in society.

Moreover, one needs to think that age is a special kind of category: an ever-changing category. For instance, we are not born old (as happens with gender or race). We get older everyday and, hopefully we will all get to be an older person. As long as we are born into our culture we learn the stereotypic images of aging and old age (Montepare & Zebrowitz, 2002). Since we are not old ourselves by then, we tend to accept in an uncritical manner these images making what Chanowitz and Langer (1981) called “premature cognitive commitments” with this mode of thinking. When we finally get to be older, although there may be some changes, these representations learned at a very early age still have the power to influence the way we think about old age. We think this is an important factor that explains the pattern of out-group favouritism showed by older people.

Another important variable which may help explain this results is *system-justification needs* (Jost & Banaji, 1994). In a system that values youth over aging, favouritism towards the younger is the expected pattern and the one which contributes to maintain the *status quo*. Hence, older people seem to uphold and defend the same image of aging as younger individuals, many times at the expense of their own self-esteem and well-being. However, in this regard it is important to discuss one aspect of our results. Study 1 and Study 2 show that, in spite the similarity between stereotypic representations of aging, older people tend to be less negative regarding aging than younger individuals. This is an interesting pattern and reflects the conflict between two needs: social justification needs and competing motives to enhance self-esteem and group status (Jost & Thompson, 2000). It shows that, although older people accept (and sometimes even defend) the general societal image imposed upon them, they try nevertheless to contradict this image in a certain degree.

After we explored the content of aging stereotypes in our country, we turned to a more specific topic: how do these stereotypes affect older people’s cognitions and behaviours? Study 3 aimed to began uncovering this issue. By now, there is a vast literature regarding the effects that aging stereotypes have on older people. The most influential work in this regard is probably the one conducted by Levy and colleagues (1996; 2003; 1999-2000) following the stereotype priming perspective. In this work, these authors showed a consistent pattern of effects: when older people are subliminally primed with negative traits of the aging stereotype they have lower performances then when they are primed with positive traits (this pattern has been shown in a variety of cognitive and behavioural domains). Moreover, these effects

seemed to be restricted to older people in the sense that younger people were not significantly affected.

Study 3 aimed to replicate this pattern using the content of Portuguese aging stereotypes. Our results were in accordance with these predictions thus legitimizing the use of this type of methodology in our cultural background. Hence, together with Studies 1 and 2, Study 3 was an important incentive to continue our work and focus on the main goal of this dissertation which was to explore the effects of automatic activation of the aging stereotypes on older people's use of comparative optimism regarding health. The next section of studies (Study 4, 5 and 6) focused exactly on this issue.

Study 4 aimed to explore older people's use of comparative optimism strategies regarding illness. The results of this study showed that, as expected, older people do use these types of strategies when they think about their risks of illness. However, there are some important variables which seem to influence this effect in a significant manner. In our results, the degree of previous personal experience appeared as a main moderator of comparative optimism scores. In this sense, we showed that whereas older people show comparative optimism when they think about least experienced illnesses (Heart attack and Stroke), they tend not to use these type of strategy when they evaluate illness with which they have more personal experience (Rheumatism and Hypertension). This is an interesting result and supports previous evidences showing exactly this type of pattern regarding other type of risks in different social groups (Helweg-Larsen & Shepperd, 2001).

Moreover, another crucial moderator of comparative optimism scores was the comparison target. In fact, we found an interesting pattern of results: when older people are evaluating the risks of typical aging illnesses (in this case, Heart attack and Stroke), they show higher comparative optimism regarding the typical older individual then regarding the typical younger individual. In fact, when they compare with the typical younger individual they even show "comparative pessimism". However, when they evaluate the risks of typical younger illnesses (i.e., AIDS and Drug addiction) they show exactly the opposite pattern: comparative optimism regarding older individuals is lower then comparative optimism regarding younger individuals.

We believe that this results favours a psychosocial explanation of risk perception (Lima, 2003, 2005) showing that risk estimates only make sense having in consideration individual's social background. Specifically, these results show that risk is perceived considering both the group belonging of the individual who is making the estimate and that of the comparison target. These results were important because they reinforced our psychosocial vision of risk

perception, and legitimized our idea that these estimates, particularly the use of comparative optimism strategies, could be significantly influenced also by other type of social variables such as, for instance, stereotypes.

Studies 5 and 6 aimed to address the main topic of this dissertation. Following the procedure proposed by Levy (1996; 1999-2000), in these studies we primed older people with either positive or negative traits of the aging stereotype and measured the effects on comparative optimism regarding the more typical illnesses of aging. Study 5 and 6 were very similar in their procedure. The only difference is that they used different methods of stereotype activation. Whereas in Study 5 priming was conducted in a subliminal manner, in Study 6 we used a supraliminal priming procedure.

Results of these two studies showed a similar pattern. First of all, we only found significant effects of priming on the least experienced illnesses (Heart attack and Stroke). Hence, previous personal experience with a certain illness appeared as an important moderator variable also of automatic stereotype activation. Secondly, we found that in both studies there was a significant decrease in older people's use of comparative optimism in the negative conditions when compared with the positive stereotype condition.

Results of Study 5 and 6 revealed an *assimilation effect* to the aging stereotype in the sense that, according with prime valence, performance was worst in the negative than in the positive stereotype condition. In fact, the pattern found in the comparative optimism measure concurs with the results of other studies which also show decrements in several different measures in the negative stereotype condition in comparison with the positive stereotype condition. In this regard Levy and collaborators found, for instance, that the activation of the negative content of the aging stereotype was associated with lower memory performance (B. Levy, 1996), slower walking (Hausdorff et al., 1999) and poorer calligraphy (B. Levy et al., 2000) than the activation of more positive contents.

However, contrary to the expectations of some authors (Hess et al., 2004; Shih et al., 2002) the fact that we found assimilation effects using both subliminal (Study 5) and supraliminal (Study 6) priming procedures show that prime awareness does not influence in a significant manner priming effects. In fact, opposite of what has been hypothesized in the literature (Hess et al., 2004; Shih et al., 2002), supraliminal primes do not seem to lead inevitably to contrast effects. Hence, our results are much more in favour of Bergh's (1992) perspective that being merely aware of the priming stimulus is not enough to make participants engage in correction efforts. Since we used implicit priming procedures in Study 5 and 6, we made sure that, in both studies participants were completely unaware of the relationship between the different

experimental tasks. In this case, the use of subliminal or supraliminal primes should not make any difference (Bargh, 1992) (we will address this issue again below).

The results of Study 5 and 6 were important and allowed us to complete our main goal: we showed, for the first time, that comparative optimism scores could be affected by automatic stereotype activation. In this specific case, we developed this work in the aging domain; however, there is no reason not to expect similar results in other domains.

In the final part of this work, we conducted another set of two studies. Study 7 and 8 aimed to explore the role that old age identification plays in the way stereotype valence affects older people's comparative optimism scores. In these studies, we only used as a dependent variable the comparative optimism scores regarding the least experienced illnesses (i.e., Heart attack and Stroke), since these were the ones where we have previously found significant effects of stereotype activation.

We think that the results of these studies were very interesting and allowed us to understand in a better way the conditions that allow assimilation and contrast to primed aging stereotypes. In both studies, our results showed a significant moderator effect of "salience of age identification", showing that when this identity is salient in the context before stereotype activation, there is a reversal in the pattern of responses. Hence, we found in a consistent manner the following pattern of results: when age identity is salient, comparative optimism in the negative stereotype condition is higher than in the positive stereotype condition. This is an interesting effect which shows, for the first time, that "age identity salience" plays a significant moderator role in automatic effects stereotypes (in this case of the aging stereotype).

Particularly the results of Study 8 were important because they allowed us to deepen our knowledge regarding the processes that may be behind these effects. In this sense, we found a significant mediated moderation effect, showing that anxiety seems to play an important role in the way stereotype valence affects comparative optimism when age identity is low or high. Our results showed that, when age identification is not salient in the context, we find the typical assimilation effects to the aging stereotype (B. Levy, 1996; B. Levy et al., 1999-2000): lower comparative optimism in the negative than in the positive stereotype condition. Moreover, our results indicate that this effect seems to be mediated by an increase in anxiety.

However, when age identity is salient in the context, the process seems to occur in a totally different manner. Negative stereotypes induce both an increase in comparative optimism and a decrease in anxiety; and these two outcomes seem to have no relationship between them. It

is like priming is affecting both the “cognitive” and the “emotional” component, and stopping these two outcomes to interfere with one another.

We are unsure about the specific reasons why this process occurs in this manner. However, it is in accordance with some findings in the literature, particularly those who explore “other-stereotypes” effects. In fact, as we already described in detail elsewhere, there are some evidences showing that priming the self (i.e., using words such as me, I, myself) is enough to turn assimilation effects to out-group stereotypes into contrast effects (Schubert & Häfner, 2003). The same pattern occurs when we make in-group identity salient before stereotype activation. Recall that, in this regard, Spears et al. (2004) showed that priming participants with their in-group identity (e.g., psychology students) was enough to override behavioural priming effects from other-stereotypes (e.g., business people). According with these authors, the main explanation for this effect is that self-activation was causing a spontaneous comparison between the self and the stereotype, leading than to contrast from primed “other-stereotypes”.

In our studies, we found a similar effect, but this time using a self-stereotyping procedure. Interestingly, we found that, when age identity is salient, older people leave the negative stereotype (i.e., there is an increase in comparative optimism in the negative stereotype condition) but they tend to join the positive stereotype (i.e., there is a decrease in comparative optimism in the positive stereotype condition). Hence, it seems that not only self activation may be promoting a spontaneous comparison between the self and the activated stereotype, as it is also taking into account individuals’ inner motives such as the need to maintain a positive social identity (i.e., join the positive part of the aging stereotype and leave the negative one behind).

In this regard, we believe that the Social Self-Regulation model (SSR) by Abrams (1990; 1994; 1996) offers a good insight into the process which might be occurring when we make age identity salient. According with this model, one might think that “identity salience” is causing a self-focus activation, which in turn is disrupting the typical passive effects of automatic stereotype activation. This increase in self-focus may lead to the engagement of a “supervisory attention-full system”, which than becomes responsible for managing behaviours, not only in accordance with the activated stereotype, but also considering other self-relevant information such as individuals’ broader goals and motives (e.g., self-image preservation). In this case, behaviour is taking in consideration individuals’ need to maintain a positive social identity: this explains why older people leave the group in the negative stereotype condition and join the group in the positive stereotype condition.

Interestingly, the work of this system seems to be affecting not only the “cognitive” answers (i.e., risk estimates) but also a more emotional component (i.e., anxiety). In fact, the results regarding anxiety also reverses; particularly in the negative stereotype condition, anxiety becomes lower when age identity salience is high than when age identity salience is low.

Finally, we would also like to note that we also found an indication of this contrastive pattern in a more behavioural health measure. In fact, when age identity was salient, the number of hedonic behaviours was significantly higher in the negative stereotype condition than in the positive stereotype condition thus indicating that older people are much more likely to engage in behaviours which are very pleasurable (e.g., drinking several glasses of wine, eating several codfish cakes, putting too many sugar spoons in the coffee) but who carry risks to one’s health, particularly in advanced ages. However, in spite of the similarities between results in the “hedonic behaviours” measure and comparative optimism, we did not find any relationship between this index and comparative optimism scores. Thus, it seems that, when age identity is salient, stereotype valence is affecting different facets (cognitive, emotional and behavioural) in the same direction, even though we could not find any significant relationship between them. We believe this an issue to further explore in the future.

By now we are unsure about the specificities of this “supervisory attention-full system”. Based on our results we assume that it should work in an unintentional, uncontrollable and unaware manner because none of our participants revealed any understanding of the processes which were occurring or any intention to cause such an effect. However, it still remains to clarify whether this is a resourceful mechanism. In fact, exploring this issue further would be an interesting path for future studies (we will address again this issue in the Limitations and future directions section).

In conclusion, in this section we attempted to grasp the overall pattern of results of the studies developed in the context of this dissertation and offer a valuable interpretation. We hope that we made an interesting contribution to better understand self-stereotyping processes, particularly in the context of aging and health issues. Next, we will present what we think are the main theoretical and applied implications of this work.

Main theoretical implications

As we have referred elsewhere, we believe that the work developed in this dissertation touches traditionally different research areas. Specifically, we think we may discuss the implications of this work having in consideration three main fields: the self-stereotyping literature in general, ageism research and the health psychology domain.

Self-stereotyping priming effects: a definitely warm approach

First of all, we would like to emphasize that, although this thesis is developed within the specific context of aging, we tried to consider some of the major issues and discussions in the self-stereotyping literature in general.

In our initial literature review of this topic (see the chapter “Stereotypes: being the target”) we tried to explore the major perspectives that study the self-stereotyping process, giving special attention to the stereotype priming perspective. In this regard, we have shown how this perspective has evolved from a merely “cold” position to a much more motivated and emotional account of automatic stereotype activation. In fact, and supporting this position, we showed how more recent perspectives within the stereotype priming approach (Blair, 2002; Kunda & Spencer, 2003) assume that individuals’ motives and emotions influence automatic stereotype activation both in the activation and in the application of stereotypes.

Moreover, in this chapter we also tried to present what we think are the main differences and similarities between the stereotype priming perspective and two other important accounts of self-stereotyping effects: the stereotype threat theory and the social identity approach. We concluded our revision by describing how the knowledge accumulated in each of these perspectives could help us improve stereotype priming’s perspective.

On one hand, stereotype threat has the major advantage of clearly assuming the interference of more emotional components in self-stereotyping effects. Recall that, according with perspective, anxiety and perceived threat assume significant mediator roles in the processes by which negative stereotypes affects the behaviours of group members (Steele & Aronson, 1995).

On the other hand, the social identity approach (Hogg & Abrams, 1988; Tajfel & Turner, 1986; Turner et al., 1987) had the major advantage of emphasizing the “strategic component”

of self-stereotyping; that is, the fact that individuals may react in different ways when presented with a possible self-categorization. In fact, according with the social identity approach (Tajfel & Turner, 1986), when individuals are presented with a possible self-categorization, they have multiple behavioural routes available rather than just passive assimilation. For instance, when they are faced with a threat to their social identity (such as, for instance, a negative in-group stereotype) individuals may react in different manners. In this regard, there are some evidences showing that low and high identifiers behave differently: whereas low identifiers usually leave the group, high identifiers tend to usually stick with group (Spears, Doosje et al., 1997).

We believe that the results of our studies may have important implications for this theoretical discussion. First of all, the significant role we found regarding anxiety in Study 8 favours the need to incorporate this emotional component when we explore stereotype priming effects. This is a variable traditionally explored within the stereotype threat theory research and we believe that we would have much to gain if we looked at these results with full attention.

Secondly, particularly the moderator role we found regarding “age identity salience” seems to be a good demonstration of the “strategic” component defended by the social identity approach (Tajfel & Turner, 1986). In fact, when age identity was not salient, stereotype priming occurred as expected: less comparative optimism in the negative than in the positive stereotype condition. However, when age identity was salient, there was a reversal in the pattern of results according with the direction predicted by social identity theory (Tajfel & Turner, 1986). In this case, identity motives seems to have influenced the automatic activation of stereotypes, leading to more comparative optimism in the negative condition than in the positive condition (unfortunately, we did not find a consistent pattern regarding the degree of group identification. However, the results of Study 7 point in the expected direction showing that high identifiers are the ones who are more likely to stick with the group in the negative stereotype condition).

We believe that this is no doubly a valid demonstration of “warmer”, motivated and emotional, stereotype priming effects. Once again, we would like to emphasize that we believe that we could greatly enrich the stereotype priming perspective if we incorporated some of the predictions explored in greater detail within the field of research of the social identity approach (Tajfel & Turner, 1986). In a sense, we believe that we should focus our attention in the object of study (self-stereotyping effects), and sum the knowledge regarding the different perspectives which better allow us to understand its specificities.

Finally, we would like to indicate that in this dissertation we also tried to uncover the role of two of specific variables which have been recently explored within self-stereotype effects following a stereotype priming perspective: prime awareness and self-relevance. Recall that there is a live debate around the role that these factors play in self-stereotyping effects. As we already referred before, the discussion around *prime awareness* centers on the effects that subliminal and supraliminal modes of stereotype activation have on target's responses. What is important to retain is that, contrary to previous studies (Hess et al., 2004; Shih et al., 2002), in our studies we did not find any evidence of a significant effect of this variable on priming effects. In fact, prime awareness *per se* did not seem to cause any difference. We think that contrast effects found in previous studies may be due to other type of variables (Hess et al., 2004; Shih et al., 2002) and, based on the results of our studies, we propose that the procedures used in these studies might have activated in-group identity in some way thus promoting contrast effects. In fact, salience of in-group identity seems a more important predictor of contrast strategies to negative aging stereotypes than mere awareness of the priming stimulus³⁵.

Another important moderator variable which has been explored in the context of self-stereotype priming effects is *self-relevance*. Recall that in this regard some authors have advanced the idea that targets of the stereotype, for whom the stereotype is self-relevant, are much more sensible to stereotype activation than non-targets (Hess et al., 2004; B. Levy, 1996; Shih et al., 2002). Moreover, high identified individuals (for whom the in-group is a crucial part of their social identity) are particularly prone to be influenced by activated in-group stereotypes (O'Brien & Hummert, 2006).

In our studies, we did find some support for the importance of self-relevance. In fact, according with predictions, Study 3 showed that only older, but not younger individuals' will-to-live was affected by the subliminal activation of the aging stereotype. Moreover, in Study 5 we also showed that, older people's comparative optimism scores were only affected when they were subliminally primed with the aging stereotype. However, we found no significant effects when they were primed with the younger stereotype.

In a related and yet different manner, Study 7 and 8 also showed that age identity plays a crucial role in priming effects. Besides the significant role we found of the *degree* of age identification in Study 7 (although this was not consistent across studies), we found a

³⁵ "Awareness of the primed stimulus" is completely different than "awareness of the relationship between tasks". In fact, we believe that if we make participants aware of the possible relationship between the activated stereotypes and following outcomes, this may lead to correction efforts and create contrast effects (Lepore & Brown, 2002).

significant effect of *salience* of age identification. Hence, we believe that these results show that self-relevance definitely plays an important moderator role in this type of effects and that there is still much to be explored regarding the specific role that this variable plays in these processes.

In this section we described the main implications of our work for debates within the self-stereotyping literature. Following the specified order, next we center the discussion on the implications for aging research in specific.

Aging studies: aging stereotypes, age identity and health risks

In spite of applying general self-stereotyping procedures, we developed this work within the aging context (in fact, participants in all of our studies were older people). In this sense, our results have necessary specific implications for research on aging. In this regard we would like to emphasize the fact that we clearly demonstrated a significant effect of automatic activation of aging stereotypes and age identity in the way older people perceive the risks of typical aging illnesses, in particular, in the use of comparative optimism strategies. Taking in consideration that risks of illness pose probably the biggest threat to well-being in later life (WHO, 2002), we believe it is important to understand in great detail its main influencing factors. Our work has the advantage of showing the effect that more social variables have in these perceptions; hence, it shows that cultural images associated with aging may have important consequences in the way older individuals cope with illness.

Health psychology: support for a psychosocial perspective

One final area where we think our work may contribute in a valid manner is the health psychology domain. We conducted our work under one specific approach in the health psychology domain: the social psychology of health. Recall that, in particular this approach centers its attention not only in individual factors, nor only in societal aspects of intervention;

in fact, it is interested in the relationship between these two levels, exploring the *psychosocial* determinants of health behaviours and cognitions (Lima, 2008).

We can think that globally, social psychology work on health behaviours has reflected three different strategies (Salovey, Rothman, & Rodin, 1998): i) the application of formal theory to the health domain; ii) the development of grounded theory to the health domain; and iii) problem-focused research addressing specific social and personality processes relevant to health behaviours. The work we have conducted in this dissertation is best included in the first strategy. Particularly, this research centers on the application of theories of self-stereotyping to understand health cognitions and behaviours, giving special emphasis to the aging domain.

Our goal is to rely on solid theory established in the social psychology domain and apply it to contents usually explored in the health psychology field. We believe that introducing stereotype priming procedures to explore the effect of automatic stereotype activation on the use of comparative optimism represents an innovation in the health psychology domain which reinforces the psychosocial approach to health (for instance, by further exploring the effects that automatic processes may have on health perceptions).

In sum, in this section we tried to describe the main theoretical implications we believe are associated with our work. Hence, besides its value to the self-stereotyping processes in general, we believe it also has consequences to the aging and health psychology domains. In a certain way, our work was conducted in an “inter-field” approach³⁶ and so it may be discussed within the scope of different perspectives.

After reviewing the main theoretical implications, next we will offer a somewhat different perspective: how our work may influence more applied interventions.

Main applied implications

We tried to conduct our studies following rigorous procedures and taking in consideration the main background theories regarding self-stereotyping processes. However, we would not forget that we are also trying to make a contribution which helps us cope with one major social concern: population ageing. As we made clear in our introductory section, our societies

³⁶ This is not an inter-disciplinary perspective because we are not talking about different scientific disciplines but of different fields within Psychology

(particularly those included in the developed “western” way of living) face one major change in this moment: in the years to come there is an expected growth in the number of older people much beyond our previous experiences. For instance, according to data from INE (2002), in Portugal we expect a reversal of the demographic pattern in 2050, with many more people above 80 years old than infants.

There is no doubt that the increase in the number of older people is an incredible achievement: we are living much longer, much more than our wildest dreams. Nevertheless, it also carries important changes in social, economical and political terms which we need to consider in depth. For instance, we know that hospitals are full with older people trying to get help for their multiple health problems. By now, this is already a difficult situation to deal with, particularly when we consider the scarcity in medical personnel in our country. Now, imagine when the number of older people is much higher than it is now...if things remain the same we will not have enough hospitals to deal with everyone’s concerns.

We know that age may be objectively associated with poorer health condition. The deterioration of some of our main functions may contribute to increase our health concerns and requests for help. However, there are many important factors which may influence the way older people may perceive and behave regarding their health. For instance, in our work, we have shown that the perceptions of risks associated with typical illnesses of aging, particularly the use of one important mechanism such as the comparative optimism strategy, may be affected by contextual activated “social stereotypes of aging”.

In fact, after so many studies conducted in several domains, we believe that there are no more doubts left: the activation of the negative content of the aging stereotype is **bad** for older people. It affects their performances, their cognitions and emotions in an automatic manner, thus jeopardizing their overall well-being. The question than is: what can we do? We suggest two ways of possible action: intervention in the broad social context and interventions in social services specialized in aging.

Intervention in the broad social context

A broad intervention is needed if we want to gradually change the widely culturally shared image of aging as a low status category. This is not just our idea; it reflects the worries of many international associations who deal with ageism issues (Age Concern England, 2004). For instance, in 2006, one American institution called The International Longevity Center asked a group of specialists on ageism issues to write and review a report regarding the status

of this form of prejudice in America and possible ways to fight it (among those specialists were Baca Levy, Robert Butler, among others) (ILC, 2006). Possible paths to pursue would be, for instance, to run national campaigns drawing attention to negative attitudes and stereotypes regarding aging in the media or, for instance, to educate workers to identify practices of age discrimination.

Fortunately, by now we are living some important changes which might contribute in a meaningful way to change ageism in our societies. We believe that the decreasing ratio between the older/younger people will probably constitute a good incentive to change. In fact, if we live in a future with many people over 65 years old and very few under 20, society will change a lot, along with the representations of age groups. Once this battle begins, we believe things will change in a profound way (we have seen the same type of movement regarding race and gender).

In European countries, there are some important actions that are being undertaken in order to promote this cultural change. For instance, I was very fortunate to collaborate in the elaboration of the questionnaire for the “Ageism” module of the 4th round of the European Social Survey (<http://www.europeansocialsurvey.org>) that aims to measure aging perceptions and ageism practices in representative samples in several European countries. I believe that, once the results come out, they will be an important tool to legitimize appropriate interventions in Europe.

However, there is still a long path to walk before any real changes are achieved. In fact, it is surprising that many European governments do not consider ageism as a main form of discrimination. For instance, in Portugal we have associations that deal with discrimination against race and gender (i.e., ACIDI - <http://www.acidi.gov.pt/>); they promote several important activities such as interventions in the school setting and in the problematic neighbourhoods. However, there is nothing similar to deal with ageism. Wouldn't make sense to have interventions in schools against ageism practices? We firmly believe this would be a good path to pursue if we are interested in promoting this cultural change. It's not enough to change the retirement age, we need to change the representation of aging and, as difficult as it may seem, this needs to be achieved in a relatively near future.

However, meanwhile, as aging cultural representations don't change, how do older people cope with these low status and widespread negative images of aging?

Intervention in social services specialized in aging

In fact, several evidences suggest that although old age is associated both with positive and negative contents, it is nevertheless a low status category and negative contents are probably much more widespread and common in older people's daily living than positive contents (Nelson, 2002). For instance, in a study conducted regarding the content of TV shows, Donlon, Ashman and Levy (2005) found that older people appear much less and, when they do, they are consistently portrayed in a negative, decadent manner (although things seem to be changing a bit by now (Featherstone & Wernick, 1995)).

In a society that devalues old age, becoming old is thus an unwanted state. So, it may cause conflicting feelings and the wish to escape one's identity. So, what can we do to help older people escape the effects of negative stereotypes of aging?

In our studies, we have seen that by making salience age identity before stereotypes are activated, older people could automatically contrast the negative stereotypes. Hence, it seems that if we make an intervention and explicitly make older people think about their belonging to the old age group, this would help defend them from the nasty effects of the negative aging stereotype. For instance, we could do interventions in services specialized in the aging public (such as Senior Universities or Day Care Centers) promoting the reflection around the content of negative aging stereotypes and motivating older people to reflect in a regular basis about their status as an older person. This training could eventually make age identity more chronicable accessible for older people, making it easily salient in several contexts and promoting contrast from negative images of aging in an automatic manner. Yet, one important question still remains: is this contrast strategy a good thing?

Apparently, our results show that along with the increase in the use of a very good adaptation strategy (comparative optimism), there is also a decrease in anxiety levels; hence, it seems that the effect of age identity salience is working in a good manner. However, one needs to be cautious about the use of this type of contrast procedures.

There is no doubt that the use of social comparison strategies, such as comparative optimism, is an adequate manner to deal with threats to the *self* (Taylor, 1989). However, they should be used with caution. Too much "optimism" may create an illusion that is too far apart from the real situation. For instance, if an older person thinks that he/she does not have any personal risk of having a Heart attack or Stroke she may end up not taking the appropriate

preventive behaviours³⁷. In this case, she will end up having a sense of subjective well-being that is based on illusory accounts (Novo, 2003). However, too much “realism” is also not adequate from a psychological point of view and may lead to depressive feelings.

For instance, in our results we have shown that when age identity is salient, older people tend to join the positive stereotype of aging (in fact, comparative optimism in the positive stereotype condition when age identity is salient is lower than when age identity is not salient). This pattern is expected according with the predictions of Social Identity Theory (Tajfel & Turner, 1986). Group belonging is an important need. If my group is valued in a positive manner, I will gladly join my group. However, our results show that this may not be the best strategy in emotional terms; at least it is not as good as contrasting the negative stereotype. In fact, this movement to join the group is not accompanied, in the emotional component, by a decrease in anxiety. Anxiety in the positive stereotype condition remains the same whether age identity is salient or not and it is higher than in the “high salience-negative stereotype condition”. Hence, it seems that joining the positive stereotype of aging is not as good as living the negative stereotype of aging. Either way, loosing the advantages of comparative optimism is not probably a good thing.

In fact, people should use comparative optimism strategies with caution and in an equilibrated manner. In fact, according to Sackeim (1983) self-denial processes play an important role in mood regulation and some defensive strategies, such as the one’s normal individual use (e.g., comparative optimism), seem necessary to maintain and promote psychological well-being. In fact, it’s under utilization or over utilization may contribute to a psychopathological condition.

In the context of aging, Novo (2003) did an interesting study showing exactly this type of pattern in older women. Her goal was to characterize different types of psychological well-being in older ages and relate this with basic personality dimensions and psychological functioning. She was able to identify three types of well-being. Group 1 was called “Reduced psychological well-being” and refers to older people who have low psychological well-being, and who have a reduced use of adequate adaptation strategies. The second and third one are described as having high subjective well-being. However, Group 2 differs from Group 3 in one fundamental manner: Group’s 2 level of well-being seems to be founded in an exacerbated use of self-deception strategies which contributed to maintain an “illusory” well-

³⁷ In fact, although we did not find in our study, significant relationship between comparative optimism and health behaviours that does not mean that there isn’t any relationship. Recall that, in fact, some authors did find significant correlations between comparative optimism and preventive health practices (Burger & Burns, 1988; van der Pligt, 1996). This is nevertheless an issue to further explore in the future.

being (which insisted, for instance, in a highly positive vision of themselves). In turn, results showed that these women, in comparison with those in Group 3, showed higher signs of psychological suffering in unobtrusive measures. This study is a good example how the equilibrated use of adequate adaptation strategies is absolutely necessary to guarantee adequate psychological health in advanced ages.

Achieving this equilibrium may be a difficult task; however, we believe that reflection about one's age and the consequences of aging is an important path if we want to obtain this result. Every one gets older; in fact, if we want to live longer we necessarily will be an older person. Hence, it is probably better to deal with it in a reflexive manner, thinking about our gains and losses in a healthy and constructive way. Interventions which promote this reflexion are probably adequate means of achieving a good and "active aging".

One way to think about possible interventions is to look at evidences regarding similar problems facing different social groups. We think that the type of identity conflict people face when they reach old age is very similar to the way homosexual individuals feel when they discover they do not follow the heterosexist "norm". The studies in this field are more developed and may help us understand the way older people deal with their identity conflicts.

In our societies, the dominant ideology defends heterosexual sexuality and other expressions of sexuality such as homosexuality are greatly discriminated against (Kite & Whitley, 1996; LaMar & Kite, 1998). Some evidences suggest that this leads to the development of homophobic feelings, which develops since an early age and may become internalized, causing a whole range of psychological problems, particularly among younger lesbians and gay men. For instance, in support of these predictions, Hammelman (1993) found that teenagers who discover and disclose their sexuality earlier in their lives are at great risk of attempted suicide, experienced negative "coming out" reactions from significant others sexuality-oriented victimization, and using drugs and alcohol to cope with problems relating to their health or gay identity. According to the author, these effects are mainly due to the fact that younger gay and lesbian may be more isolated, cognitively embedded within heterosexist norms and values, and have less access to gay-affirmative organizations and individuals. Hence, assuming a negative identity is not an easy endeavour, and creates a conflict which needs to be dealt with. Studies have shown that, in this heterosexist society, sometimes concealing one's identity may be the better option for one's health. In one interesting study, Cole, Kemeny and Taylor (1997) showed that whether healthy HIV-positive gay men concealed or not their homosexual identity had important consequences for their health, particularly if they were highly sensitive to rejection from others. Data from a 9-year

prospective study of 72 initially healthy HIV-positive gay men showed that, when they did not conceal their homosexual identity, rejection-sensitive individuals experienced a significant acceleration in fundamental health outcomes such as times to AIDS diagnosis and to HIV-related mortality. However, accelerated HIV progression was not observed in rejection-sensitive gay men who concealed their homosexual identity. Hence, these results seem to indicate that concealment was protecting such individuals from negative health effects. Does this mean that concealment is good? Not necessarily. In fact, according to Cole, Kemeny and Taylor's (1997) results also presented evidence that this strategy may have some detrimental effects on individuals' health. Hence, given these contradictory results, the authors estimated in this manner the value of using concealment strategies: "the present results are consistent with the idea that the net effect of concealment stems from a balance of costs and benefits – a harmful price of passing as a heterosexual that is independent of an individual's degree of rejection sensitivity and a beneficial protective effect that grows in direct proportion to an individual's degree of rejection sensitivity" (Cole et al., 1997, p. 329). We think that this pattern of results is interesting and may relate to the process by which an older individual assumes his older identity. For instance, one interesting variable to account for in old age is the degree of older people's "rejection sensitivity" to the opinion of others. This seems like an important factor to deal with when we think about age identity conflicts.

In the following section, we will explore in more detail other avenues for future research regarding the topic of this dissertation.

Limitations and future directions

We have identified some limitation that we think need to be considered in the future. We also divided them in two subsections: theoretical and methodological, on one hand, and applied, on the other hand.

Theoretical and methodological limitations and future directions

- i) *Include a neutral control condition:* none of the priming studies included a neutral control conditions which would allow us to understand better the direction of effects. Particularly, in Studies 5 and 6 we can only conclude that comparative optimism is lower in the negative than in the positive aging priming condition. However, we can not know whether this was due to a decrease in comparative optimism in the negative priming condition, or an increase of optimism in the positive stereotype condition. Wee think that, including the neutral condition in future studies would be interesting to better explore the effects of automatic activation of aging stereotypes;
- ii) *Prime multiple contents of the aging stereotype:* in our studies we followed Levy's studies (B. Levy, 1996, 2003; B. Levy et al., 1999-2000) and so we primed older people either with the positive or negative contents of the aging stereotype. However, as we referred in the section "Ageism and aging stereotypes", aging stereotypes are composed of multiple subgroups with varying valence degrees (Brewer et al., 1981; Schmidt & Boland, 1986). We believe it would be interesting to prime older people with contents related with specific subgroups and explore these effects in outcome variables;
- iii) *Use the same method of stereotype activation in Studies 5 and 6, just manipulating prime awareness:* In studies 5 and 6 we obtained the same results using a typical method of subliminal stereotype activation (a visual detection task) and a typical method of supraliminal stereotype activation (a manipulation of a text including the negative or positive traits of aging). Although these are two different methods, they have one important difference: in the first people are not aware of the primed

stimulus (i.e., they can not read the stereotypic words), whereas in the second one they are aware of the primed stimulus (i.e., they can read the stereotypic words). Hence, if prime awareness was enough to cause contrast effects, we would expect different results by using these two methods. Since we got exactly the same pattern of results, we think it is safe to say that, at least, prime awareness is not an important moderator of the effects we found. However, we think in methodological terms, it would be very elegant if we could replicate these results in just one study, where we used exactly the same type of priming method, just varying the sublimarity or supralimarity of the primed traits. We could follow Hess et al. (2004) suggestion and use a visual detection task where we would vary the length of presentation of the stimulus (i.e. subliminal: 50 ms/ supraliminal: 500 ms);

- iv) *Replicate the pattern of Studies 7 and 8 using subliminal priming procedures:* in Studies 7 and 8 we used supraliminal priming procedures. We know that these were implicit procedures in the sense that none of participants referred any understanding between the different tasks. Hence, we have no doubts that we are talking about automatic effects in the sense that they do not require any awareness or intention to control the process. However, the use of subliminal priming procedures would be interesting to confirm the automatic nature of these effects;
- v) *Explore the processes behind the effects due to increased “age identity salience” in Studies 7 and 8:* we advanced the explanation that identity salience was responsible for activating a regulatory system to engage, which would explain the differences in comparative optimism. We have already described before how we think this system might work. However, we think it is important to explore this issue in more detail. For instance, in order to explore whether this is resource consuming process it would be interesting to introduce a “cognitive resources” manipulation which would allow us to evaluate the effect of this variable. Hence, we could include one extra variable in our design: 2 (Stereotype valence: positive or negative) x 2 (Age identity salience: high or low) x 2 (Cognitive resources: high or low) and see the effects on comparative optimism scores. To manipulate cognitive resources we could ask our participants to perform a secondary task (e.g., pay attention to images that were passing in a computer nearby and press a button when necessary) while they answered the comparative optimism measure. Then we could check whether we find the same pattern of results in both “Cognitive resources” conditions (if we do, the process is not requiring cognitive

resources to occur; if we don't, cognitive resources are a crucial aspect of the pattern found in the "high age identity salience" condition).

- vi) *Replicate the mediated moderation effect in Study 8, but measuring anxiety before Comparative Optimism:* In study 8 we found a significant mediated moderation effect of anxiety in the way Stereotype valence and Salience of Age Identification affect comparative optimism scores. This was an interesting result, which may help to explain the processes behind the effects of identity salience. However, we believe that we still need to further explore this result. In fact, although the pattern of results when age identification salience is low is straightforward (negative stereotypes are associated with increased anxiety, which in turn leads to lower use of comparative optimism), the pattern of results when salience of age identification is high is more difficult to explain. Recall that we found that negative aging stereotypes were associated both with an increase in Comparative Optimism and a decrease in Anxiety. However, we did not find any significant relationship between these two variables. This a strange pattern of results according with the literature (Taylor, 1989) and needs to be further explored in the future. Hence, a replication of Study 8 would be a good manner to confirm these results.
- On the other hand, from a more methodological point of view, Study 8 presented one important limitation. In this study we measured anxiety after comparative optimism. Based on the recommendations by Baron and Kenny (1986) this presents a shortcoming and it would be advisable to replicate these results but measuring the mediator variable (anxiety) after stereotype activation, but before the comparative optimism measure. Hence, this is another issue that needs to be addressed in a future study.
- vii) *Increase the size of our samples:* In some of our studies, we only found marginal significant effects. We believe that this was due to the small number of participants included in these studies. Hence, we think it would be good to replicate these results in a wider sampler of older participants.
- viii) *Replicate the studies using different social comparison measures:* We think that would be very interesting to replicate these studies but using different social comparison measures. In this sense, it would be possible to conclude that the effects we found are not only restricted to the health domain or to the comparative optimism measure; we are really measuring the use of social comparison strategies regarding aging stereotypes. For instance, one appropriate measure would be the

“personal group discrimination discrepancy” (Dumont, Seron, Yzerbyt, & Postmes, 2006). This measure the difference between perceived discrimination for oneself and for the group. Hence, it is a similar measure to comparative optimism, but applied to a different content.

- ix) *Replicate the studies using different social groups*: If we could replicate these results in other social groups, this would increase the generalization of these effects. We could, for instance, replicate these studies on a sample of homosexual participants which we believe have a similar way of dealing with their identity as older people do.

Applied future directions for this work

It is interesting to witness that, as we are finalizing this dissertation, we were already approached by interested people who want to make a difference in aging social services. Recently, one undergraduate student who is involved in some voluntary work with older people asked whether we could think about these results to do a “real” intervention to change the way older people are treated in a Day Care Centre where she works. We are currently developing this project, but one of our main ideas would be to use a “theatre” manipulation of more positive or negative stereotypes of aging, while measuring important health outcomes before and after the intervention. Our hope is that by exploring these methods we could make a valid contribution to change the characteristics of social services for aging people in our country.

Concluding comments

In this dissertation I have followed a long path of exploration and discovery of aging issues in several aspects. Not only did I become familiar with different theories in the aging domain but, most of all, I became more familiar with older people, with the conditions they face and the social services they have available in the present days. This experience leads to re-affirmate my most intimate and personal idea that old age is not a necessary sad period. For instance, I was surprised by the increasing variety of social offer that is recently being implemented in our country (actually I was pleasantly surprised to find a Senior University right beside my house). This is the work of valid senior citizens who really want to make a difference.

Hence, although I am definitely aware of the strength of social contexts (after all, I am a social psychologist) I think aging is, in part, what we make of it. If I have to choose (as we all do) I hope I can follow the footsteps of my grandmothers and be even more active and joyful as I try to be today. I am aware that older people are sometimes treated in a negative manner and that I will also likely suffer this type of discrimination. That is why I think I have to contribute to change things now, while I am still young. I think this work is just the beginning of this fight which I hope lasts long.

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ANNEXES

ANNEX 1 – stereotypic attributes of younger and older people

Table 18. First 15 attributes that younger and older participants perceive as culturally associated with younger men and women and with older men and women

	Young women	Young men	Older women	Older men
Younger and older participants	Beautiful (20.3%)	Fun (15.1%)	Ill (19.0%)	Ill (9.8%)
	Hardworking (13.8%)	Irresponsible (15.1%)	Old (13.8%)	Old (9.2%)
	Active (13.1%)	Hardworking (10.5%)	Useless (9.8%)	Boring (8.5%)
	Irresponsible (11.2%)	Active (7.8%)	Wise (8.5%)	Old (8.5%)
	Healthy (10.5%)	Take drugs (7.8%)	Miserable (7.9%)	Like to play cards (8.5%)
	Independent (10.5%)	Drinkers (7.2%)	Take care of grandsons (7.8%)	Grumpy (8.5%)
	Fun (9.8%)	Disrespectful (7.2%)	Sad (7.8%)	Miserable (7.2%)
	Joyful (8.5%)	Immature (7.2%)	Physically unable (7.2%)	Physically unable (6.5%)
	Indiscreet (8.5%)	Take care of appearance (6.5%)	Intellectually unable (7.2%)	Intellectually unable (6.5%)
	Take care of appearance (7.9%)	Unconcerned (5.9%)	Lonely (6.5%)	Calm (6.5%)
	Sexually active (6.5%)	Beautiful (5.2%)	Worry about their health (6.5%)	Retired (5.9%)
	Ambitious (5.9%)	Lazy (5.2%)	Experienced (6.5%)	Experienced (5.9%)
	Modern (5.9%)	Healthy (5.2%)	Active (5.9%)	Grandparents (5.2%)
	Sociable (5.9%)	Delinquent (4.6%)	Calm (5.9%)	Lonely (5.2%)
	Have a negative vision of older people (5.9%)	Strong (4.6%)	Affectionate (5.9%)	Affectionate (4.6%)

Table 19. Attributes that younger participants considered as culturally associated with younger people, by decreasing levels of typicality

Attribute	Typicality				Valence			
	Confidence interval 95%				Confidence interval 95%			
	Mean	Inferior limit	Superior limit	Standard deviation	Mean	Inferior limit	Superior limit	Standard deviation
Take care of appearance	8.645	8.313	8.977	1.310	7.532	7.109	7.956	1.667
Adventurous	8.468	8.193	8.743	1.080	6.774	6.327	7.221	1.759
Active	8.194	7.768	8.62	1.680	8.21	7.766	8.653	1.747
Healthy	8.081	7.646	8.515	1.710	9.016	8.625	9.408	1.542
Fun	7.871	7.578	8.164	1.150	8.419	8.077	8.762	1.35

Sociable	7.855	7.524	8.186	1.300	8.177	7.808	8.547	1.454
Hasty	7.839	7.485	8.192	1.390	3.258	2.792	3.725	1.837
Smokers	7.839	7.476	8.201	1.430	3.097	2.516	3.678	2.288
Quick	7.823	7.397	8.248	1.670	7.177	6.817	7.538	1.420
Beautiful	7.661	7.188	8.135	1.860	8.565	8.101	9.028	1.825
Irresponsible	7.548	7.211	7.885	1.330	1.484	1.078	1.889	1.597
Outgoing	7.387	7.051	7.723	1.320	6.629	6.173	7.085	1.795
Creative	7.161	6.739	7.583	1.660	7.855	7.434	8.276	1.658
Take drugs	6.661	6.223	7.100	1.730	0.952	0.558	1.346	1.552
Willingness to improve	6.661	6.184	7.139	1.880	8.161	7.732	8.591	1.691
Educated	6.355	5.822	6.887	2.100	8.484	8.094	8.873	1.534
Dependent	6.226	4.542	7.91	6.630	2.823	2.303	3.342	2.045
Alert	6.148	5.671	6.624	1.860	6.387	5.970	6.804	1.643
Knowledgeable	5.839	5.281	6.397	2.200	7.565	7.070	8.059	1.947
Astute	5.738	5.254	6.221	1.890	7.355	6.954	7.756	1.580
Independent	5.581	4.938	6.224	2.530	7.806	7.276	8.336	2.087
Intuitive	5.452	4.928	5.975	2.060	6.246	5.765	6.727	1.877
Misguided	4.968	4.377	5.558	2.330	2.113	1.745	2.481	1.450
Confuse	4.839	4.183	5.494	2.580	2.500	2.113	2.887	1.523
Hardworking	4.806	4.356	5.257	1.770	8.161	7.713	8.610	1.767
Sage	4.557	4.013	5.102	2.130	7.246	6.791	7.701	1.776
Incompetent	4.516	3.910	5.122	2.390	1.721	1.308	2.135	1.614
Accomplished	4.435	3.963	4.908	1.860	8.210	7.839	8.581	1.461
Grumpy	3.770	3.153	4.388	2.410	2.306	1.866	2.747	1.733
Mentor	3.726	3.174	4.278	2.170	6.677	6.242	7.113	1.716
Calm	3.452	3.071	3.833	1.500	7.032	6.603	7.461	1.689
Superstitious	3.339	2.861	3.816	1.880	4.066	3.549	4.582	2.016
Useless	3.258	2.682	3.834	2.270	0.935	0.642	1.229	1.158
Boring	3.242	2.691	3.793	2.170	2.129	1.68	2.578	1.769
Advisers	3.161	2.647	3.676	2.030	7.435	6.979	7.892	1.798
Intellectually unable	3.082	2.497	3.667	2.280	1.613	1.042	2.184	2.250
Wise	3.065	2.607	3.522	1.800	8.164	7.737	8.590	1.665
Dementia	3.000	-0.54	6.54	13.940	1.081	0.739	1.423	1.346
Experienced	3.000	2.574	3.426	1.680	8.210	7.780	8.639	1.690
Mature	2.919	2.439	3.4	1.890	8.21	7.878	8.542	1.307
Lonely	2.790	2.276	3.305	2.030	1.919	1.556	2.282	1.429
Forgetful	2.468	1.828	3.108	2.520	2.290	1.896	2.684	1.551
Slow	2.164	1.761	2.567	1.570	2.629	2.300	2.958	1.296
Conservative	1.952	1.588	2.315	1.430	4.048	3.538	4.559	2.012
Miserable	1.919	1.485	2.354	1.710	1.806	1.316	2.297	1.932

Physically unable	1.548	1.087	2.010	1.820	1.475	1.085	1.866	1.523
Non excitable	1.419	1.086	1.753	1.310	2.452	2.024	2.880	1.686
Decrepit	1.410	0.968	1.852	1.730	1.306	0.940	1.673	1.444
Decline	1.306	0.823	1.790	1.900	1.790	1.319	2.262	1.857
Senile	1.306	0.785	1.828	2.050	1.387	0.911	1.864	1.876
Dying	1.279	0.799	1.758	1.870	0.952	0.622	1.281	1.299
Ill	1.113	0.840	1.385	1.070	1.532	1.114	1.950	1.647
Old	0.548	0.196	0.901	1.390	3.371	2.861	3.881	2.010
Alzheimer	0.258	0.058	0.458	0.790	1.258	0.865	1.651	1.546
Grandparents	0.242	0.043	0.441	0.780	6.403	5.798	7.009	2.385
Retired	0.177	0.06	0.295	0.460	3.855	3.400	4.310	1.791

Table 20. Attributes that older participants considered as culturally associated with younger people, by decreasing levels of typicality

Attribute	Typicality				Valence			
	Confidence interval 95%				Confidence interval 95%			
	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit
Take care of appearance	7.500	6.908	8.092	2.331	7.123	6.626	7.619	1.871
Healthy	7.355	6.701	8.009	2.574	7.879	7.337	8.421	2.061
Quick	7.200	6.720	7.680	1.858	6.772	6.189	7.355	2.196
Beautiful	7.197	6.617	7.777	2.264	6.776	6.177	7.375	2.279
Active	6.852	6.381	7.324	1.842	7.579	7.125	8.033	1.711
Adventurous	6.790	6.156	7.424	2.497	5.175	4.559	5.792	2.323
Fun	6.742	6.294	7.190	1.764	7.321	6.821	7.822	1.869
Sociable	6.733	6.339	7.128	1.528	7.263	6.783	7.743	1.808
Outgoing	6.508	6.041	6.975	1.822	6.193	5.685	6.700	1.913
Creative	6.403	5.918	6.889	1.912	7.304	6.806	7.801	1.858
Smokers	6.246	5.628	6.864	2.413	2.544	1.944	3.144	2.260
Willingness to improve	6.032	5.527	6.538	1.992	7.298	6.820	7.776	1.802
Hasty	5.836	5.241	6.432	2.325	3.034	2.549	3.519	1.845
Educated	5.820	5.328	6.311	1.919	7.534	6.983	8.086	2.096
Hardworking	5.705	5.241	6.169	1.811	7.404	6.855	7.952	2.069
Dependent	5.526	4.715	6.338	3.060	3.421	2.819	4.023	2.267
Intuitive	5.492	4.937	6.046	2.128	6.579	5.990	7.168	2.220
Sage	5.383	4.816	5.950	2.195	6.776	6.193	7.359	2.217
Alert	5.328	4.741	5.915	2.293	5.893	5.344	6.442	2.051
Independent	5.197	4.508	5.885	2.688	7.414	6.907	7.921	1.929
Knowledgeable	5.067	4.539	5.594	2.041	7.211	6.680	7.741	1.998

Mentor	4.786	4.115	5.457	2.506	6.614	6.086	7.142	1.989
Astute	4.649	4.004	5.294	2.431	6.211	5.650	6.771	2.111
Irresponsible	4.574	3.946	5.202	2.453	2.052	1.464	2.640	2.235
Take drugs	4.383	3.740	5.027	2.491	1.649	1.024	2.274	2.357
Accomplished	4.300	3.826	4.774	1.835	6.807	6.217	7.397	2.224
Calm	4.228	3.750	4.706	1.803	7.086	6.515	7.657	2.171
Misguided	4.213	3.616	4.810	2.332	1.946	1.415	2.478	1.986
Confuse	4.117	3.446	4.788	2.598	2.649	2.120	3.179	1.995
Mature	3.983	3.436	4.531	2.119	7.155	6.567	7.744	2.238
Boring	3.982	3.313	4.652	2.525	2.561	1.987	3.135	2.163
Wise	3.915	3.346	4.484	2.184	7.036	6.414	7.658	2.301
Non excitable	3.712	3.001	4.423	2.729	3.579	2.945	4.213	2.39
Incompetent	3.632	3.072	4.191	2.110	2.431	1.878	2.984	2.104
Superstitious	3.458	2.931	3.984	2.020	3.228	2.661	3.795	2.138
Forgetful	3.31	2.657	3.964	2.487	3.121	2.577	3.665	2.07
Intellectually unable	3.186	2.484	3.889	2.694	2.638	1.932	3.344	2.687
Slow	3.119	2.526	3.711	2.275	3.393	2.888	3.898	1.885
Experienced	2.966	2.419	3.512	2.077	7.621	7.146	8.095	1.805
Grumpy	2.930	2.320	3.540	2.298	2.759	2.241	3.276	1.967
Lonely	2.733	2.138	3.329	2.306	3.982	3.319	4.645	2.475
Useless	2.632	2.031	3.233	2.265	1.807	1.287	2.327	1.959
Conservative	2.583	2.079	3.087	1.951	5.245	4.572	5.918	2.441
Adviser	2.561	1.894	3.229	2.514	6.579	6.005	7.153	2.163
Miserable	2.125	1.430	2.820	2.594	1.625	1.184	2.066	1.647
Ill	1.966	1.339	2.592	2.384	3.333	2.716	3.950	2.325
Decline	1.643	0.936	2.349	2.638	2.397	1.853	2.940	2.068
Old	1.431	0.710	2.152	2.741	3.596	2.861	4.332	2.77
Dementia	1.379	0.822	1.936	2.118	1.345	0.848	1.841	1.888
Physically unable	1.250	0.815	1.685	1.684	2.393	1.814	2.972	2.163
Grandparents	1.211	0.531	1.890	2.562	6.421	5.681	7.161	2.790
Retired	1.151	0.421	1.881	2.649	4.862	4.24	5.484	2.365
Senile	0.950	0.430	1.470	2.012	1.607	1.053	2.161	2.069
Decrepit	0.947	0.445	1.450	1.894	1.603	1.116	2.091	1.854
Dying	0.786	0.268	1.303	1.933	1.161	0.666	1.655	1.847
Alzheimer	0.356	0.135	0.576	0.846	1.667	1.044	2.290	2.348

Table 21. Attributes that younger participants considered as culturally associated with older people, by decreasing levels of typicality

Attribute	Typicality		Valence	
	Confidence interval 95%		Confidence interval 95%	

	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit
Retired	9.161	8.873	9.449	1.130	3.855	3.400	4.310	1.791
Grandparents	9.097	8.838	9.356	1.020	6.403	5.798	7.009	2.385
Experienced	8.500	8.082	8.918	1.650	8.21	7.780	8.639	1.690
Old	8.452	7.934	8.969	2.040	3.371	2.861	3.881	2.010
Conservative	8.410	8.078	8.742	1.300	4.048	3.538	4.559	2.012
Mature	8.258	7.930	8.586	1.290	8.210	7.878	8.542	1.307
Advisers	8.048	7.646	8.450	1.580	7.435	6.979	7.892	1.798
Wise	7.984	7.598	8.370	1.520	8.164	7.737	8.590	1.665
Forgetful	7.855	7.373	8.337	1.900	2.290	1.896	2.684	1.551
Ill	7.823	7.387	8.258	1.710	1.532	1.114	1.950	1.647
Superstitious	7.823	7.489	8.156	1.310	4.066	3.549	4.582	2.016
Dependent	7.710	7.297	8.122	1.620	2.823	2.303	3.342	2.045
Lonely	7.710	7.254	8.166	1.800	1.919	1.556	2.282	1.429
Decline	7.500	7.038	7.962	1.820	1.79	1.319	2.262	1.857
Slow	7.484	7.100	7.868	1.510	2.629	2.300	2.958	1.296
Senile	7.323	5.384	9.261	7.630	1.387	0.911	1.864	1.876
Grumpy	7.145	6.665	7.625	1.890	2.306	1.866	2.747	1.733
Boring	7.049	6.562	7.536	1.900	2.129	1.680	2.578	1.769
Physically unable	6.855	6.300	7.41	2.190	1.475	1.085	1.866	1.523
Miserable	6.774	6.095	7.454	2.680	1.806	1.316	2.297	1.932
Alzheimer	6.689	6.163	7.215	2.050	1.258	0.865	1.651	1.546
Confuse	6.548	6.043	7.054	1.990	2.500	2.113	2.887	1.523
Calm	6.516	6.017	7.015	1.960	7.032	6.603	7.461	1.689
Dementia	6.323	5.824	6.822	1.970	1.081	0.739	1.423	1.346
Non excitable	6.311	5.753	6.870	2.180	2.452	2.024	2.880	1.686
Misguided	6.161	5.561	6.761	2.360	2.113	1.745	2.481	1.450
Sage	6.098	5.574	6.623	2.050	7.246	6.791	7.701	1.776
Sociable	5.984	5.498	6.469	1.910	8.177	7.808	8.547	1.454
Intuitive	5.887	5.275	6.499	2.410	6.246	5.765	6.727	1.877
Mentor	5.871	5.296	6.446	2.270	6.677	6.242	7.113	1.716
Intellectually unable	5.629	5.140	6.118	1.930	1.613	1.042	2.184	2.250
Astute	5.508	4.995	6.022	2.010	7.355	6.954	7.756	1.580
Decrepit	5.393	4.816	5.970	2.250	1.306	0.940	1.673	1.444
Accomplished	5.371	4.869	5.873	1.980	8.210	7.839	8.581	1.461
Dying	5.048	4.461	5.636	2.310	0.9520	0.622	1.281	1.299
Hardworking	5.016	4.441	5.591	2.270	8.161	7.713	8.61	1.767
Useless	4.968	4.247	5.689	2.840	0.935	0.642	1.229	1.158
Incompetent	4.887	4.258	5.516	2.480	1.721	1.308	2.135	1.614
Fun	4.871	4.330	5.412	2.130	8.419	8.077	8.762	1.350

Educated	4.823	4.305	5.340	2.040	8.484	8.094	8.873	1.534
Knowledgeable	4.532	4.031	5.033	1.970	7.565	7.070	8.059	1.947
Alert	4.500	4.025	4.975	1.870	6.387	5.970	6.804	1.643
Healthy	4.452	1.265	7.638	12.550	9.016	8.625	9.408	1.542
Outgoing	3.984	3.518	4.449	1.830	6.629	6.173	7.085	1.795
Beautiful	3.71	3.181	4.239	2.080	8.565	8.101	9.028	1.825
Creative	3.565	3.085	4.044	1.890	7.855	7.434	8.276	1.658
Willingness to improve	3.459	2.992	3.926	1.820	8.161	7.732	8.591	1.691
Take care of appearance	3.339	2.803	3.875	2.110	7.532	7.109	7.956	1.667
Independent	3.290	2.784	3.797	1.990	7.806	7.276	8.336	2.087
Active	3.274	2.734	3.815	2.130	8.21	7.766	8.653	1.747
Smokers	2.903	2.373	3.433	2.090	3.097	2.516	3.678	2.288
Adventurous	2.548	2.089	3.007	1.810	6.774	6.327	7.221	1.759
Irresponsible	2.361	1.872	2.849	1.910	1.484	1.078	1.889	1.597
Hasty	2.180	1.748	2.613	1.690	3.258	2.792	3.725	1.837
Quick	2.145	1.781	2.510	1.440	7.177	6.817	7.538	1.420
Take drugs	1.000	0.552	1.448	1.760	0.952	0.558	1.346	1.552

Table 22. Attributes that older participants considered as culturally associated with older people, by decreasing levels of typicality

Attribute	Typicality				Valence			
	Confidence interval 95%				Confidence interval 95%			
	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit	Mean	Inferior limit
Grandparents	8.082	7.559	8.605	2.044	6.421	5.681	7.161	2.790
Experienced	7.758	7.327	8.189	1.696	7.621	7.146	8.095	1.805
Mature	7.754	7.342	8.166	1.609	7.155	6.567	7.744	2.238
Retired	7.710	6.986	8.433	2.848	4.862	4.240	5.484	2.365
Conservative	7.542	7.077	8.007	1.784	5.245	4.572	5.918	2.441
Advisers	7.517	7.006	8.028	1.979	6.579	6.005	7.153	2.163
Lonely	6.803	6.139	7.468	2.594	3.982	3.319	4.645	2.475
Wise	6.770	6.316	7.225	1.774	7.036	6.414	7.658	2.301
Forgetful	6.452	5.86	7.043	2.331	3.121	2.577	3.665	2.070
Sociable	6.271	5.764	6.778	1.946	7.263	6.783	7.743	1.808
Old	6.233	5.527	6.939	2.733	3.596	2.861	4.332	2.770
Decline	6.016	5.323	6.710	2.731	2.397	1.853	2.940	2.068
Sage	5.898	5.351	6.445	2.098	6.776	6.193	7.359	2.217
Hardworking	5.879	5.250	6.508	2.392	7.404	6.855	7.952	2.069
Slow	5.852	5.240	6.465	2.393	3.393	2.888	3.898	1.885

Dependent	5.839	5.239	6.439	2.362	3.421	2.819	4.023	2.267
Calm	5.836	5.319	6.353	2.018	7.086	6.515	7.657	2.171
Astute	5.772	5.218	6.326	2.088	6.211	5.650	6.771	2.111
Intuitive	5.719	5.087	6.351	2.381	6.579	5.990	7.168	2.220
Knowledgeable	5.717	5.202	6.231	1.992	7.211	6.680	7.741	1.998
Grumpy	5.677	5.071	6.284	2.387	2.759	2.241	3.276	1.967
Superstitious	5.644	5.003	6.286	2.462	3.228	2.661	3.795	2.138
Ill	5.639	5.028	6.251	2.388	3.333	2.716	3.950	2.325
Educated	5.597	5.036	6.157	2.206	7.534	6.983	8.086	2.096
Take appearance of	5.548	4.991	6.105	2.193	7.123	6.626	7.619	1.871
Accomplished	5.475	4.937	6.012	2.062	6.807	6.217	7.397	2.224
Boring	5.295	4.630	5.960	2.597	2.561	1.987	3.135	2.163
Fun	5.119	4.588	5.649	2.035	7.321	6.821	7.822	1.869
Mentor	5.098	4.574	5.623	2.047	6.614	6.086	7.142	1.989
Confuse	5.082	4.452	5.712	2.458	2.649	2.120	3.179	1.995
Outgoing	5.034	4.567	5.500	1.79	6.193	5.685	6.700	1.913
Willingness to improve	5.017	4.393	5.641	2.373	7.298	6.820	7.776	1.802
Intellectually unable	5.000	4.365	5.635	2.413	2.638	1.932	3.344	2.687
Physically unable	4.817	4.214	5.419	2.332	2.393	1.814	2.972	2.163
Non excitable	4.767	4.100	5.433	2.580	3.579	2.945	4.213	2.390
Independent	4.683	4.136	5.231	2.119	7.414	6.907	7.921	1.929
Alert	4.655	4.103	5.207	2.099	5.893	5.344	6.442	2.051
Active	4.550	4.028	5.072	2.020	7.579	7.125	8.033	1.711
Beautiful	4.259	3.612	4.906	2.461	6.776	6.177	7.375	2.279
Healthy	4.136	3.511	4.760	2.396	7.879	7.337	8.421	2.061
Senile	4.117	3.439	4.794	2.624	1.607	1.053	2.161	2.069
Creative	4.069	3.599	4.538	1.786	7.304	6.806	7.801	1.858
Decrepit	3.933	3.241	4.626	2.68	1.603	1.116	2.091	1.854
Alzheimer	3.800	3.106	4.494	2.686	1.667	1.044	2.290	2.348
Incompetent	3.525	2.876	4.175	2.494	2.431	1.878	2.984	2.104
Misguided	3.525	2.856	4.195	2.569	1.946	1.415	2.478	1.986
Dementia	3.508	2.792	4.224	2.797	1.345	0.848	1.841	1.888
Miserable	3.441	2.768	4.113	2.582	1.625	1.184	2.066	1.647
Hasty	3.404	2.766	4.041	2.404	3.034	2.549	3.519	1.845
Quick	3.217	2.658	3.776	2.164	6.772	6.189	7.355	2.196
Useless	3.175	2.463	3.888	2.687	1.807	1.287	2.327	1.959
Irresponsible	2.786	2.118	3.453	2.492	2.052	1.464	2.640	2.235
Adventurous	2.644	2.046	3.242	2.295	5.175	4.559	5.792	2.323
Smokers	2.517	1.995	3.039	2.021	2.544	1.944	3.144	2.260

Dying	2.450	1.752	3.148	2.702	1.161	0.666	1.655	1.847
Take drugs	0.741	0.331	1.152	1.562	1.649	1.024	2.274	2.357

ANNEX 2 – Risk perception for self and older in each study

Table 23. Mean values and standard deviations of RPself and RPolder in each experimental condition from Study 5

		Younger stereotype		Older stereotype	
		Positive	Negative	Positive	Negative
Rheumatism	RPself	6.63 (2.65)	7.16 (2.16)	5.69 (2.21)	6.85 (2.28)
	RPolder	7.63 (2.01)	6.83 (1.80)	7.15 (1.90)	7.42 (1.55)
Hypertension	RPself	6.50 (3.20)	4.75 (2.26)	6.38 (2.21)	6.71 (2.46)
	RPolder	6.41 (2.11)	6.16 (1.74)	6.38 (1.50)	6.50 (1.40)
Heart attack	RPself	4.83 (1.03)	4.50 (1.24)	5.15 (1.52)	5.28 (1.54)
	RPolder	5.75 (1.54)	5.41 (1.67)	6.15 (1.14)	5.28 (0.72)
Stroke	RPself	5.00 (0.85)	5.50 (1.51)	5.07 (1.84)	5.28 (1.07)
	RPolder	5.16 (1.02)	5.41 (1.67)	6.00 (1.63)	5.42 (0.85)

Table 24. Mean values and standard deviations of RPself and RPolder in each experimental condition from Study 6

		Older stereotype	
		Positive	Negative
Rheumatism	RPself	6.25 (1.74)	6.50 (2.13)
	RPolder	6.35 (2.30)	6.40 (2.16)
Hypertension	RPself	5.90 (2.44)	6.63 (2.33)
	RPolder	6.85 (2.25)	6.78 (2.07)
Heart attack	RPself	5.15 (1.46)	5.95 (1.19)
	RPolder	5.90 (1.51)	5.70 (2.17)
Stroke	RPself	5.10 (1.77)	5.55 (1.65)
	RPolder	6.30 (1.42)	5.72 (1.52)

Table 25. Mean values and standard deviations of RPself and RPolder in each experimental condition from Study 7

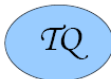
	Low age identity salience		High age identity salience	
	Positive aging stereotype	Negative aging stereotype	Positive aging stereotype	Negative aging stereotype
RPself (Heart attack + Stroke)	4.96 (0.13)	5.57 (0.85)	5.25 (0.40)	5.12 (1.94)
RPolder (Heart attack + Stroke)	5.43 (0.67)	5.00 (0.1)	5.00 (0.2)	5.80 (1.50)

Table 26. Mean values and standard deviations of RPself and RPolder in each experimental condition from Study 8

	Low age identity salience		High age identity salience	
	Positive aging stereotype	Negative aging stereotype	Positive aging stereotype	Negative aging stereotype
RPself (Heart attack + Stroke)	4.50 (1.04)	5.43 (0.73)	5.00 (0.1)	4.70 (0.86)
RPolder (Heart attack + Stroke)	5.81 (1.22)	5.50 (1.26)	5.27 (0.60)	5.40 (0.81)

ANNEX 3 – Brochure used in Studies 6 and 8

Associação
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Trata-se de um equipamento colectivo com capacidade para 30 pessoas de ambos os sexos.

Nesta associação, são realizadas diversas actividades:

- passeios culturais
- bailes/convívios
- conversas de reflexão
- teatro
- grupo coral

...entre outras actividades!

A nossa filosofia assenta na promoção do bem-estar das pessoas idosas nas suas diferentes vertentes.

Deste modo, procuramos promover o bem-estar, através da sociabilização com outros utentes.

Possuímos também vários programas adaptados a um ritmo mais calmo e maduro, se o desejar.

Na Associação Tempo de Qualidade respeitamos a sabedoria dos mais velhos.

O seu tempo é precioso e a nossa missão é que passe connosco
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