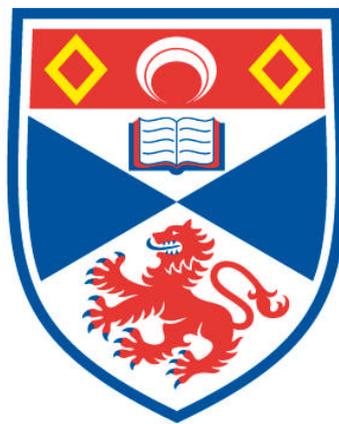


**PERCEPTIONS OF OLDER ADULTS IN AN AGEING WORLD:
CONTENT, STRUCTURE, AND CONSEQUENCES OF AGE-RELATED
AUTO-STEREOTYPES**

Joanne K. Persson

**A Thesis Submitted for the Degree of PhD
at the
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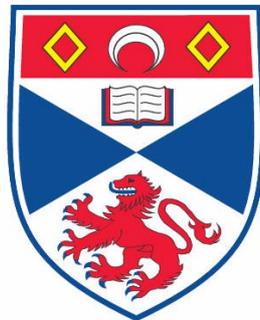
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Perceptions of older adults in an ageing world:

Content, structure, and consequences of age-related
auto-stereotypes

Joanne K. Persson



This thesis is submitted in partial fulfilment for the degree of PhD

at the

University of St Andrews

14/05/2013

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Abstract

The current thesis explored participants' stereotypes and auto-stereotypes of old age within the UK, and the consequences of auto-stereotype activation on older adults' memory performance and well-being. Study 1 employed a questionnaire design to explore young (aged 17-25 years) and older adults' (aged 60-75 years) experiences and stereotypes of ageing. Older participants demonstrated high subjective age bias, reporting subjective ages significantly below their chronological age. Older adults also demonstrated a greater understanding of positive aspects of old age than young adults, although no significant differences emerged between cohorts over the valence of generated stereotype content. Study 2 modified the questionnaire to further differentiate between more positive versus less negative aspects of ageing. Findings indicated that although older adults displayed less negative perceptions of old age than young adults, they did not demonstrate more positive representations. Study 3 explored the structure (as opposed to content) of age-related stereotypes using a free-sorting task, and included old-old adult participants (aged 75-91 years). Confirming previous findings, subtype structure formed two high level clusters, consisting of positive or negative categories. Old-old adults demonstrated the most complex subtype structure from the three groups, with no significant differences emerging between young and older adults. Finally, Study 4 employed a subliminal priming paradigm to examine the impact of positive or negative auto-stereotype activation on older adults' memory performance and well-being. Findings suggested that negative auto-stereotype activation had a detrimental impact on participants' memory performance, although the low power of the study means additional work is required to confirm this effect pattern. No significant effects of priming emerged for young adults. In summary, the current findings suggest that stereotypes and auto-stereotypes of old age are complex, consisting of both positive and negative elements, and point to the importance of considering subjective, rather than chronological age when assessing age-related identity.

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Chapter One:

1.1: General introduction

Section 1.1.1: Stereotypes and ageing

Britain is an ageing society (Giannakouris, 2008). For the first time in 2001 the national census data revealed that there were more older adults within the UK (including Scotland) than young adults (Office for National Statistics, 2001). Furthermore, those aged 65 years or older (particularly those aged 75 years plus) are projected to be the fastest growing population within UK society (Government Actuary Department, 2005). Similar trends have been displayed within most developed countries (The European Platform, 2007; Giannakouris, 2008). As more people are living into later life than ever before, it is becoming increasingly important that we understand the factors that contribute towards successful ageing (Horton, Baker, Pearce, & Deakin, 2008).

Traditional accounts of ageing have conceptualised physical and cognitive decline as an inevitable part of the ageing process (Craik, Jennings, & Salthouse, 1992; Masoro, 2006), and have tended to focus on biological aspects of ageing (e.g., Jessberger & Gage, 2008; Park & Gutchess, 2006), leaving more social processes to be ignored (Bowling, See-Tai, Ebrahim, Gabriel, & Solanki, 2005; Dean, 2003). Recent accounts have started to question the inevitability of this decline (e.g., Levy & Leffheit-Limson, 2009), however, emphasising the role of psychosocial factors in influencing well-being and functional capacity in later life (i.e., participants' ability to complete intellectual and/or physical functions; Donaldson, 1984, p. 240). Such factors include social roles (Hidalgo, Moreno-Jimenez, & Quinonero, 2013), availability of support networks (Fratiglioni, Paillard-borg, & Winblad, 2004), and auto-stereotypes of ageing (i.e., stereotypes about one's own in-groups; Triandis & Vassiliou, 1967; Horton et al., 2008).

Indeed, over the last decade, a plethora of studies have demonstrated that stereotypes and auto-stereotypes of later life can have a profound impact on older adults' physical health and functional capacity (e.g., Levy & Myers, 2004; Meisner, 2012). As emphasised by Abrams and colleagues (2011), an examination of societal representations of old age are central to the study of successful ageing, due to the widespread (and negative) consequences of prejudice and discrimination on both older adults themselves (Garstka, Schmitt, Branscombe, & Hummert, 2004; Scott, Jackson, & Bergeman, 2011), and society as a whole

(Abrams, Russell, Vauclair, & Swift, 2011). The current thesis will therefore outline our theoretical understanding of stereotypes and stereotyping, before examining how these cognitive representations can exert effects on older adults health and well-being.

Section 1.1.2: The nature and representation of stereotypes

The study of stereotypes and stereotyping is one of the oldest research topics within social psychology (Stangor & Lange, 1994), and has examined the processes underlying, and resulting from, the stereotypes of numerous societal groups (for reviews, see S. T. Fiske, Cuddy, Glick, & Xu, 2002; Quadflieg & Macrae, 2011). Psychological research in this field has indicated that people are stereotyped on a wide variety of social characteristics, including race (Pauker, Apfelbaum, & Ambady, 2010), nationality (Cuddy et al., 2009; Eagelman, 2011), age (Mason, Darnell, & Prifti, 2010), gender (Morton, Rabinovich, & Postmes, 2012), mental health status (Jorm, 2000; Kirsh, Slack, & King, 2012) and sexual orientation (Brambilla, Carnaghi, & Ravenna, 2011). Despite this however, there has been much controversy surrounding the processes underlying stereotyping, such as when, why, and/or how we use stereotypes (Quadflieg & Macrae, 2011).

Even the definition of what we mean by a “stereotype” has also been a topic of considerable debate (Brigham, 1971; Kanahara, 2006), with many varied definitions currently in use; (Leyens, Yzerbyt, & Schadron, 1994). The term was first introduced to social psychology almost a century ago by Walter Lippmann, who defined stereotypes as people’s internal representations of individuals and groups as ‘*pictures inside [our] heads*’ (1922, p.60). Lippmann discussed how stereotypes were not always accurate representations of reality as they can be influenced by the perceiver’s own internal processing. This perspective has been reinforced by subsequent research, which has emphasised that stereotypes may be based on inferences made by the perceivers themselves, who have constructed relationships that do not, in fact, exist (for a review, see R. S. J. Wyer & Carlston, 1994). Other studies have indicated that stereotypes are generally negative and/or inaccurate representations of societal groups (Katz & Braly, 1933). This research, in turn, led Gordon Allport to revise the definition of ‘stereotype’ as ‘*an exaggerated belief, associated with a category*’ (1954, p.191).

More recent work has revealed that stereotypes can consist of both positive and negative elements, rather than being primarily negative. For example, housewives are often

perceived as warm but incompetent (e.g., Cuddy et al., 2009), whereas gay men are perceived as gentle but emotional (Madon, 1997). More recent definitions have therefore tended to drop the evaluative element of a stereotypes (Leyens et al., 1994), simply classifying them as '*a belief about a group of people*' (Kanahara, 2006, p.311). Further distinctions have also been drawn between individuals' auto-stereotypes and meta-stereotypes (i.e., stereotypes which you believe out-group members hold about your in-group; Vorauer, Main, & O'Connell, 1998). With over 90 years of research to draw upon, the current chapter provides a brief overview of the main theories concerning the formation and representation of stereotypes, which are directly relevant to the studies presented in this thesis.

Many theories about stereotypes and stereotyping start from the viewpoint of trying to understand how such perceptions are formed (Kunda, 1999). These theories have tended to provide explanations focussing on either individual or group/societal-based formulations (Bar-Tal, 1997; Fiske, 2000). Individualistic accounts, for instance, have tended to focus on the perceiver's own personality as an explanation for their tendency to stereotype (for a review, see Leyens et al., 1994). These have included the authoritarian personality; that is, an individual who has been brought up by status-obsessed parents, and as a result is subservient to authority figures (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; Oesterreich, 2005), and the closed mind perspective, typified by individuals who are dogmatic, and tend only to assimilate ideas that fit into their pre-existing world-view (Rokeach, 1960). Importantly, the authoritarian personality and closed mind theories both ascribed the formation of stereotypes to individuals, and suggested that adherence to stereotypical beliefs was a function of individuals' personalities.

In contrast, and of more importance to the current thesis, socio-cultural approaches suggest that stereotypes are a product of the culture that surrounds perceivers (for reviews, see Fiske, 2000; Meiser & Hewstone, 2010), and are learned from a variety of sources. These include beliefs and attitudes being passed down from parents to children (e.g., Castelli, Carraro, Tomelleri, & Amari, 2007), being acquired through local media such as picture books and television (e.g., Kahlenberg & Hein, 2010), and through awareness of macro-societal factors, such as intergroup relations and current economic conditions (e.g., Bar-Tal, 1997). Thus, the socio-cultural perspective accepts that a range of factors and varying contexts can influence the development and content of stereotypical representations. Interestingly, once such cultural stereotypes are absorbed, the perceiver's own expectations

can then serve to reinforce these stereotypes through self-fulfilling prophecies (for a discussion of these processes, see Jussim, Palumbo, Chatman, Madon, & Smith, 2000).

Regardless of whether one accepts an individualistic or socio-cultural perspective on stereotype formation, once perceptions of certain groups are formed, how are these beliefs internally represented and stored? This is an important area for study, as how stereotypes are represented can influence not only how they are accessed but also when they are activated (Hilton & von Hippel, 1996). These, in turn, can have a range of consequences for both social perceivers, and the targets of the stereotyped views (see Section 1.1.4). Numerous theories have been proposed, suggesting potential methods for stereotype representation (e.g., the associative networks model (ANM), Wyer and Carlston, 1979). Once again, a detailed analysis of this research is beyond the scope of the current chapter, but an overview of the key theories pertinent to the research covered in this thesis are considered. These are the exemplar, prototype, and stereotype content models.

The exemplar model (Walker, 1975) suggests that, when trying to determine which category of social perception to classify people into (e.g., *Politicians, Actors*), we match them up to previously encountered, concrete exemplars of the category (e.g., *Tony Blair, Hugh Grant*). Thus, when encountering a potential new example of a social group (e.g., *Gordon Brown*), we evaluate them for similarity to existing exemplars, and assign them to the group whose exemplars they most closely match (e.g., *Politicians*). Walker argued that the exemplars most typical of a given category will be the most accessible, and are therefore likely to be recalled first when making these kinds of judgements, even though many cognitive representations of a given group may be held (E. R. Smith & Zarate, 1992).

The exemplar model emphasises the role of context in making category decision (for a review, see E. E. Smith & Medin, 2002). Thus, according to this view, people will be assigned to different categories, depending on which social attributes are salient at a given time (e.g., if our social context is an international tournament, Andy Murray might be classified as a 'British athlete', whereas in UK national match he might be classified as 'Scottish'). Smith and Zarate (1992) argue that this is due to the way that attention is allocated when encountering potential new exemplars of a category. If participants' age-group identity is salient, for example, perceivers may be more likely to categorise someone according to their age than their gender. The allocation of attention is influenced by both

internal (e.g., motivations to appear unbiased) and external considerations (e.g., context). In a study of media representations of Andre Agassi from 1990 to 2005, for example, Atkinson and Herro (2010) emphasised the role of comparison targets on Agassi's representation. They note a move from descriptions of Agassi as the '*Chartreuse Kid*' in 1990 (p. 94), which emphasised his lack of experience in comparison with his older peers, to the '*Wise Old Gnome of Tennis*' in 2005 (p. 95). Although Agassi's own age obviously has an impact on this change, the authors emphasised the role of context in determining perceptions.

Cantor and Mischel (1979) criticised the exemplar model, however, by arguing that social categorisation is too complicated for this process to be efficient. How do we know what a perfect example of an intelligent person is, for example, and how do we draw the line between categories (e.g., '*intelligent*' versus '*clever*' people)? Similarly, Hamilton and Mackie (1990) emphasise the role of socio-cultural information in stereotype formation, arguing that stereotypes may often be (partially) based on social learning (e.g., parents describing members of other races) about groups with whom we have no personal experience. Furthermore, Hamilton and Mackie argue that the retrieval of multiple exemplars is untenable, as there comes a point when an abstracted summary of these exemplars is more useful than repeatedly accessing the individual representations themselves.

As an alternative, Cantor and Mischel (1979) proposed the prototype model, in which categories are represented by more abstracted, composite representations of the group; that is, an averaged representation of the attributes associated with that category. How prototypical a group member is perceived to be depends on a range of factors, including how many attributes they have in common with other members of the group and how central these aspects are to the individual's personality. Thus a single individual may become more or less prototypical of the group, depending on the surrounding context. Cantor and Mischel argue that categories exist along a continuum that have no clear boundaries or defining features (cf., Rosch & Mervis, 1975). Thus, potential examples of a category are judged by how closely they resemble the relevant group's prototype, rather than being compared to exemplars (E. E. Smith & Medin, 2002).

A major strength of the prototype approach is that it can account for a hierarchical system of stereotyping (e.g., Vonk & Ashmore, 2003), so that a superordinate category (e.g., *women*) can be differentiated into further subtypes (e.g., *feminist*, *housewife*). Devine and

Baker (1991), for example, asked participants to generate all of the characteristics that they associated with either a superordinate category term (*Black*), or labels for potential subtypes of this stereotype (e.g., *ghetto*, *athlete*). Discriminant function analysis was conducted on the results (which allows us to determine whether the characteristics associated with each subtype form a unique set, or are (also) associated with the other subtypes; Field, 2005). The analysis revealed two reliable subtypes: the businessman and the athlete, each associated with a distinct set of characteristics, as well as identifying a superordinate category. Devine and Baker argue that that subtypes are the most functional level at which people stereotype others, as distinct sets of characteristics and behaviours may be associated with each individual subtype (e.g., Matheson, Collins, & Kuehne, 2000). Certainly distinct subtypes have been identified for a range of stereotypes alongside race, including gender (Vonk & Ashmore, 2003), religious beliefs (Harper, 2007), and sexuality (Geiger, Harwood, & Hummert, 2006), suggesting that the subtyping phenomenon is widespread.

Although the exemplar (Walker, 1975) and prototype models (Cantor & Mischel, 1979) of stereotype representation have different fundamental comparison targets (i.e., exemplars or prototypes), a number of similarities do emerge between the two theories. Both approaches agree that necessary and sufficient features are not a requirement for group allocation (e.g., D.L. Hamilton & Mackie, 1990; E. E. Smith & Medin, 2002), for example, and account for the importance of context in the salience of specific stereotypes. Furthermore, both theories permit a hierarchical system of stereotyping (as exemplars can relate to each individual subtype, just as prototypical representations do; D. L. Hamilton & Mackie, 1990). It is therefore unsurprising that further research has demonstrated that perceivers may use a *combination* of prototypes and exemplars when making category judgements (e.g., D. L. Hamilton & Sherman, 1994).

Whether exemplar- or prototype-based stereotyping strategies are employed seems to depend on a range of factors, including the size of the categories (Homa, Proulx, & Blair, 2008; J. D. Smith & Minda, 1998), and at which stage of the categorisation process people are trying to form their representations (e.g., J. D. Smith, Murray, & Minda, 1997). Work by Homa and colleagues (2008), for example, asked participants to categorize either large sets of 45 patterns, or smaller sets of 5, 10, or 15 patterns. Whereas exemplar-based processes were more reliable (i.e., accurately classifying more cases) for the smaller sets of cases, prototype models were more efficient when large numbers of cases were included.

Indeed, Homa and colleagues conclude that only a mixed model can adequately account for the displayed data (p. 441). Similarly, additional authors have suggested that a combination of representational models may be used in social situations in the real world (Fiske & Neuberg, 1990), and have emphasised that each model has its own contribution to make to the field (Wyer & Carlston, 1994). Although examining the utility of prototype- and exemplar-based models (and examining when each is more efficient) has been a topic of much debate within the literature (e.g., J. D. Smith et al., 1997; Voorspoels, Vanpaemel, & Storms, 2008), a full examination of this issue is beyond the scope of the current thesis. We shall therefore progress to examine the final theory of stereotype representation to be included in this review: the stereotype content model, or SCM (Cuddy, Fiske, & Glick, 2007).

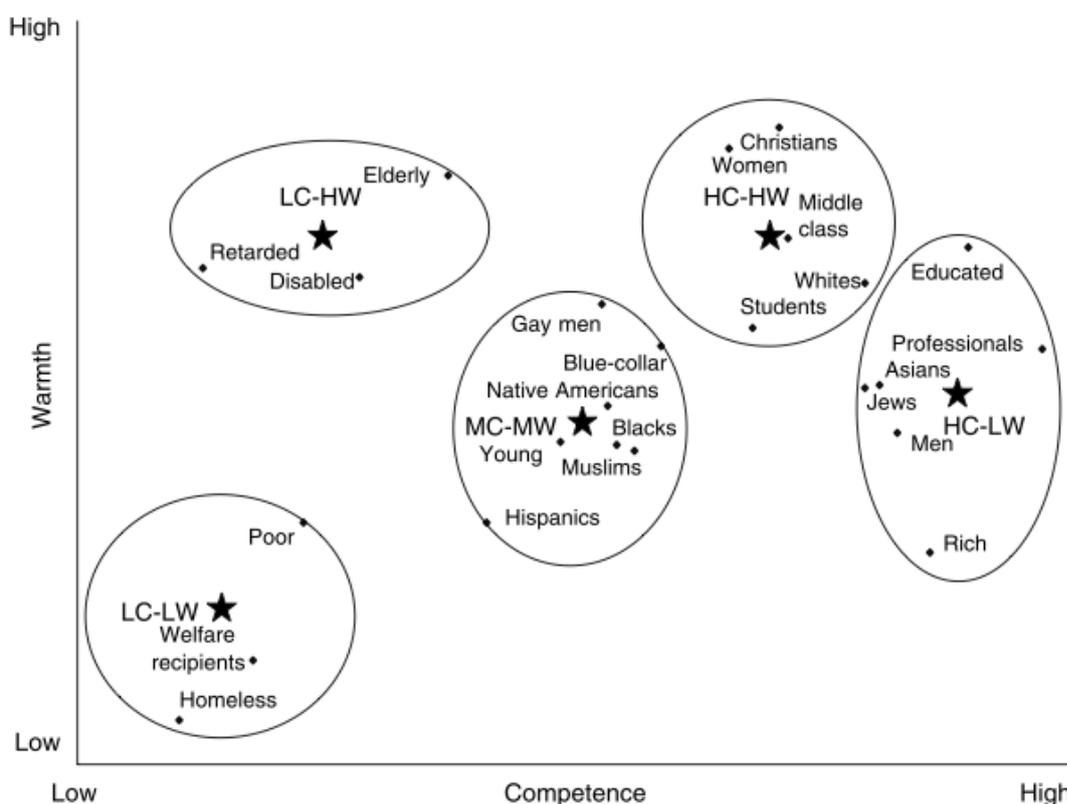
The SCM differs from the models outlined above, as rather than examining representations of specific stereotypes, the SCM posits that stereotype content is determined by social relationships between groups (Fiske et al., 2002). There are three main arguments to this model. First of all, the SCM hypothesizes that all stereotypes can be represented along two dimensions: warmth (e.g., *sincere*, *trustworthy*), and competence (e.g., *intelligent*, *confident*). This hypothesis was built upon an analysis of traits associated with stereotype content (e.g., Katz & Braly, 1933), and impression formation (e.g., Wojciszke, Bazinska, & Jaworski, 1998), which suggested that stereotype content could be reduced to the warmth-competence dimensions. It should be noted, however, that the studies by Fiske and colleagues (e.g., Cuddy et al., 2009; Fiske, Cuddy, Glick, & Xu, 2002) do not provide a precise description of how this analysis was performed, although general overviews are provided (e.g., see Fiske et al., 2002, p. 879).

A range of studies (e.g., Fiske et al., 2002; Lee & Fiske, 2006) have supported the two-dimension argument of the SCM, by asking participants to assess societal groups (e.g., ‘the rich’, ‘the elderly’) on traits associated with either warmth or competence (e.g., ‘competitive’, ‘tolerant’)¹. Subsequent cluster analysis (a technique which allows us to identify how sets of items can be classified into groups of similar or homogeneous entities; Aldenderfer & Blashfield, 1985) has indicated that various groups can be represented along

¹ Slight methodological variations have occurred across studies. The work by Cuddy and colleagues (2009), for example, assessed competence and warmth on eight traits (excluding ‘intelligent’), whereas the studies by Fiske and colleagues (2002) used nine.

this spectrum (see Figure 1.1), and reliably occupy one of four quadrants. These are either evaluatively consistent, containing high ratings on both the competence and warmth domains (e.g., *low-warmth, low-competence*), or ambiguous, consisting of a positive rating on one dimension, and a negative rating on the other (e.g., *low-warmth, high-competence*; Lee & Fiske, 2006). A fifth, mid-level cluster emerged in the study by Fiske and colleagues (2002), yet was not reliably replicated across samples (e.g., from the 23 groups included in this study, only seven (30.43%) were not clustered reliably, four of which were included in the mid-level cluster), and so has not been a focus of the model.

Figure 1.1: Group competence-warmth stereotypes from the Stereotype Content Model



Note. Stars indicate cluster centres. H, M, and L, respectively, indicate high, medium, and low; W, warmth; C, competence. Taken from “A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition” by S. Fiske, A. J. C. Cuddy, P. Glick, and J. Xu, 2002, *Journal of Personality and Social Psychology*, 82, p.892. Copyright 2002 by the American Psychological Association.

The second hypothesis of the SCM is that two aspects of intergroup relations cause variation in stereotype content: perceived status and competition (e.g., Cuddy, Norton, & Fiske, 2005; Fiske et al., 2007). Fiske and colleagues proposed that outgroup members were seen to be competent if they had high status within society, whereas warmth was negatively

associated with judgements of competitiveness (Fiske et al., 2002). In an empirical test of this hypothesis, Caprariello and colleagues manipulated participants' perceptions of a hypothetical new immigrant group, the 'Wallonians' (Caprariello, Cuddy, & Fiske, 2009), by providing information about their status, and level of economic threat (e.g., '[they] *typically have prestigious jobs, and are well educated and economically successful*'; p151). Participants were subsequently asked to rate the Wallonians on adjectives associated with warmth and competence.

In line with expectations, groups who were portrayed as non-competitive were rated as warmer than those who were described as competitive. Similarly, those who enjoyed a higher status were rated as more competent than those with lower statuses (Caprariello et al., 2009)². Although a number of studies have demonstrated a correlational relationship between warmth and competition, and status and competence (e.g., Cuddy et al., 2009; Fiske et al., 2002), the experiment by Caprariello and colleagues (2009) was the first to demonstrate a causal link between these processes. One major limitation of the study, however, concerns the ecological validity of the design: In the real world, a wide range of factors, including collective histories, and external context (e.g., comparison outgroups), influences intergroup relations (for a review, see Reicher, Spears, & Haslam, 2010). Reducing these relationships to vignettes depicting competitiveness and status is therefore a simplification of the complexities involved in intergroup processes, which could lead to unrealistic conclusions. The SCM does provide some initially promising results, however, suggesting that stereotype representations may be partially determined by relevant intergroup processes, and further work is required to explore these relationships.

The third hypothesis of the SCM is that stereotypes do not have to be primarily negative (Cuddy & Fiske, 2002). In fact, relatively few outgroup stereotypes occupy the low-competence, low-warmth quadrant. In contrast, most outgroups are represented in an ambiguous manner, being high on one dimension, but low on the other (Fiske et al., 2002). These can either be *envious* stereotypes, characterised by respect for the outgroup's competence, but dislike of their lack of warmth, and their associated competitiveness for resources (e.g., business women; see Table 1.1), and *paternalistic* stereotypes, characterised

² It should be noted that the manipulation's effect on ratings of competence ($p < .001$) was stronger than the corresponding effect on warmth ($p < .02$), which may reflect a stronger relationship between competence and status than between warmth and competition.

by like of the outgroup’s friendliness, but disrespect of their low levels of competence (e.g., older adults). Interestingly, the majority of stereotypes seem to fall within these ambiguous clusters.

Work by Lee and Fiske (2006), for example, asked participants to rate 25 immigrant groups within America (e.g., *Italian immigrants, Russian immigrants*) on their perceived warmth and competence. Participants held ambivalent stereotypes about almost all of the nationalities: 21 of the 25 groups (85%) showed significant differences in their warmth and competence ratings. Irish immigrants, for instance, were rated as being significantly more ‘warm’ than ‘competent’. In (almost) every study conducted by Fiske and colleagues (e.g., Fiske et al., 2002; Lee & Fiske, 2006), the only groups to occupy the high-warmth, high-competence cluster have been participants’ own ingroups, and relevant societal-reference groups (i.e., the groups to which they belong). Participants’ stereotypes therefore tend to be ambiguous, containing evaluatively inconsistent traits, whereas auto-stereotypes are evaluatively consistent.

Table 1.1: *Behavioural and affective responses associated with each of the four warmth by competence quadrants from the Stereotype Content Model.*

Warmth		Competence	
		Low	High
High	Affective response	Pity	Admiration and pride
	Behavioural response	Active facilitation, passive harm	Active facilitation, passive facilitation
	Quadrant examples	Elderly, disables	Students, middle-class
Low	Affective response	Contempt and disgust	Envy
	Behavioural response	Active harm, passive harm	Passive facilitation, active harm
	Quadrant examples	Drug addicts, homeless	Rich people, professionals

Fiske and colleagues (2002) propose that this pattern of stereotype content occurs so frequently because it is functionally useful: by praising devalued outgroups on one dimension (e.g., warmth *or* competence) individuals can value their place in society (e.g., the envied position of the successful career woman), whilst simultaneously derogating them on the other

dimension, therefore justifying the ingroup's resentment of them. This also allows individuals to retain the unilaterally positive perceptions for their own ingroups (see Section 1.1.3 for further details on this strategy). The only exception to this finding has been with research conducted with collectivist cultures, where no group was found to occupy the most positive quadrant (Cuddy et al., 2009).

An additional strength of the SCM as a model of stereotype representation concerns the predictions that it allows us to make concerning responses to specific groups. According to Cuddy and colleagues, stereotypes from each of the four quadrants (see Figure 1.1) should be associated with specific affective and behavioural responses (Cuddy et al., 2002; see Table 1.1). In a neuroimaging study, for example, participants viewed photographs of in- and out-group members (Harris & Fiske, 2006). When presented with photos from extreme outgroups (the low-low quadrant), two specific brain regions, the insula and amygdala, were differentially activated. These areas have previously been associated with disgust (Murphy, Nimmo-smith, & Lawrence, 2003; Schäfer, Schienle, & Vaitl, 2005)³, supporting Harris and Fiske's hypothesis (2006) that the low-low quadrant is associated with a specific affective response.

Similarly, Fiske and colleagues argue that specific behaviours should also be associated with each of the stereotype quadrants (see Table 1.1). They suggest, for example, that paternalistic stereotypes (low-competence, high-warmth) should be associated with behaviours that actively help the relevant outgroup members (e.g., assisting them), but passively harm them (e.g., neglecting or ignoring them). In an extension of the 'Wallonian' study outlined above (Caprariello et al., 2009), Cuddy and colleagues manipulated whether the fictitious immigrants were presented as being high or low in warmth and competence (e.g., '*intelligent... and good-natured*' versus '*incompetent... and not warm*'; Cuddy et al., 2002, p641). In line with predictions, the separate behavioural tendencies were indeed associated with specific stereotypes (see Table 1.1) with high-warmth clusters associated with active helping, and high-competence clusters associated with more passive helping. Thus, a major strength of the SCM is that it provides a causal explanation for the link

³ In Shafer and colleagues' (2005) study, the insula was activated in response to both fear and disgust. The authors therefore suggest that this region is involved in generic affective responses, rather than to specific emotions. Other studies indicate that it is associated with specific emotions, however (e.g., fear but not anger; Murphy et al., 2003); Harris and Fiske (2006) suggest that fear may also be generated in response to low-low outgroups, such as drug addicts.

between stereotypical beliefs and behaviour, suggesting that stereotypes can have profound consequences for the way certain groups are treated (see Section 1.1.3 below).

As with the previous models of stereotype representation, however, the SCM is not without its weaknesses. As mentioned above, the majority of studies to date have relied on correlational methods (e.g., Cuddy et al., 2009), with only three providing experimental manipulations of the hypotheses (Caprariello et al., 2009; Cuddy et al., 2007; Harris & Fiske, 2006). As outlined above, the vignette-based studies (Caprariello et al., 2009; Cuddy et al., 2007) have questionable ecological validity, and the brain imaging study (Harris & Fiske, 2006) has associated issues. Previous research within social cognition, for example, has indicated that the medial prefrontal cortex (mPFC) is heavily involved in processing social information (for a review, see Forbes & Grafman, 2010). When responding to photographs from the ‘pity’, ‘pride’, and ‘envy’ stereotype quadrants, participants in Harris and Fiske’s (2006) experiment displayed significant activation of these regions. In contrast, when responding to photographs from the ‘disgust’ quadrant, the mPFC was not significantly activated. This led Harris and Fiske (2006) to argue that individuals from the low-low quadrant were perceived as being less than human, as well as being perceived with disgust and fear.

However, caution should be employed when interpreting this finding. As emphasised by Forbes and Grafman (2010), situational shifts in ingroup classification (i.e., categorizing yourself as ‘English’ versus ‘British’ in different contexts) can result in different patterns of neural activation (Van Bavel, Packer, & Cunningham, 2008). Previous work has indicated, for example, that participants show heightened neural activation when viewing own-race faces, than when viewing faces from other racial groups (Golby, Gabrieli, Chiao, & Eberhardt, 2001). A recent study extended this finding, however, by assigning participants from different races into random ingroups and outgroups (Van Bavel et al., 2008).

When participants were asked to classify photographs according to these new, minimal groups, they displayed increased activation in a range of brain areas, including the fusiform gyri and dorsal striatum (Van Bavel et al., 2008). In contrast, when participants were asked to classify the photographs according to race, increased activation was obtained for racial ingroup members. Thus, the pattern of neural activation was dependent upon participants’ current ingroup categorizations. The lack of mPFC activation on Harris and

Fiske's (2006) study could therefore be a function of the specific comparison outgroups employed in this study, rather than a reflection of dehumanisation of the 'disgust' stereotypes. Increased activity of the amygdala also occurs when participants perceive outgroup faces, as opposed to ingroup faces (Hart et al., 2000). As participants in Harris and Fiske's (2006) study were looking at photographs from outgroup members, this is an alternative explanation for their findings, rather than the photographs evoking a fear response. Assuming that a lack of mPFC activation represents the dehumanisation of a particular group of people may therefore be premature, and replication is required before any firm conclusions are drawn.

Although the results from the empirical tests of the SCM do provide some interesting information, further empirical data would therefore strengthen the model, and should be addressed in future research. There is also the possibility that reducing representations of stereotypes to two dimensions may over-simplify the process, especially considering the complexity of beliefs that surround stereotypes (see Section 2.2). A full review of the debates and controversies surrounding stereotype representation is beyond the scope of the current chapter. Rather, we will progress to focus on an area of immediate relevance to the current thesis - what the *purpose* of stereotypes are, and the *consequences* of stereotypical thinking.

Section 1.1.3: The purposes and consequences of stereotypes

Over the past 90 years, many different explanations have been offered for the purpose of stereotypes (for reviews, see Hilton & von Hippel, 1996; Snyder & Miene, 1994). According to Snyder and Miene, the function of stereotypes fall into three main spheres: Cognitive economy in light of complex social information (e.g., Macrae, Stangor, & Milne, 1994); the reinforcement of one's identity as an in-group member through shared beliefs and/or expectations with the in-group (Haslam, Oakes, Reynolds, & Turner, 1999); and ego protection, in terms of promoting one's own self esteem via group membership (e.g., Bailey & Ricciardelli, 2010). Work within the social identity approach (e.g., Tajfel & Turner, 1986) has tended to combine the functions of social identity confirmation and ego protection in terms of a positive sense of ingroup identity (e.g., Reicher, Spears, & Haslam, 2010), so we will review these aspects of stereotype function concurrently. An additional function of stereotypes, first suggested by Allport (1954), is their use in justifying the negative treatment of out-groups (e.g., Rutland & Brown, 2001). We will review each of these proposed

functions (cognitive economy, positive in-group identity, and justification of out-group treatment), along with their consequences, in order to demonstrate the importance of stereotypes and stereotyping in everyday life.

According to the social cognitive tradition, the main function of stereotypes is the simplification of the complex social information which is involved in person perception (e.g., Allport, 1954; Bodenhausen & Lichtenstein, 1987; Freeman & Ambady, 2011). When we meet someone for the first time, gaining a full understanding of them – their characteristics, attitudes and expected behaviour – is an incredibly complicated process, and involves considerable cognitive effort (Fiske, 1989; Fiske & Neuberg, 1990). As we only have limited cognitive resources available to us at any one time (for a review, see Sanders, 1991), this can be particularly difficult when the cognitive demands of a task (known as cognitive load) are high. In contrast, relying on stereotypical beliefs can provide a useful cognitive shortcut or heuristic (Macrae et al., 1994), which facilitates our decisions about an individual (Bodenhausen & Wyer, 1985) and allows us to be economical with our cognitive resources.

To demonstrate this, Macrae and colleagues (1994) asked participants to form impressions of individuals, whose names were presented on the top half of a computer screen. A series of adjectives appeared on the bottom half of the screen (e.g., *aggressive*), and participants in the experimental condition were presented with a stereotype label (e.g., *skinhead*), whereas the control group simply received the individual's name. Half of the adjectives were consistent with the stereotype, whereas the remainder were neutral. Participants were simultaneously asked to process unrelated information about Indonesia via a tape-recording. At the end of the experimental session, participants were asked to recall the traits that had been associated with each individual, and to answer a 20-item, multiple-choice test on Indonesia. The authors argued that, if stereotypes function to simplify social information processing, then participants' memory for consistent trait information should be facilitated when the stereotype label was provided. Furthermore, if stereotypes are indeed cognitive shortcuts, allowing us to maintain our cognitive reserves, use of the stereotype labels should reduce the cognitive load of the impression task, allowing participants in the experimental condition to direct attention to the information about Indonesia.

In line with expectations, those in the experimental condition recalled over twice as many stereotype-consistent personality traits than those in the control condition, whereas no

significant differences emerged over the neutral terms, which were unrelated to the stereotype. Similarly, those exposed to the stereotype label also answered significantly more questions about Indonesia correctly than did the control group. A similar pattern of results was obtained in Study 2, when the stereotype labels were presented subliminally (i.e., too fast for conscious awareness), suggesting that stereotypes can operate automatically to enhance our cognitive capabilities (Macrae & Bodenhausen, 2000; Macrae et al., 1994; but see Bargh, 1989). These results have been replicated and extended across a number of domains, including facilitating performance when under time pressure (Dijker & Koomen, 1996), indicating that stereotypes can serve as cognitive shortcuts (e.g., Bodenhausen & Lichtenstein, 1987; R. S. Wyer, Bodenhausen, & Srull, 1984).

We will now turn to the second function of stereotyping as proposed by Snyder and Miene (1994), of promoting a sense of positive in-group identity. Two theories of particular relevance to this aspect of stereotyping are the social identity (Tajfel & Turner, 1986, Turner, 1982), and self-categorization theories (Turner et al., 1987; Turner, Oakes, Haslam, & McGarty, 1994). A brief review of these theories will therefore be outlined before we address the second function of stereotyping (cf. Snyder & Miene, 1994). The social identity approach (SIA; a combination of the two theories mentioned above) proposes that people can define themselves in terms of the groups to which they belong (Tajfel & Turner, 1986). Thus, 'groups' are primarily *psychological* entities: groups of individuals who identify with a shared social category (Turner, 1982). This means that individuals have multiple social identities (e.g., Andy Murray as a 'British' or 'Scottish' player), which can be activated or made salient at different times depending on the external context (for an excellent review, see Turner et al., 1994).

The SIA suggests that individuals are motivated to hold positive representations of the groups to which they belong (i.e., their ingroups; Tajfel & Turner, 1979, 1986). Furthermore, the theories suggest that group members are motivated to hold positively distinct representations of their ingroups (i.e., auto-stereotypes that differentiate ingroups from outgroups) on dimensions that are important to the individual's self-concept (for a review, see Reicher et al., 2010). If individuals belong to low-status groups within society (e.g., certain racial minorities; Mazzocco, Rucker, Galinsky, & Anderson, 2012), achievement of positive ingroup identities can be achieved through strategies relating to two main processes: *social mobility* strategies, which occur when the boundaries between groups are permeable so

participants are able to leave the derogated groups (e.g., choosing to support a different football team if your team is doing badly); and *social creativity* strategies when the boundaries between group memberships are fixed (e.g., gender or racial group memberships) so ingroup identities are difficult to change (for a review, see Reicher et al., 2010). As social creativity strategies are more relevant to the current thesis, this review shall focus on these processes⁴.

Essentially, engaging in social creativity strategies means reformulating what it means to be a member of a low status group (Becker, 2012). This can be achieved through a number of different methods, including choosing a new comparison dimension to promote ingroup positivity (e.g., ‘We may not be rich, but we’re kind’), or making social comparisons that favour the ingroup (e.g., a working woman comparing herself to non-working women, versus male colleagues; Blanton, George, & Crocker, 2001). A study by Shinnar (2008), for example, examined Mexican immigrants’ meta-stereotypes of their group, and reformulations of these perceptions. Although participants displayed awareness of negative mainstream stereotypes about their group (e.g., being perceived as ‘stupid’ or ‘lazy’ due to low-status jobs), participants in this study used social creativity strategies to reconceptualise the meaning behind these stereotypes (e.g., “Mexicans are willing to do jobs that others won’t, as they are hardworking and selfless”). Thus, one function of auto-stereotypes is the promotion of a positive sense of ingroup identity, which can protect the self from detrimental consequences of stigmatised identities (e.g., Ilic et al., 2012).

Of course, challenges to a positive ingroup identity may not always arise from outgroup members’ perceptions, but also from ingroup members’ actions that are perceived to violate group norms (e.g., engaging in discriminatory behaviours; Miron, Branscombe, & Schmitt, 2006). So how can individuals reconcile positive representations of their ingroups with concrete examples of unfair behaviour by ingroup members? A (partial) answer to this question relates to the fourth purpose of stereotypes: justification of the negative treatment of outgroups, or *group-justification* (for a review, see Jost & Banaji, 1994). One example of such negative outgroup treatment is discrimination based on category membership.

Discrimination is probably the most negative, and most widely known, consequence of

⁴ *Note.* An additional range of strategies relate to collective action, where group members work together to challenge their negative status. This tends to occur when group boundaries are perceived to be illegitimate (e.g., Haslam & Reicher, 2012). As collective action strategies are not relevant for the current theses, we will not discuss this issue (for reviews, see Becker, 2012; Reicher et al., 2010).

stereotypes (Dovidio, Brigham, Johnson, & Gaertner, 1996), although its occurrence has often been simplified within the literature (for a review, see Reicher, 2004).

Discrimination has been found to apply to a range of societal groups and situations, including individuals of different races (e.g., Gerrard et al., 2012), disabilities (e.g., Gouvier, Sytsma-Jordan, & Mayville, 2003), and ages (e.g., Abrams, Eilola, & Swift, 2009). The relationship between stereotypes and discrimination initially appears to be straightforward: if an in-group member holds a stereotype about a specific out-group (e.g., obese people are *lazy* and *unhealthy*), then certain behaviour towards them seem justified (e.g., *why would I want to employ him? She's lazy*). In a revealing study, for example, Agerstrom and Rooth (2011) assessed weight-based discrimination in a real job setting. Fictitious job applicants, who were matched in terms of their qualifications and experience applied for 985 advertised vacancies. Photographs of the job applicants were selected to depict either obese or normal-weight candidates, and were submitted alongside the applications.

Discriminatory behaviour was assessed along two variables. The first was the number of call-backs that the candidate from each weight bracket received. A total of 419 call-backs were received across applicants (248 were common to both), with the thinner individual receiving 67 (16%) more interview invites than the obese candidate. The second measure, however, was the major variable of interest. Several months after the applications had been submitted, the hiring manager from each advertisement was contacted, and asked to participate in a study investigating labour market outcomes. Those who agreed were asked to complete the implicit associations test (Greenwald et al., 2002): a subliminal measure, which assesses automatic associations between categories (e.g., *thin* versus *fat*) and attributes (e.g., *good* versus *bad*). Scores on the IAT significantly predicted interview call-backs, as those who held more negative stereotypes about obese people were less likely to invite the larger candidate to interview. Thus, the stereotypes that were held by these hiring managers had a direct relationship to work-based discrimination.

Although this function of stereotypes seems to be categorically negative, two caveats should be mentioned. First of all, a review of studies relating to racial stereotypes and discrimination (Dovidio et al., 1996) only obtained a modest (but significant) relationship between the two. Thus, the assumption that stereotyping underlies all discrimination is erroneous, as the relationships are complex (see Reicher, 2004). In Dovidio and colleagues'

(1996) review, for example, a range of other factors seemed to exert greater influence, such as participants' prejudice levels (as opposed to stereotypes), and the amount of time spent considering such views. Secondly, as previously indicated, stereotypes can help to bolster an individuals' sense of ingroup identity and well-being (e.g., Ilic et al., 2012; van Veelen, Otten, & Hansen, 2011), and previous research (Garstka et al., 2004) has indicated that positive ingroup identities can serve as protective factors against discrimination.

In this study (Garstka et al., 2004), the impact of perceived discrimination on psychological health of young and older adults was investigated. Although both groups experienced discrimination as a result of their age, young adults reported higher levels than their older counterparts. Despite this, young adults experienced no negative effects of discrimination on their well-being. The authors hypothesized that this could be due to young adults' perception that they would soon leave their low-status group, and enter the higher-status, middle-aged category. In contrast, a direct effect of discrimination on psychological health was experienced by the older adults, who were unable to leave their low-status age-group, but this effect was attenuated by positive in-group identification. Thus, although stereotypes may influence discrimination, they would also appear to provide a defence against such experiences.

The research outlined above indicates that stereotypes can serve multiple functions - both positive and negative, ranging from the simplification of complex social behaviour and the promotion of positive identity (Macrae et al., 1994), to the justification of negative treatment of out-groups, including discriminatory behaviours and attitudes (Tarrant et al., 2012). A review of the consequences of stereotypical thinking would not be complete without summarising the literature from the stereotype threat research, however, which can have powerful effects on individual group member's performance.

In a seminal paper, Steele and Aronson (1995) introduced the idea of stereotype threat: when members of a devalued group face judgement based on negative stereotypes of their group (e.g., women being worse at maths than men), the fear of confirming this stereotype may elicit detrimental effects on relevant performance (Spencer, Steele, & Quinn, 1999, p.5). In Steele and Aronson's second study (1995), for example, participants were told that their verbal problem-solving ability would be assessed, and that the test was difficult and would be challenging. Participants were split between two experimental conditions that

manipulated the salience of the stereotype through task instructions. In the diagnostic condition, participants were told the study was investigating “personal factors” which could influence verbal problem solving skills, and would test their verbal abilities. In contrast, the non-diagnostic instructions made no reference to verbal ability.

A significant interaction of race and instruction condition emerged for the number of correct responses (Steele & Aronson, 1995). Specifically, black participants in the diagnostic condition performed significantly worse than did participants in all the other conditions. Thus, salience of a negative ingroup stereotype (that was related to a specific performance domain) resulted in impaired performance on the relevant task. These results have been extended across a range of other participant groups and performance domains, including (but not limited to) overweight individuals and exercise (Seacat & Mickelson, 2009), white men and racist attitudes and/or behaviours (Goff, Steele, & Davies, 2008), race, self-esteem and maths (Blanton, Crocker, & Miller, 2000; Shih et al., 2002), and ageing and memory (Desrichard & Köpetz, 2005; Hess, Auman, Colcombe, & Rahhal, 2003). Just as with other stereotype domains, there is considerable debate over the processes relating to stereotype threat, particularly in relation to the mechanisms underlying these effects (e.g., Hess, Hinson, & Hodges, 2009; Steele & Aronson, 1995).

Steele and Aronson (1995) originally suggested a series of potential mechanisms underlying performance impairments, including anxiety about confirming the negative stereotype, self-consciousness, and withdrawal of effort. Schmader and colleague (2008), however, have argued that the mechanism underlying performance detriments actually consists of three integrated pathways: 1) a physiological stress response, resulting in impaired cognitive functioning; 2) a tendency to actively focus on performance, thereby increasing cognitive load; and 3) an attempt to suppress negative thoughts and feelings, also increasing cognitive load. It is also worth considering that different mechanisms may underlie stereotype threat effects in different situations (Steele & Aronson, 1995), rather than all three mechanisms occurring simultaneously. If an individual is invested in a particular performance domain (e.g., if good memory performance is an important part of an older adults’ self-concept; Hess, Auman, Colcombe, & Rahhal, 2003), for example, then any stereotype threat effects on performance would be unlikely to be caused by withdrawal of effort, but might be caused by a focus on performance or a physiological stress response. Thus, stereotype threat effects may not always be caused by the same mechanism, which may

help to explain some of the contradictory findings within this literature (for a review, see Schmader, Johns, & Forbes, 2008).

An interesting point to note in relation to the stereotype threat literature is that the emphasis has tended to be on *impairments* in performance. An alternative perspective may be to consider the potential for improvements that can be made, through very simple manipulations. For example, work by Desrichard and Kopetz (2005) investigated the impact of stereotype threat on older adults' memory performance. In standard tasks used to assess memory (i.e., free and cued recall measures), instructions either emphasised the memory component of the tasks, or presented them as assessing cognitive performance. Simply reframing the task instructions to minimise the memory aspect improved older adults' scores by almost 12%. Of more importance, however, is that this manipulation increased older adults' scores to the level of young adults within the study. Considering the fact that age-related memory decline is reported by many older adults as *the* most distressing aspect of the ageing process (Craik, 2006), the significance of this result cannot be understated. Thus, instead of conceptualising stereotype threat effects in terms of performance detriments, we should attempt to consider them in light of the benefits that can be enacted by a simple change.

To summarise, four possible functions of stereotypes have been reviewed in conjunction with a range of positive and negative consequences of such processes. Although a number of these effects are negative, such as the discrimination of out-groups and negative effects on performance, a number of beneficial effects have also been evident (e.g., facilitation of complex social information). It should be noted, however, that this review is not exhaustive; there are a range of additional functions and consequences that have not been addressed here, such as in- and out-group homogeneity (for a review, see Rubin & Badea, 2012) and effects on language (McCann & Giles, 2002). The literature outlined above illustrates the clear importance of stereotypes in everyday life, and the wide-ranging effects they can exert on the targets – and perpetrators – of stereotypical views (e.g., Agerström & Rooth, 2011; Macrae, Milne, & Bodenhausen, 1994).

Although it would seem that virtually every group within society can be either the perpetrators and/or victims of stereotyping, as reviewed in Section 1.1.1, there is one group in particular which warrants further attention: older adults (individuals aged 60 years and over).

As we have seen, stereotypes can exert a large effect on older people, at least in terms of age-related discrimination, and the direct effects of stereotype threat on memory (e.g., Garstka et al., 2004; Hess et al., 2003). The next section outlines some of the many reasons why older adults represent a fascinating group for study, including current demographic trends (Giannakouris, 2008), the significance which stereotypes may be able to play in improving the quality of life of our older population (Horton et al., 2008), and the inter-individual and societal costs of age discrimination (Abrams, Russell et al., 2011).

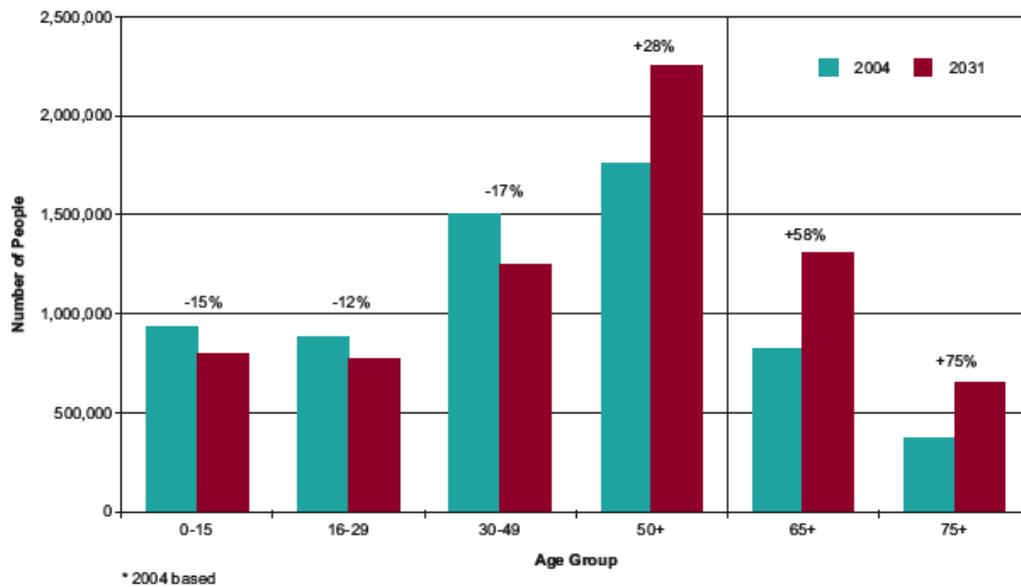
Section 1.1.4: Why study ageing and age-related stereotypes?

As outlined above, people are stereotyped for a variety of reasons (e.g., to simplify/facilitate social decisions, e.g., Macrae et al., 1994) and on a number of domains, (e.g., Kirsch et al., 2012). Certain stereotypes seem to be more accessible than others, however, and are activated when we first meet people (Fiske & Neuberg, 1990). Nelson (2005), for example, argues that we classify others by race, gender, and age within seconds of meeting them, possibly as these categories can be readily assessed through physical manifestations and visual cues (e.g., skin colour, wrinkles; Fiske & Neuberg, 1990; Zebrowitz, 1996). These variables have been described as the automatic (Brewer & Feinstein, 1999), or fundamental categories of person perception⁵, and are central to social categorisation processes.

So why should the current research focus on age-related stereotypes, if race, gender, and age have all been described as fundamental (Brewer & Feinstein, 1999; Nelson, 2005)? One reason is due to current demographic trends, as Britain is an ageing society (e.g., Dean, 2003; Giannakouris, 2008). For the first time in 2001 the national census data revealed that there were more older adults within the UK than young adults (Office for National Statistics, 2001). Furthermore, those aged 65 years or older (particularly those aged 75 years plus) are projected to be the fastest growing population within UK society, including Scotland (see Figure 1.2). As more people are living into later life than ever before, it is becoming increasingly important that we understand the factors that contribute towards successful ageing (S. Horton et al., 2008).

⁵ Fiske and Neuberg (1990) argue that class is the fourth automatic category of social perception, but this assertion has not been replicated elsewhere (e.g., Brewer & Feinstein, 1999; Nelson, 2005), so we decided not to include it here.

Figure 1.2: 2004-based population projections for Scotland



Note. Adapted from “Household Projections from Scotland, 2004-based” by the Government’s Actuary Department (2005). Retrieved from: <http://www.gro-scotland.gov.uk/statistics/theme/households/projections/archive/household-projections-for-scotland-2004-based/index.html>. Copyright 2008 by Crown Copyright

As reviewed in Section 1.1.2, traditional accounts of ageing have conceptualised physical and cognitive decline as an inherent part of growing older (Craik et al., 1992; Masoro, 2006), and have tended to focus on biological aspects of ageing (e.g., Jessberger & Gage, 2008). This has resulted in a tendency for social processes to be neglected within the literature (Dean, 2003). Recent accounts have emphasised the role (and importance) of psychosocial factors in promoting health and functional capacity in later life, however, including social support networks (Fratiglioni et al., 2004), personal motivations (Hess et al., 2003), and auto-stereotypes of ageing (Sean Horton, Baker, Pearce, & Deakin, 2010; Levy, 2003).

Indeed, Abrams and colleagues (2011) have recently argued that an understanding of age-related stereotypes and auto-stereotypes (i.e., stereotypes about one's ingroups; Triandis & Vassiliou, 1967) are central to an examination of successful ageing, as negative attitudes and discrimination towards older adults can have detrimental effects on both older individuals themselves, and society as a whole (Abrams, Russell, et al., 2011; Abrams, Vauclair, & Swift, 2011). As reviewed in Section 1.1.3, for example, salience of negative auto-stereotypes of later life resulted in impaired memory performance and self-efficacy ratings in older adults (Desrichard & Köpetz, 2005; Rahhal et al., 2001). The impact of

negative age-related stereotypes and auto-stereotypes on older adults is not limited to memory performance, however, but has been shown to have a detrimental effect on a range of variables, including cardiovascular reactivity (Levy, Hausdorff, Hencke, & Wei, 2000a), employment outcomes (Rabl, 2010), psychological well-being (Yuan, 2007), and ingroup identification (Weiss & Lang, 2012).

A number of studies have indicated that age-based discrimination within the workplace, for example, is often based on inaccurate (Ng & Feldman, 2008) and negative stereotypes of old age (e.g., Krings, Sczesny, & Kluge, 2011; for a review, see Ng & Feldman, 2012). In the study by Krings and colleagues (2011), for instance, participants were given job descriptions and resumes from two fictitious job candidates, aged 29 and 50 years. Participants of all ages (from 21-65 years) were almost three times less likely to select the older than the young candidate for an interview. This finding was partially mediated by participants' auto/stereotype endorsement of the older candidate (along warmth-competence dimensions, cf. Cuddy & Fiske, 2002), suggesting that age stereotypes underlie (some) discriminatory practices (for a review, see Ng & Feldman, 2012). As age discrimination has negative consequences for both older adults themselves (e.g., increased stress and reduced psychological well-being; Scott, Jackson, & Bergeman, 2011; Yuan, 2007) and employers (e.g., loss of experienced workers; Messe, 2012), this reinforces Abrams and colleagues' (2011) argument for the importance of studying age-related auto/stereotypes.

The study by Yuan (2007), for example, indicated that experiences of age-related discrimination (e.g., being treated without respect) increased older adults' psychological distress, whilst simultaneously reducing positive well-being. This study did not assess participants' ratings of ingroup identity, however, which has been shown to attenuate the negative effects of perceived discrimination on older adults' well-being (Garstka et al., 2004). A recent study by Weiss and Lang (2012) suggests that older adults' ingroup identification is also reduced by negative auto-stereotypes of ageing. Participants in this study (Weiss & Lang, 2012) were asked to complete an 'ageing quiz', which activated either positive, negative, or neutral auto-stereotype of ageing through a series of questions relating to gains and losses in later life (e.g., gains in wisdom versus health problems). Subjective age bias (SAB; the difference between chronological and subjective ages, where higher levels represent greater dissociation from participants' age-group, p. 153) and age-related identity were subsequently assessed.

In line with expectations, older participants in the negative stereotype condition reported lower levels of age-group identity and higher SAB than participants in the neutral or positive auto-stereotype conditions (Weiss & Lang, 2012, Study 2). Thus, the salience of negative auto-stereotypes of ageing had a detrimental impact on older adults' age-related ingroup identification. Considering the positive relationship between older adults' ingroup identity and well-being (Garstka et al., 2004), negative auto-stereotypes of later life may therefore leave older adults particularly vulnerable to the negative consequences of discrimination (e.g., Krings et al., 2011; Yuan, 2007). This represents one way in which an investigation of age-related auto/stereotypes is an important area for study, as interventions aimed at improving such representations could have significant benefits for older adults' quality of life (see Braithwaite, 2002).

The impact of negative age-related auto/stereotypes is not limited to older adults themselves, however, but can also have a detrimental effect on the wider society (Abrams, Vauclair, et al., 2011). In 2006, for example, the cost of lost productivity of older workers in the UK was estimated to be £16 billion per annum, excluding the costs of benefits and lost taxes (AGE, 2006). Similarly, negative effects of discrimination on older adults' physical and mental health (e.g., Scott, Jackson, & Bergeman, 2011) have resulted in significant health-care costs (The European Older People's Platform, 2007), and increased NHS waiting lists. Thus, negative consequences of age-related stereotypes apply to society as a whole, rather than being limited to detrimental impacts on older adults themselves. Interventions aimed at improving societal stereotypes of ageing could therefore have wide-ranging benefits (Abrams, Russell, et al., 2011; Braithwaite, 2002).

This is not to say that gender- and race-related stereotypes are not an important area for research. Indeed, the effects of age-related auto/stereotypes outlined above (e.g., reduction in ingroup identity; Weiss & Lang, 2012) have also been obtained in relation to negative auto-stereotypes of gender and race. Such effects include detrimental consequences of auto-stereotype activation on women's physical health (e.g., Osborne, 2007), and cognitive performance for members of racial minority groups (e.g., Scherbaum, Blanshety, Marshall-Wolp, McCue, & Strauss, 2011). The significance of these effects for the health and well-being of women and ethnic minorities should not be understated. Whereas a wealth of literature has investigated the antecedents and consequences of racism and sexism (e.g., Foyes, Shipherd, & Harrington, 2013; Giamo, Schmitt, & Outten, 2012), however, research

related to ageism (i.e., unfair treatment of others based on their age; Palmore 1999) has tended to be neglected within the literature (Nelson, 2005; North & Fiske, 2012).

A recent study (North & Fiske, 2012), for example, conducted a PsychINFO search of studies relating to discrimination, and identified; 8,491 studies relating to racism; 2,836 relating to sexism, yet only (comparatively speaking) 750 relating to ageism (p. 982). This is despite a growing body of evidence to suggest that age discrimination is a significant problem within society (Bowling, 2007; Butler, 2005), which can have a range of detrimental effects on older adults (e.g., Rabl, 2010; Scott et al., 2011). Although research investigating the content and consequences of race- and gender-related stereotypes are therefore important, an examination of these processes in relation to ageing has been neglected (Nelson, 2002, 2005; North & Fiske, 2012). Considering the number of older adults within British society (Giannakouris, 2008), a closer examination of these issues is therefore required.

A final reason for focussing on age-related processes relates to the unique consequences of negative stereotypes of ageing. Nelson (2002) argues that ageism is '*one of the most socially condoned, institutionalized forms of prejudice in the world*' (pp. ix); an argument which is echoed by other researchers, who assert that, in contrast to sexism and racism, social sanctions against the articulation of negative beliefs about the elderly are almost non-existent (Levy & Banaji, 2002; Palmore, 2004). The lack of such social sanctions can help to explain why negative stereotypes and auto-stereotypes towards ageing are so prevalent within Western societies (Kite, Stockdale, Whitley, & Johnson, 2005), and exert a powerful effect on older adults' performance and self-ratings (Meisner, 2012). This makes the design of interventions aimed at improving such stereotypes an important area for study (cf. Braithwaite, 2002).

Furthermore, as reviewed in Section 1.1.3, membership in certain stigmatised groups is involuntary due to impermeable group boundaries (see Reicher et al., 2010). Only in relatively rare circumstances, for example, will people be able to alter their gender or race (see Griffin, 1962; Reed, Rhodes, Schofield, & Wylie, 2009). Individuals therefore have little personal control over their membership in these groups, and tend to remain within one group for the duration of their lives. In contrast, if young adults live long enough, they will eventually become older adults, and will thus progress from an in-group to an out-group.

Thus, young adults demonstrate negative attitudes and prejudice towards a group to which they will eventually belong (Nelson, 2002).

In summary, this section has indicated that age forms a major basis of social categorisation (Kite et al., 1991), that more people than ever before are living into later life (Giannakouris, 2008), and that, due to unique aspects of age-group membership (e.g., Nelson, 2005), older adults may be particularly vulnerable to the negative effects of age-based discrimination (e.g., Harries, Forrest, Harvey, McClelland, & Bowling, 2007) and stereotypes (Levy, 2009). Furthermore, previous research indicates that stereotypes can exert a powerful effect on older adults' memory performance (Desrichard & Kopetz, 2005; Hess et al., 2003), physical and psychological health (Levy, Hausdorff, Hencke, & Wei, 2000b; Scott et al., 2011), and ingroup identity (Weiss & Lang, 2012). Investigating the content of age-related stereotypes and auto-stereotypes may therefore be the first step in improving functional capacity, and reducing psychological distress, for our ageing population (Abrams, Russell, et al., 2011; S. Horton et al., 2008)

Section 1.1.5: Content of age-related stereotypes and auto-stereotypes

As we saw earlier (Section 1.1.3), the activation of stereotypes and auto-stereotypes can have a range of effects on individuals, including facilitating memory performance (Macrae et al., 1994), and promoting positive ingroup identification (Shinnar, 2008). With respect to ageing, auto/stereotypes have been demonstrated to have beneficial or detrimental effects across numerous performance domains (e.g., memory performance and walking speed; for a review, see Horton et al., 2008), depending on the valence of the activated auto-stereotypes (i.e., positive or negative).

In Section 1.1.4, for example, we saw that activation of a negative auto-stereotype reduced older participants' age-related ingroup identity in comparison to those exposed to a positive auto-stereotype (Weiss & Lang, 2012). Similar patterns have been obtained in relation to cardiovascular stress (Levy, Hausdorff, Hencke, & Wei, 2000) and memory performance (Levy, 1996; see Chapter 5 for a detailed discussion of the consequences of auto-stereotype activation). Considering the beneficial and detrimental effects of auto-stereotype activation on older adults' functional capacity (for a review, see Meisner, 2012), a comprehensive understanding of the content of these stereotypes is a necessary step in the design of interventions to address/counter these negative representations of later life (cf.

Braithwaite, 2002), and is an area of research that warrants further attention (Kite et al., 2005; North & Fiske, 2012).

Early research into the content of auto/stereotypes of old age, utilising young and older participants, suggested that such perceptions were primarily negative (Arnhoff, Leon, & Lorge, 1964; Tuckman & Lorge, 1952, 1954)⁶. A growing body of evidence has revealed that these auto/stereotypes are actually complex, being both multi-valenced and multi-dimensional (Hummert, Garstka, & Shaner, 1997; Kite et al., 2005; Kite & Wagner, 2002). The first study to examine the structure of ageing stereotypes, as opposed to “merely” the content of such perceptions, was conducted by Brewer, Dull, and Lui (1981). Work by Rosch and colleagues (e.g., Rosch, 1978; Rosch & Mervis, 1975) had indicated that categories in the natural world were hierarchically organised, in pyramid structures. These consisted of a general, or superordinate, category at the top (e.g., *vehicles*), followed by different subtypes (e.g., *cars*; *lorries*), and individual examples of these subtypes (e.g., *Ford*; *Nissan*). Further work had indicated that a similar structure could also underlie social perception (see Section 1.1.2).

Based on a review of the previous literature, which identified that previous descriptions of older adults had often contained inconsistent terms (e.g., ‘irritable’ versus ‘serene’; Green, 1981), Brewer, Dull, and Lui (1981) proposed that three distinct subtypes of the superordinate elderly stereotype existed. These consisted of the *grandmother* type; a family-orientated older woman; the *elder statesman* who is distinguished and conservative; and the *senior citizen*, who is isolated and inactive. The authors selected ten photographs corresponding to each of these subtypes, plus an additional 10 control photos of either generic older or young adults⁷. Young adults were subsequently asked to sort the pictures into groups. Cluster analysis was conducted on the results, which, in line with expectations, indicated that the photos were sorted into the three distinct groupings. This suggested that the superordinate stereotype of an “older adult” actually consisted of a number of subtypes (but see below for criticisms of this methodology).

⁶ The study by Tuckman and Lorge (1952) indicated that contextual factors also influenced these perceptions. Older participants in residential homes demonstrated more negative auto-stereotypes of ageing than older adults who were living independently.

⁷ No information is provided for how these control photos were selected (Brewer et al., 1981, p. 658).

After identification of the three subtypes, a second study indicated that young participants associated distinct sets of personality traits (e.g., *calm*) and behaviours (e.g., *likes to knit*) with the individual subtypes: The senior citizen was associated with primarily negative traits and behaviours (e.g., *weak, walks with a cane*), for example, whereas the grandmother type was perceived to be predominantly positive (e.g., *optimistic, is a good cook*). Twenty-five traits (from a checklist of 44) were selected as being associated with older adults by over half of the student sample. Of these, only four were associated with more than one subtype. This suggested that, although the superordinate category of “older adults” included all of the above terms, significant differentiation occurred between the three subtypes.

In combination, the results from the two studies by Brewer and colleagues (1981) indicated that perceptions of the elderly could be divided into different subtypes, which were associated with distinct sets of characteristics and behaviours. Furthermore, the results suggested that, rather than being primarily negative as previous work had suggested (e.g., Arnhoff et al., 1964), perceptions of older adults were multi-valenced, consisting of both positive and negative elements. A major limitation of these studies (Brewer et al., 1981), however, was that the photographs were originally selected on their hypothesised correspondence to the three subtypes, which were identified before the study was conducted. It is therefore unsurprising that the cluster analysis identified a three-subtype structure. Although 10 control photos were also included in the photograph set, a more ecologically valid method of exploring stereotype structure would have been the selection of a random set of photos, and assessing whether distinct subtypes emerged from the data. Furthermore, Brewer and colleagues (1981) do not provide an explanation of how the three-subtype structure was initially identified, which makes it difficult to assess its validity. Similarly, only minimal information was provided on how the photographs were selected for inclusion in the study (see p. 658), which makes replication problematic. Although these studies did provide some preliminary evidence for a hierarchical structure of age-related stereotypes, additional studies were therefore required to confirm and extend these findings.

One such study was conducted by Brewer and Lui (1984), who asked elderly participants to repeat the photo-sorting and behavioural statement tasks from the previous study (Brewer et al., 1981). This added to the theoretical understanding of the structure of age-related stereotypes, as the older participants sorted the photographs into more

subcategories, and showed more complex categorisations of the behavioural statements than young adults from the previous study (Brewer et al., 1981). Thus, older adults' auto-stereotypes were more complex than the stereotypes of old age held by young adults. These findings are in line with Linville's (1982) in-group complexity bias, which proposes that in-group members hold more complex representations of their own groups than of out-groups.

Interestingly, however, this differentiation was limited to the specific subgroup to which the older participants identified. At the end of the photograph-sorting task, for example, Brewer and Lui (1984) asked their older female participants to select the photograph that was 'most like' themselves (p. 590). Out of the 34 women who participated, 32 (94.1%) selected a photograph from the grandmother category. When ascribing behavioural statements to the grandmother photographs, older participants demonstrated a higher complexity of assignment (i.e., created more clusters of behaviours) than did the young adults. When assigning statements to the senior citizen photographs, in contrast, no such difference occurred.

The finding that more complex auto-stereotypes of ageing only applied to the specific subtype with which older adults identified highlights the importance of examining the content *and* structure of ageing auto-stereotypes: Older adults in this study did not seem to identify with the generic elderly category. Rather, older women in the sample identified strongly with a specific subtype, and (in line with ICB) showed more complex representation of this ingroup than the wider superordinate category (Brewer & Lui, 1984). This finding shows that auto-stereotypes of older adults are influenced by individuals' own self-concepts, and indicates that inter-individual variability may occur over the content of people's stereotypes.

As both of the studies by Brewer and colleagues (1981, 1984) employed similar materials and procedures, however, the same limitations can be applied to both (e.g., lack of selection criteria for the photographs). An additional criticism was that, as the original photograph sets were selected by the authors (rather than participants), the three subtypes identified in the previous studies (Brewer et al., 1981; Brewer & Lui, 1984) might not be an accurate representation of the stereotypes that participants held (Schmidt & Boland, 1986). In order to address this issue, Schmidt and Boland (1986) asked undergraduate students to generate all of the traits that they associated with older adults. Once semantically similar

items had been removed, this produced a list of 99 terms, consisting of 32 positive (e.g., *capable*), and 59 negative traits (e.g., *annoying*; see Appendix I).

Asking participants themselves to generate stereotypical terms (Schmidt & Boland, 1986) allowed a more detailed and direct assessment of stereotype content than had previously been possible. An independent sample of participants subsequently sorted these traits into groups, representing all of the characteristics they believed could be found in one older adult. These results were then subjected to hierarchical cluster analysis, producing four positive (e.g., *perfect grandparent*; *wise*), and eight negative subcategories (e.g., *nosy neighbour*; *busy-body*). This extended the results from Brewer and colleagues' work (Brewer et al., 1981; Brewer & Lui, 1984), and confirmed that the superordinate elderly stereotype could be divided into different subtypes.

A replication of this experiment was conducted by Hummert (1990), also using undergraduate students at an American university⁸. A free-sorting procedure was again employed, using the traits generated by Schmidt and Boland's (1986) participants. This study (Hummert, 1990) replicated 5 of the 12 subtypes created in the earlier work (Schmidt & Boland, 1986; e.g., *Perfect Grandparent*; see Table 1.2), with three additional conceptual replications (e.g., *Recluse*), bringing the total to eight replicated subtypes (66.7%). By 'conceptual replication' we refer to subtypes which contained few of the traits ascribed to the original cluster (e.g., the *Liberal Matriarch/Patriarch* subtype only contained one of the original three traits, 'Democrat'), but whose trait groupings could have been used to describe the same individual. Hummert's (1990) informants also created two additional stereotypes (the *Inflexible Senior Citizen* and *Self-Centred Elderly*), despite using the same set of characteristics. This does suggest that, broadly speaking, similar stereotypes of the elderly were held across the two samples, although some differences also emerged (see Table 1.2).

These findings were extended in a subsequent study (Hummert, Garstka, Shaner, & Strahm, 1994), which included middle-aged and older adults in the trait-generation and sorting samples. Seventy-seven of Schmidt and Boland's 99 traits (1986; e.g., 'lonely'

⁸ No gender or race ratios were provided in either study (Hummert, 1990; Schmidt & Boland, 1986), so a demographic comparison is not possible.

Table 1.2: Comparison of subtypes of the elderly auto/stereotype that emerged across samples and age-groups

Stereotype subtypes	Schmidt & Boland, 1986	Hummert, 1990	Hummert et al., 1994		
			Age-group		
			Young	Middle- aged	Elderly
Seven core subtypes					
Despondent	✓	✓	✓	✓	✓
Golden Ager	-	-	✓	✓	✓
John Wayne Conservative	✓	✓	+	✓	✓
Perfect Grandparent	✓	✓	✓	✓	✓
Recluse	+	+	+	+	+
Severely impaired	✓	✓	✓	✓	✓
Shrew/curmudgeon	✓	✓	✓	✓	✓
Remaining subtypes					
Activist	-	-	-	-	X
Bag lady/Vagrant	X	-	-	-	-
Elitist	-	-	-	-	X
Inflexible senior citizen	-	-	-	-	-
Liberal matriarch/patriarch	+	+	-	+	-
Mildly impaired	✓	-	-	✓	+
Nosey neighbour	X	-	-	-	-
Sage	X	-	-	-	-
Self-centred	-	+	-	+	+
Small town neighbour	-	-	-	-	X
Vulnerable	+	+	+	-	-

Note. ✓: replication of the subtype. +: conceptual replication. x: generated in one study.

‘intelligent’) were replicated⁹, with an additional 20 terms generated in the later study (see Table 1.3; Hummert et al., 1994). These findings suggest that stereotypes and auto-stereotypes of older adults are relatively consistent across samples. These traits generated across both studies (Hummert et al., 1994; Schmidt & Boland, 1986) covered a range of different content domains, including physical characteristics (e.g., ‘shaky hands’), and emotions (e.g., ‘happy’; see Appendix I). This suggests that people’s auto/stereotypes of older adults are complicated, containing both positive and negative elements, rather than being predominantly negative.

Table 1.3: *Auto/stereotype terms generated by young, middle-aged and older adults*

Positive terms	Negative terms
Conservative	Depressed
Determined	Scared of becoming sick and incompetent
Eager to learn and experience	Timid
Has sense of humour	Tired
Health-conscious	Worried about finances
Independent	
Likes social activities	
Move after retirement	
Politically aware and active	
Pursues a hobby	
Religious	
Successful	
Travels often	
Trustworthy	
Well-groomed	

Note. Adapted from “Stereotypes of the Elderly Held by Young, Middle-Aged, and Elderly Adults” by M. L. Hummert, T. A. Garstka, J. L. Shaner, and S. Strahm, 1994, *Journals of Gerontology: Psychological Science*, 49, p. 243. Copyright 1994 by the Gerontological Society of America.

It is worth noting that 15 of the 20 additional traits generated by Hummert and colleagues’ (1994) participants were positive terms, showing a more positive valence than the

⁹ Any items that were synonyms were removed (e.g., *set in ways* replaced with *stubborn*), and phrases were shortened to one or two words (e.g., *find difficult to change* became *inflexible*; Hummert et al., 1994).

99 which were obtained in Schmidt and Boland's study (1986). The finding that older adults generated the 20 positive traits more frequently than young adults suggests that older adults held a more complex representation of the positive aspects of aging than their younger counterparts¹⁰, possibly reflecting their own experiences with the aging process. This finding is in line with SIA's ingroup positivity bias (e.g., Tajfel & Turner, 1986), which suggests that we hold more positive representations of our ingroups than of groups to which we do not belong (e.g., Ruback, Kohli, & Pandey, 2009). In contrast, the finding that middle-aged adults also showed more positive representations of later life supports the developmental theory (Heckhausen, Dixon, & Baltes, 1989), which argues that older individuals show more complex representations of ageing than young adults due their personal experience with ageing process, and the integration of their life experiences into their representations of ageing.

Further support for the hypothesis that older adults would show more complex representations of ageing than younger age-groups was obtained in the sorting phase of Hummert and colleagues' (1994) study, as elderly adults created more subtypes ($M = 8.28$) than middle-aged ($M = 6.28$), or young adults ($M = 6.98$). Only the difference between the elderly and middle-aged adults was significant, although the comparison with the young adults was in the expected direction. Thus, the results from Hummert and colleagues' study are also consistent with Linville's (1982) in-group complexity bias, as older participants displayed more elaborate perceptions of their own age-group than did younger participants¹¹.

When a direct comparison is drawn between the subtype sets created in the two studies (Hummert et al., 1994; Schmidt & Boland, 1986), a number of similarities emerge. Of Schmidt and Boland's 12 original subtypes, seven were replicated in the later paper, with an additional four conceptual replications (see Table 1.2). It should be noted, however, that the number of traits ascribed to the same cluster between studies varied. For example, young participants in Hummert and colleagues' (1994) study used 2 of the 7 original traits (28.6%)

¹⁰ An alternative explanation for the increased positivity of views in Hummert and colleagues' study (1994) could be that a positive attitudinal shift towards older adults had occurred in the 8 years between studies. Considering the short timeframe between studies, however, the inclusion of older participants in the later study seems to be a more feasible explanation for the findings. Attitudinal shifts over time are discussed in more detail below.

¹¹ The lack of a significant difference between young and older adults is surprising, with no explanation offered by Hummert and colleagues (1994). One possibility concerns the relatively low power of the study (level of .55, calculated using G*power 3; Faul, Erdfelder, Lang, & Buchner, 2007). See Chapter 4 for a more detailed discussion of this issue.

from Schmidt and Boland's (1986) study to describe a *John Wayne Conservative*, yet used 6 of the original 9 traits (66.7%) to describe the *Severely Impaired* subtype. Interestingly, from Hummert's (1990) study, the subtype that showed the greatest consistency with Schmidt and Boland's original classification was a positive subtype, the *Perfect Grandparent*, with 15 of the original 19 traits (78.9%) appearing. This suggests that some stereotype subtypes may be more robust than others. Only two of the stereotypes generated in Hummert and colleague's (1994) study had not been created in previous work (Hummert, 1990; Schmidt & Boland, 1986): The *Elitist* subtype, which was created by the middle-aged and elderly participants (and so it is unsurprising that they did not emerge in the earlier study), and the *Golden Ager* subtype, whose traits mainly consisted of the 20 new traits which were generated in this study.

Hummert and colleagues (1994) therefore argued that seven auto/stereotypes of old age are common to adults of all ages (*the Golden Ager, John Wayne Conservative, Perfect Grandparent, Shrew/Curmudgeon, Recluse, Despondent* and *Severely Impaired*), and emphasised that almost half of these stereotypes (42.9%) were positive: a far cry from the primarily negative perceptions of ageing as proposed by the early literature (e.g., Tuckman & Lorge, 1952). The authors also argue that their results indicate that perceptions of older adults showed consistency across the three samples studied. It should be noted, however, that a considerable degree of inconsistency also emerged. For example, a quarter (3) of Schmidt and Boland's (1986) original subtypes were not generated in either of the later studies (Hummert, 1990; Hummert et al., 1994). This was despite the same characteristics being used across the two North American samples (Hummert, 1990; Schmidt & Boland, 1986), which both consisted of young adult students.

Considering the variability which was evident over the consensus of trait terms associated with conceptually similar clusters across the studies (e.g., the *John Wayne Conservative*), this indicates that certain elderly stereotype subtypes may be more robust, or consistent across groups, than others. This is in line with the socio-cultural perspective on stereotyping which was reviewed in Section 1.1.2 (see Fiske, 2000). This perspective suggests that stereotype content often consists of a core set of beliefs, common to people within or even countries and cultures (Cuddy et al., 2009), with more peripheral concepts being idiosyncratic. Consistency of subtypes notwithstanding, these results do clearly indicate that stereotypes of older adults are multi-valenced and multi-dimensional.

The multi-valenced nature of these auto/stereotypes has profound implications for older adults' functional capacity. As reviewed in Section 1.1.4, for example, a number of studies have demonstrated that auto-stereotypes activation can have a detrimental or beneficial effect on older adults' well-being and performance (see Section 5.2.1 for a full discussion of this issue), depending on the valence of the specific auto-stereotype (for a review, see S. Horton et al., 2008). As previous research has demonstrated that differences in content and valence emerge within participants' subtypes of age-related auto/stereotypes (e.g., Brewer & Lui, 1984; Hummert et al., 1994), a detailed understanding of the content and structure of these elderly subtypes, rather than merely an overview of the superordinate elderly category, is therefore required. This may help us to understand the effects which specific stereotypes exert upon older adults themselves, and to design interventions aimed at countering specific, negative auto-stereotypes, that can exert a negative effect on older adults' functional capacity (see Chapter 5 for a discussion of this issue).

A more comprehensive view of the content of old age stereotypes was provided by a meta-analysis by Kite and Johnson (1988). This review primarily attempted to determine whether attitudes towards older adults were more negative than attitudes towards young people. Out of 43 independent effect sizes, some of which were retrieved from different studies within the same paper, 30 (69.8%) revealed more negative perceptions of older adults, whereas 11 (25.6%) revealed more negative attitudes towards young adults. The remaining studies showed no differences¹². The overall effect size ($d = 0.39$) indicated that attitudes towards older adults were more negative than towards young adults by over a third of a standard deviation, but the effect sizes were not homogenous, suggesting that moderating variables were also exerting an effect.

When individuating information about a specific older adult target was provided (e.g., *she likes to cook*), for example, rather than asking participants to assess generic older adults, the difference in ratings between old and young targets was smaller (i.e., older adults were perceived more positively). This may have been due to personalised information about an older target allowing specific stereotype subtypes to be called to mind, rather than accessing the superordinate elderly category, or facilitating the activation of specific prototypes or

¹² *Note.* Participant age was not included as a variable in this meta-analysis, as too few studies varied both target and participant age (Kite & Johnson, 1988, p. 234).

exemplars of older adults (cf., Cantor & Mischel, 1979; Walker, 1975). In each case, the valence of the personal information would obviously influence which subtype, prototype, or exemplar was made salient. Similarly, negative ratings were attenuated in studies utilising between-subjects, instead of within-subjects designs, suggesting that the comparison out-group (i.e., young adults) was influencing attitudes towards older adults. This finding is in line with social categorisation hypotheses (Turner et al., 1987).

An interesting finding from the meta-analysis concerned publication dates of the studies (Kite & Johnson, 1988): the more recent a study, the more positive were the attitudes towards older adults. The authors suggest that this finding may relate to an increase in the number of older adults in society over their time-frame (from 1963-1985), resulting in participants having more information relating to the ageing process (and to older adults themselves, e.g., through increased social contact), and consequently holding more positive attitudes¹³. A more recent meta-analysis on attitudes towards ageing (Kite et al., 2005) certainly indicates that more research has been conducted investigating age-related processes: in contrast to the 43 effect sizes in the earlier study (Kite & Johnson, 1988), the later meta-analysis (Kite et al., 2005) was conducted on 232 effects.

Once again, the meta-analysis revealed that attitudes towards older adults were more negative than towards young adults (Kite et al., 2005). Attitudinal beliefs were assessed across five categories in this study (e.g., competence), and attitudes towards older adults were significantly more negative than towards young adults on each category. The largest effect size was obtained when attractiveness ratings were assessed, followed by ratings of stereotypical beliefs. In the earlier study (Kite & Johnson, 1988) competence ratings had emerged as eliciting the second largest effect on ratings (with use of a within-subjects design eliciting the largest effect on ratings of older adults). Replicating the finding from the earlier review (Kite & Johnson, 1988), the effect sizes across studies in the later meta-analysis (Kite et al., 2005) were not homogenous, indicating that context again exerted an effect on participants' evaluations of older adults. These moderating factors included more positive views being associated with between-subjects study designs (rather than within-subjects), and more recent studies reporting more positive ratings of older adults' competence. It is worth

¹³ This argument is of particular relevance to the current thesis, as a similar demographic shift has occurred in recent years within the UK (i.e., more older adults within British society; Government's Actuary Department, 2005), which could result in a similar pattern of findings (i.e., a positive attitudinal shift).

noting, however, that date of publication did not influence assessments of evaluations, or behaviour/behavioural assessments.

One factor which was also examined in the present study (Kite et al., 2005) was the age of the raters in each study included in the meta-analysis, and whether this influenced attitudes towards ageing. In line with positive distinctiveness predictions (Turner et al., 1987), young participants reported greater differences in their ratings of young and older adults (i.e., older adults were rated more negatively). As was outlined in the studies reported in Section 1.1.4, however, older adults again did *not* show in-group favouritism. Specifically, they also rated older adults more negatively than young adults. This finding reinforces an unusual aspect of age-group membership, as other stigmatised groups tend to rate their in-groups more favourably than their respective out-groups. In a meta-analysis relating to attitudes towards gender (Twenge, 1997), for example, women reported more favourable attitudes about other women than did their male counterparts. This finding supports the argument that the same processes that apply to other stigmatised groups may not apply to older adults, emphasising the need for research with this specific population.

In this section, we have seen how our understanding of stereotypes of old-age has progressed over the last 60 years. Our conceptions of ageing stereotypes have developed from the primarily negative representations (e.g., *irritable*, *suspicious*) of the early work (Arnhoff et al., 1964), to multi-valenced and multi-dimensional, complex perceptions, consisting of multiple subtypes. The two meta-analyses conducted by Kite and colleagues (Kite et al., 2005; Kite & Johnson, 1988) have indicated that ageing stereotypes can be influenced by a range of background factors, and that perceptions of ageing have become more positive over time. The next section highlights two important issues with the previous work in this area of research, and how the current thesis proposes to address these issues.

Section 1.1.6: The current research

Current estimates suggest that by 2020, as many as one third of the population will be aged over 50 years (Dean, 2003). In the earlier sections we noted that age constitutes a fundamental category of social perception (Brewer & Feinstein, 1999), and that there has been an awareness in the recent literature that psychosocial aspects of ageing have an important role to play in the promotion of older adults' quality of life (Bowling et al., 2005; Dean, 2003). As we have seen, older adults' own auto-stereotypes can exert a powerful

effect on their memory performance (Hess et al., 2004), physical health (Levy et al., 2000), and psychological well-being (Garstka et al., 2004), and young adults' stereotypes of older adults influence how younger people interact and treat them (McCann & Giles, 2002). A detailed understanding of the content and structure of age-related stereotypes could therefore be the first step in promoting older adults' functional capacity in later life (Horton et al., 2008). Considering the increased number of older adults within British – and Scottish (Government's Actuary Department, 2005) – society, this aim should be treated with utmost importance (Abrams, Russell, et al., 2011).

The relevant studies reviewed in Section 1.1.5 have undoubtedly enhanced our understanding of age-related stereotypes in a myriad of ways (e.g., Kite et al., 2005; Schmidt & Boland, 1986), from the original perspective of perceptions being a unitary and negative construct, to the multi-dimensional, multi-valenced, and hierarchical structure we perceive today. There are two major gaps in our current knowledge, however, which need to be addressed in future research. The first is that the majority of studies investigating the content of age-related stereotypes have been restricted to North American samples, with few studies exploring cross-cultural differences in the perceptions of ageing (Löckenhoff et al., 2009). Indeed, in their meta-analysis reviewed above, Kite and colleagues (2005) had hoped to examine differences in perceptions of ageing across countries, but too few studies had examined cross-cultural differences in perspectives about older people for the analysis to be conducted.

Secondly, previous research examining older adults' auto-stereotype content has tended to classify everyone aged 60 years and over into a single cohort (e.g., Hummert et al., 1994), despite a potential 40 year age difference within this age-group. This means that we have little understanding of whether any differences emerge between older (aged 60-74 years) and old-old adults' (aged 75-90 years) auto-stereotypes of the ageing process. This is despite evidence to suggest that young adults' stereotypes of later life vary, depending on the target age-group (i.e., older or old-old adults; Hawkins, 1996; Hummert, Mazloff, & Henry, 1999), and that older individuals' experiences of the ageing process (e.g., health and well-being) vary as a function of participant age (e.g., Freedman & Martin, 1998; Moe & Hagen, 2011).

Considering these limitations of previous research (see Section 2.2.1 for a full

discussion of these issues), and the importance of auto-stereotypes of ageing on older adults' health and well-being (e.g., Levy et al., 2000a; Weiss & Lang, 2012) a series of three studies were designed to assess the content and structure of age-related stereotypes and auto-stereotypes within the UK. The studies aimed to develop our theoretical understanding of age-related auto/stereotypes, through examining whether older and old-old adults' representations of later life display the ingroup positivity bias proposed by SIA (e.g., Tajfel & Turner, 1979), and Linville's ingroup complexity bias (1982). Chapter Two will review the limitations of the previous research with American samples, before progressing to describe our first, questionnaire-based study, to assess the content of age-related stereotypes and auto-stereotypes with a British sample.

Chapter Two:

Study 1

2.1: Overview

Considering the range of consequences of auto-stereotype activation on older adults' functional capacity and health (see Sections 1.1.4 and 1.1.5), the main aim of Study 1 was an examination of young and older adults' perceptions and experiences of the ageing process, with a focus on stereotypes and auto-stereotypes of later life. We aimed to explore any differences between perceptions of ageing between these cohorts, with particular reference to positivity and complexity of auto/stereotype content. A further aim was to compare stereotypes and auto-stereotypes of old age from a British sample to findings from previous studies using American participants (Schmidt & Boland, 1986; Hummert et al., 1994). Finally, we aimed to examine age-related identity and experiences of discrimination in the two cohorts, in an attempt to resolve inconsistent findings from previous research (e.g., Abrams, Russell et al., 2011; Garstka et al., 2004).

2.2: Introduction

Section 2.2.1: Do older adults hold more complex and positive auto-stereotypes of old age than young adults?

As reviewed in Section 1.1.6, previous findings indicate that stereotypes and auto-stereotypes of old age are complex, spanning multiple domains (e.g., physical health, emotions), and consisting of both positive and negative elements (Hummert et al., 1994; Schmidt & Boland, 1986). Two theories predict that older adults should show more complex auto-stereotypes than the representations held by young adults: Heckhausen and colleagues' developmental theory (Heckhausen, Dixon, & Baltes, 1989; Heckhausen & Krueger, 1993), and Linville's ingroup complexity bias (ICB; 1982; see Section 1.1.4). The developmental theory suggests that, as people age, their schemas (i.e., cognitive representations) of ageing expand, to incorporate their own experiences into these representations. Early work into auto-stereotypes of ageing supported this hypothesis, as older participants' responses to questionnaire items were heavily influenced by their own experiences with ageing (e.g., Tuckman & Lorge, 1952). This theory suggests that the complexity of age-related stereotypes should be positively correlated with participant age: older adults should show

more complex auto-stereotypes of ageing than middle-aged adults, and middle-aged adults should hold more complex perceptions than young adults.

In contrast, Linville's (1982) ingroup complexity bias (ICB) suggests that we hold more elaborate conceptions of our ingroups than of outgroups, as membership in a specific group results in a better understanding of what it means to be an ingroup member. Thus, older adults should hold more complex representations of ageing than both younger and middle-aged adults. As we saw in Section 1.1.5, work by Brewer and Lui (1984) supported both theories, as older adults were shown to hold more complex representations of their own group than the views expressed by young adults.

In contrast, work by Hummert and colleagues (1994) obtained partial support for the ICB, but not for the developmental approach (Heckhausen et al., 1989, 1993). During the sorting phase of Hummert and colleagues' study, participants sorted 97 traits associated with older adults into groups representing subtypes of the elderly stereotype. Elderly adults (aged 62-84 years) created more groups ($M = 8.28$) than middle-aged ($M = 6.28$) and young adults ($M = 6.98$), although only the difference between middle-aged and older adults was significant. No significant difference emerged between the number of groups generated by young and middle-aged adults.

The increased number of groups generated by elderly adults also demonstrated more complex representations of the stereotype subtypes than those displayed by the younger age-groups. Young participants' *Severely Impaired* subtype, for example, was further differentiated into *Mildly* and *Severely Impaired* by elderly adults, whereas middle-aged adults' *Golden Ager* subtype was differentiated into the *Activist* and *Golden Ager* subtypes by elderly adults. These findings support Linville's ICB (1982), as the greater differentiation between subtype categories by elderly adults reveals a more complex representation of their own age-group than the perceptions held by both of the younger groups. In contrast, the developmental approach (Heckhausen et al., 1989, 1993) was not supported, as significant differences did not emerge between young and middle-aged adults.

Hummert and colleagues' (1994) study only provides partial support for the complexity bias (Linville, 1982), however, as older adults did not generate significantly more groups than their younger counterparts, although the trend was in the expected direction. No

explanation was offered for why young and older adults' responses did not significantly differ. One possible explanation could be that the study lacked sufficient statistical power (ability of a test to correctly reject the null hypothesis; Field, 2005) to detect the difference. This suggestion seems unlikely, however, as Hummert and colleagues (1994) used sample sizes of 40, which result in acceptable levels of power (i.e., $>.80$; Cohen, 1988).

Furthermore, as reviewed in Section 1.1.4, the study by Kite and colleagues (1991) asked older adults to generate traits relating to young and older targets. In contrast to ICB, interactions between age and target were not obtained: old participants did not generate more items relating to their own age-group than to the outgroup. In summary, previous research investigating ICB in relation to old age has produced contrasting results. Although some studies have demonstrated that older adults hold more complex auto-stereotypes of their own age-group than young adults' stereotypes of later life (e.g., Abrams, Russell et al., 2011; Brewer & Lui, 1984; Hummert et al., 1994, Study 1), other research has failed to obtain a difference (Hummert et al., 1994, Study 2; Kite et al., 1991). Further research is therefore required to address these contrasting findings.

One aspect of these findings that may help to explain the divergent pattern of results concerns the positivity of auto/stereotypes of ageing. According to the sociocultural model of stereotype representation (see Sections 1.1.2 and 1.1.3), stereotypes are formed through information gathered from societal sources (e.g., TV and media). As portrayal of older adults in the media is predominantly negative (e.g., Donlon, Ashman, & Levy, 2005; Ellis & Morrison, 2005), it could be that negative aspects of age-related stereotypes and auto-stereotypes are equally well understood across age-groups. Indeed, Levy and Banaji (2002) have argued that older adults internalise society's negative stereotypes of ageing to create their auto-stereotypes. Thus, it seems feasible that negative components of older adults auto-stereotypes (e.g., declining health and independence; Freedman & Martin, 1998) may be no more complex than young adults' corresponding stereotypes. In contrast, older adults may have a better understanding of the positive aspects of ageing, due to their own experience with the process.

In line with this suggestion, older participants in Brewer and Lui's (1984) study showed greater complexity than young adults when sorting photographs and behavioural statements (e.g., 'likes to knit') associated with a positive subtype of the elderly auto-

stereotype (the grandmother subtype). In contrast, no significant difference emerged when sorting items relating the negative subtype (senior citizen). Similarly, in the study by Hummert and colleagues (1994; see Section 1.1.6), elderly participants were more likely to generate the 20 positive ‘new’ terms (i.e., terms generated in this study that had not previously been generated by young adults in Schmidt & Boland’s 1986 study) than young adults¹⁴. Thus, older adults appeared to demonstrate a more elaborate understanding of the *positive* aspects of ageing than their younger counterparts. The contrasting findings from previous research examining the complexity of stereotypes and auto-stereotypes of ageing (e.g., Brewer & Lui, 1984; Kite et al., 1991) may therefore be due to a lack of differentiation between positive and negative auto/stereotypes of ageing.

These findings relate to the social identity approach (SIA), which suggests that individuals are motivated to hold positive representations of their ingroups (i.e., groups to which they belong; Tajfel & Turner, 1979, 1986; Turner et al., 1987). The increased complexity that older adults displayed (in comparison to young adults; Brewer & Lui, 1984; Hummert et al., 1994) over positive aspects of ageing may therefore be reflective of older individuals’ motivation to view their ingroup in a positively distinct manner; that is, to maintain a positive sense of ingroup identity on valued dimensions, that differentiate the group from relevant outgroups (for reviews, see Becker, 2012; Reicher et al., 2010). This process results in an ingroup positivity bias (IPB; also referred to as ‘ingroup favouritism’), where more positive representations of an individual’s ingroups are held than of groups to which the individual does not belong (Tajfel & Turner, 1979, 1986). Thus, we should expect older adults to hold more positive auto-stereotypes of their ingroup than the stereotypes that are held by young adults.

Further support for the ingroup positivity bias (Tajfel & Turner, 1979, 1986) in relation to ageing comes from recent European research (Gluth, Ebner, & Schmiedek, 2010). In this questionnaire-based study, young and older adults were asked to complete a semantic differential scale (i.e., a list of positive/negative characteristics and attributes), associating a series of paired characteristics (e.g., ‘active-passive’) with young and older adults. In support of IPB, older adults showed more positive responses than young adults when rating their own

¹⁴ A limitation of this finding, however, is that a full analysis of the valence of all 97 traits generated in Hummert and colleagues’ study was not provided, but rather was limited to the 20 new traits that had not previously been identified (see p. 244), which makes generalization of the findings difficult.

age-group on ‘instrumentality’ (an individual’s adaptability and vitality) and ‘acceptability’ (an individual’s sociability; Gluth et al., 2010, p. 148)¹⁵. Taken together, these findings suggest that, in line with SIA, older adults display more positive auto-stereotypes of old age than their younger counterparts (Brewer & Lui, 1984; Gluth et al., 2010; Hummert et al., 1994).

One limitation of the studies exploring both the complexity and positivity of age-related auto-stereotypes, however, is that none of the studies (e.g., Gluth et al., 2010) controlled for the confounding role of social identity on participants’ representations of later life. Previous research within the SIA has revealed a significant correlation between levels of ingroup identity and IPB (e.g., Nigbur & Cinnirella, 2007; Postmes, Branscombe, Spears, & Young, 1999), for example, revealing that those who strongly identify with their group show more positive ingroup auto-stereotypes. This tendency is particularly pronounced for members of minority or low-status groups (Mummendey et al., 1992; Otten, Mummendey, & Blanz, 1996).

Mummendey and colleagues suggest that this finding may be due to the negative ingroup identities and stereotypes that can occur as a result of minority or low-status group membership (e.g., Mexicans as lazy; Shinnar, 2008). Such (potentially) negative ingroup identities result in a greater motivation for ingroup members to employ social creativity strategies, in order to promote a positive sense of ingroup membership (Mummendey et al., 1992; Turner et al., 1987). Thus, different levels of older adults’ auto-stereotype complexity in previous studies (i.e., Brewer & Lui, 1984; Hummert et al., 1994) may have been influenced by inter-individual variability in levels of ingroup identity between samples. Further work investigating the content of stereotypes and auto-stereotypes of old age should therefore also examine participants’ displayed levels of age-related ingroup identity, in order to determine whether this confounding factor is also exerting an effect.

In summary, previous research investigating ICB in relation to old age has produced contrasting results. Although some studies have demonstrated that older adults hold more complex auto-stereotypes of their own age-group than corresponding stereotypes from young

¹⁵ On ratings of older adults’ ‘autonomy’ (independence), however, young adults showed more positive views. This may have related to young adults’ perceptions of the low independence and status of their own age-group (Garstka et al., 2004).

adults (e.g., Brewer & Lui, 1984; Hummert et al., 1994, Study 1), other research has failed to obtain a difference (Hummert et al., 1994, Study 2; Kite et al., 1991). In contrast, evidence suggests that, in line with IPB, older adults hold more positive auto-stereotypes of their age-group than the stereotypes held by young adults (Gluth et al., 2010; Hummert et al., 1994). As reviewed above, however, one limitation of the previous studies concerns the lack of an exploration of the relationship between age-related identity and positivity of responses. The next section will therefore assess whether differences should emerge between young and older adults in levels of age-related ingroup identity.

Section 2.2.2: Do older adults display lower levels of age-group identity than young adults?

Previous work investigating levels of age-related identity in young and older adults have revealed contrasting findings. A study by Garstka and colleagues (2004), for example, found that older adults reported significantly higher levels of identity than young adults, demonstrating scores that were significantly above the midpoint of the scale. In contrast, additional studies have indicated that older adults show mid levels of age-related ingroup identity (Abrams, Vauclair et al., 2011), with additional findings revealing low levels of identification (ACE, 2008; Demakakos et al., 2007). Much controversy therefore surrounds age-group identity in later life, with little consensus in the available literature. It should be noted, however, that two of these studies only used a single item to assess age-group identity (Abrams, Vauclair et al., 2011; ACE, 2008), and therefore have low reliability (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012; Emons, Sijtsma, & Meijer, 2007).

In addition, research has also indicated that older adults identify more strongly with younger age-groups than with their own, reporting felt-ages (subjective ages) considerably below their own chronological age (Bytheway 2005; Westerhof, Barrett, & Steverink, 2003). Indeed, work suggests that subjective age may be more important in determining individuals' sense of age identity than their chronological age (Bowling et al., 2005), suggesting that identifying with younger ages may be an adaptive strategy in later life (Westerhof & Barrett, 2005). Adopting this strategy allows older adults to distance themselves from the negative stereotypes that abound concerning old age (Levy & Banji, 2002), and avoid the negative effects associated with these perceptions (see Section 1.1.5, e.g., Desrichard & Kopetz, 2005; Levy et al., 2000). Certainly lower reported subjective ages have been associated with

positive ratings of life satisfaction and affect (Logan, Ward, & Spitze, 1992-1993; Westerhof & Barrett, 2005).

Further evidence for the relationship between identity and well-being was obtained in the study by Garstka and colleagues (2004; see Section 1.1.4), which indicated that high levels of ingroup identity attenuated the negative impact of experiences of age discrimination on older adults' psychological health. Previous research therefore indicates that age-related identity is an important part of participants' experiences of the ageing process. Considering the impact that positive identities may exert on participants' auto-stereotypes (Nigbur & Cinnirella, 2007), and the moderating role between identity, discrimination, and well-being (Garstka et al., 2004), the current literature would benefit from a more detailed examination of the factors that can promote age-related ingroup identity.

Section 2.2.3: Do differences emerge over the types of age discrimination experienced by young and older adults?

As reviewed in Chapter 1 (Section 1.2.1), age discrimination is a widespread problem in the UK (Bowling, 2007; Butler, 2005; McCann & Giles, 2002), with evidence suggesting that its occurrence is increasing both in the UK (ACE, 2004), and across Europe (Van den Heuvel & Van Santvoort, 2011). Considering the increasing number of older adults within European (including British) society (Giannakouris, 2008), this means that more and more older adults may be subjected to the negative effects of perceived ageism¹⁶ (e.g., Garstka et al., 2004). Participants' experiences of discrimination therefore constitute an important aspect of people's experiences of the ageing process, and yet have tended to be neglected in the literature, especially in comparison to discrimination associated with other stigmatized identities (e.g., women or ethnic minorities; Nelson, 2002; North & Fiske, 2012). Recent studies have therefore argued for the necessity of further research into this area (Nelson, 2005; Van den Heuvel & Van Santvoort, 2011).

One well-established finding in the discrimination literature, for example, concerns the personal/group discrimination discrepancy (PGDD; Taylor, Wright, Moghaddam, & Lalonde, 1990). This discrepancy focuses on the disparity between the level of perceived

¹⁶ By 'perceived ageism' we mean an individuals' subjective experience of discrimination. It is extremely difficult to objectively define discrimination (Salentin, Asbrock, Christ, & Wagner, 2007), as such definitions often diverge. Salentin and colleagues argue that, in the real world, it is more useful to accept participants' subjective ratings of experienced discrimination.

discrimination an individual has personally experienced (as an ingroup member of a stigmatized, e.g., women or ethnic minorities), and the higher levels of discrimination that they expect other ingroup members to have experienced (e.g., Bourguignon, Seron, Yzerbyt, & Herman, 2006; Crosby, 1984). In a study conducted on female immigrants to Canada, for example, Taylor and colleagues (1990) asked participants to indicate how often they had experienced discrimination as a result of their gender, and how often other women had experienced such discrimination. In both cases, women reported higher perceived levels of discrimination for other ingroup members than they did for themselves.

The PGDD has been replicated with ethnic minorities (Bourguignon et al., 2006), lesbians (Zanna, Crosby, & Loewenstein, 1986), and people with physical health conditions (Perrott, Murray, Lowe, & Ruggiero, 2000). To our knowledge, however, no studies have investigated this effect in relation to age discrimination. To examine the extent of this pattern, a citation-search was conducted on Taylor and colleagues' (1990) original article proposing the PGDD, and Crosby's earlier (1984) study¹⁷. From 405 articles citing these papers, only one (Giles & Reid, 2005) explored age discrimination, and this made no reference to the PGDD. Similarly, a literature review using the key terms 'discrimination discrepancy' and a combination of 'personal' or 'group' identified 17 studies examining this effect, none of which examined age discrimination. The current PGDD literature therefore provides no evidence as to whether this discrepancy occurs in individuals' experiences of age discrimination, and constitutes a gap in our current understanding of ageism.

As indicated in Section 1.2.1, however, ageism does appear to be a pervasive problem within the UK. In a recent study, for example, participants of all ages ($n = 54,988$, age range 15-80+ years)¹⁸ from 28 European countries were asked to indicate how often they had personally experienced unfair treatment due to their age (Abrams, Russell et al., 2011). Participants were also asked how serious a problem they perceived age discrimination to be within their respective cultures. Ageist treatment was by far the most frequently experienced type of discrimination. Almost twice as many Europeans reported experiencing unfair treatment as a result of their age than due to their race, with experiences of sexism falling between the two. The same pattern was evident with British participants. It should be noted,

¹⁷ Crosby's (1984) study was selected as a key paper to base this citation search upon, as in their review of the relevant literature, Taylor and colleagues (1990) highlight that Crosby was the only author to openly note and discuss the PGDD (see p. 255).

¹⁸ Neither the mean nor the upper age limit were included in the paper.

however, that prevalence rates of age discrimination were highest for young adults. Within the UK, for example, over three times as many young adults reported experiences of ageism as older adults. This replicates previous findings within Britain (ACE, 2004, 2008), which also indicated that age-based discrimination was more common than other forms of unfair treatment (i.e., due to individuals' gender or religion).

One limitation of previous studies in this area, (e.g., ACE, 2004; Garstka et al., 2004), however, is that experiences of discrimination have tended to focus on prevalence rates of ageist behaviour, rather than examining different *types* of experience across age-groups. One exception to this pattern was the study by Abrams, Russell and colleagues (2011), which asked participants of all ages to indicate whether they had experienced age discrimination in the form of a lack of respect (e.g., being ignored or patronized), or being treated badly (e.g., being insulted or abused). Although young adult reported both forms of discrimination more frequently than the older age-groups, the proportion of each age-group sample that experienced each form of discrimination was roughly the same (i.e., approximately one third reported being treated badly, versus two thirds who were treated with a lack of respect).

One limitation of this study (Abrams, Russell et al., 2011) was that participants were not given the opportunity to indicate whether they had experienced any other forms of age-based discrimination, so only limited evidence was obtained in relation to variability of types of experience across age-groups. A more detailed examination of whether any differences emerge between groups might help to explain why young adults report discrimination more frequently than all other age-groups. Work by Bowling and colleagues, for example, demonstrates that age discrimination against older adults is a common occurrence within British medicine (e.g., Harries, Forrest, Harvey, McClelland, & Bowling, 2007), yet does not seem to affect younger populations (for reviews, see Bowling 1999, 2007). Considering the wide range of negative effects that have been demonstrated to occur as a result of ageist experiences (e.g., negative employment outcomes and increased psychological stress; Messe, 2012; Scott et al., 2011), the literature would benefit from a closer examination of any differences that occur in types of discriminatory practice that young and older adults experience.

Section 2.2.4: Limitations of previous research, summary, and hypotheses

We have already identified that one limitation of the previous research investigating the

content of age-related auto-stereotypes concerns the lack of an exploration of the role of identity in relation to participants' cognitive representations of later life. Recent reviews of the literature have emphasised an additional problem: that the majority of research within this area has been conducted on samples within the USA (Lockenhoff et al., 2009; Kite et al., 2005). To determine the extent of this pattern, a literature search of the PsychINFO database was conducted using a timeframe from 1996 to 2008, and employing combinations of the following terms: stereotypes, auto-stereotypes, ageing, aging, senior, old* adults, UK, Brit*, Engl*, performance and priming. The criteria for inclusion were that studies: 1) explored the *content* of ageing stereotypes; 2) examined interventions designed to alter such stereotypes or 3) investigated the effects of stereotypes on performance across a range of variables, including memory, anxiety and cardiovascular responses. Studies which focussed on other aspects of ageing, with only passing relevance to stereotypes (e.g., Bonnesen & Burgess, 2004), were excluded from this analysis. This search produced a total of 176 studies, of which over 80% ($n = 141$) were conducted in Northern America, with 13% ($n = 23$) conducted in Europe (see Appendix II), despite the high proportion of older adults living here (UN Population Division, 2004).

Furthermore, although a number of similarities emerged in both the content and the structure of age-related stereotypes in the three cluster analysis studies of age-related stereotype content reviewed in Section 1.1.5 (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986), a number of important differences also emerged. Hummert and colleagues (1994) argued that seven subtypes were reliably replicated across samples. This is only 58.3% of Schmidt and Boland's (1986) original stereotype clusters, however, indicating that considerable variability existed between samples. If such differences could occur across samples within the same country (although admittedly in states which are geographically distant from each other), it is plausible that variability in views could also occur across countries. Explorations of stereotype content should therefore focus on the specific population under study (Schmidt & Boland, 1986).

Furthermore, recent studies of perceptions of ageing (including auto/stereotypes) within the UK (Abrams, Eilola, & Swift, 2009) and across 28 countries in the European

region¹⁹ (Abrams, Vauclair, & Swift, 2011) have indicated that differences in societal context (i.e., the structure and culture of society, p. 13) within and between countries result in different auto/stereotypes of ageing. The later study (Abrams, Vauclair et al., 2011), for example, indicated that positive attitudes and auto/stereotypes of later life were positively correlated with a range of societal factors, including the proportion of older adults within society, employment rates, Gross Domestic Product levels (GDP; i.e., affluence), and years in education. A recent theory suggests that intergenerational tensions (e.g., conflict over available jobs) may underlie the effects of societal factors on ageism and negative auto/stereotypes of later life (North & Fiske, 2012): As opportunities are limited, younger adults are forced to compete with older adults for available jobs and resources, which means that endorsing negative stereotypes of old age could serve a protective function for young adults, and improve their work-related opportunities (see Krings et al., 2011).

In contrast, Hummert and colleagues (1994) suggest that increasing numbers of older adults within society should lead to positive attitudinal changes towards later life, as the general public become more familiar with age-related issues (see also Kite et al., 2005). Interestingly, the studies by Abrams and colleagues (2009, 2011) found support for both of these alternative explanations for intergenerational attitudes, as GDP level was positively correlated with attitudes to ageing (i.e., wealthier countries should more positive auto/stereotypes of later life, as competition for resources was minimised within these contexts), as was higher proportions of older adults within society. Thus, examination of auto/stereotypes of ageing across different countries should develop our theoretical understanding of the reasons underlying more positive perspectives.

Although the USA and UK have, broadly speaking, similar cultures (e.g., both individualistic, democratic societies), there are a number of variables which could result in differing attitudes towards old age (cf. Abrams et al., 2009; 2011). The UK has a greater proportion of older adults (aged 65 years and over; 17.3%) within society than the USA (13.9%; CIA World Factbook, 2012), for example, and lower unemployment rates (UK $M = 7.8\%$, USA $M = 8.9\%$; World Bank, 2011): two factors that were associated with positive auto/stereotypes of later life (Abrams, Vauclair et al., 2011). It is therefore possible that British auto-stereotypes of ageing may be more positive than the views expressed by

¹⁹ By 'European region' we mean countries in the geographical area of Europe (plus Israel), which are not necessarily part of the EU (e.g., Croatia).

participants in the USA. In contrast, however, the UK has a lower GDP (\$39,038 per capita) than the USA (\$48,112), and fewer average years in education (9.4 years compared to 13.3 years, World Bank, 2011). British participants may therefore endorse more negative stereotypes and auto-stereotypes of ageing than their North American counterparts, as these factors were associated with more negative perceptions of later life in the previous research (Abrams, Vauclair et al., 2011).

Indeed, a recent questionnaire study suggests that British auto/stereotypes of ageing may be more negative than the views held in the USA (Löckenhoff et al., 2009). This questionnaire asked young participants from 26 countries to indicate whether a set of eight characteristics (e.g., *physical attractiveness*; *wisdom*) increase or decrease in older people, and to rate how positively their own culture views old age. On each of the nine measures, participants from the UK ($n = 95$) reported more negative perceptions than participants from the USA ($n = 309$), although in each case the magnitude of this difference was small ($M = 0.32$). These items were highly related to the characteristics generated in the multiple subtypes work (Hummert et al., 1994; Schmidt & Boland, 1986), suggesting that stereotypes of older people in the UK may be more negative than in America.

To our knowledge, this questionnaire (Löckenhoff et al., 2009) is the only study to simultaneously examine stereotypes of ageing in the UK and USA, so our current understanding of differences in perceptions across the two countries is extremely limited. As argued by Kite and colleagues (2005), studies examining attitudes to older adults (including stereotypes and auto-stereotypes) have tended to be restricted to North American samples. Assessing stereotype content across a wider range of cultures and countries would therefore contribute to our knowledge of this area (see Appendices II and IV). Ideally, such studies would be cross-cultural in nature, including samples from multiple countries, so that direct comparisons could be drawn between the stereotype content across countries. This would also allow additional factors (e.g., participants' years of education or subjective ages) to be controlled for. Considering the range of detrimental consequences of negative auto-stereotype activation on older adults (see Section 1.1.4), a developed understanding of the content of age-related stereotypes in countries outside of North America could be a vital first step in designing interventions to counter the negative effects of such stereotypes (Braithwaite, 2002; Horton et al., 2008; Levy, 1996).

An additional consideration is that results from the two meta-analyses by Kite and colleagues (Kite & Johnson, 1988; Kite et al., 2005) demonstrated that perceptions of ageing changed over time. Within both reviews, attitudes towards ageing become more positive the more recent the study. Current projections for the population in Scotland show an exponential increase in the number of older citizens between now and 2031 (Giannakouris, 2008). It is therefore plausible that another attitudinal shift could be underway, resulting in more positive auto-stereotypes of ageing than have previously been obtained (e.g., Schmidt & Boland, 1986). Preliminary support for this suggestion comes from a study conducted within the UK from 2000-2007, which demonstrated the development of more positive representations of ageing within an advertising campaign across time (Williams, Ylance, & Wadleigh, 2007). A replication of the earlier sorting studies (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986) could therefore be timely and revealing.

In summary, previous research has suggested that older adults hold more complex auto-stereotypes of later life than the stereotypes displayed by young adults (Brewer & Lui, 1984; Hummert et al., 1994, Study 2), although contradictory evidence has also been found (Hummert et al., 1994, Study 1; Kite et al., 1991). In addition, in line with SIA's ingroup positivity bias, previous research suggests that older adults display more positive perceptions of ageing than their younger counterparts (Abrams, Russell et al., 2011; Gluth et al., 2010; Hummert et al., 1994), yet previous studies examining content and structure of age-related stereotypes have failed to explore the relationship between positive representations of ageing and ingroup identity (cf. Nigbur & Cinnirella, 2007). Furthermore, the literature has been dominated by studies conducted in the USA (Meisner, 2012), with few studies examining perceptions of ageing in countries outside of North America (Kite et al., 2005). Similarly, investigations into participants' experiences of age discrimination have focussed on prevalence rates, which may overlook variability in the types of behaviour that are commonly experienced.

The current study therefore aimed to explore the content of age-related stereotypes and auto-stereotypes in the UK. Based on previous findings (e.g., Hummert et al., 1994), we predicted that the content of auto/stereotypes of old age would be complex, but in line with hypotheses from Linville's ingroup complexity bias (1982) and SIA (e.g., Tajfel & Turner, 1986), we expected older adults to display more complex and positive auto-stereotypes of ageing than their younger counterparts. It was also predicted that significant differences

would emerge over displayed levels of identity between young and older adults, although due to the inconsistency of previous findings (e.g., ACE, 2008; Garstka et al., 2004), we did not stipulate in what direction these differences would lie. Finally, we predicted that young adults would report greater experiences of age discrimination than older adults, but that qualitative differences would also emerge between these groups, in terms of the kinds of discriminatory practices that had been experienced. Study 1 also aimed to compare current findings to previous research using samples from the USA. As this study was not cross-cultural (i.e., participants were recruited from the UK, rather than the UK and USA), a direct comparison between the current results and earlier findings was problematic, and needed to be treated with some caution. As so few studies have been conducted outside of North America, however, (see Section 2.2.4) an examination of the content of age-related stereotypes and auto-stereotypes in the UK should expand our understanding of this area (cf. Kite et al., 2005), and provide an insight into whether perceptions of ageing differ across countries.

2.3: Method

2.3.1: Participants.

This study comprised 33 young adults, aged 17-26 years ($M = 20.30$, $SD = 2.62$), and 32 older adults aged 60-78 years ($M = 65.53$, $SD = 4.82$). The young participants were recruited from undergraduate psychology classes at St Andrews University, and received course credit for their participation. Older adults were recruited on a voluntary basis from sports classes for the over 50s, and a local Rotary club. The number of years in education for each age-group was computed, although the variances between samples were unequal for this measure. A Mann-Whitney U -test was therefore employed (non-parametric equivalent of an independent samples t -test, which does not assume homogeneity of variance; Field, 2005), revealing no significant differences in level of education between the two age-groups ($U = 368.00$, $n_1 = 28$, $n_2 = 33$, $p > .17$).

As young adults tend to have higher levels of education than older adults (e.g., De La Fuente, 2012), the lack of significant difference in years of education between the two age-groups was surprising. This may reflect a recruitment bias in our sample, originating as a result of recruiting older participants from sports classes and a Rotary group (i.e., retired professionals), or from the demographics of the local population of St Andrews (i.e., an

affluent and well-educated population; *Scottish Neighbourhood Statistics, 2013*). This issue is addressed in further detail in Sections 2.6.1 and 4.5.4.

2.3.2: Materials.

Stereotype items. Based on work by Schmidt and Boland (1986), the auto/stereotype content of young and older adults was sampled (content-generation) by asking participants to respond to the following question (See Appendix 3 for alternative wording for young adults):

*How would you personally describe a typical older person (aged 60-75 years)?
In the space below please write down all the things you typically think, hear or read about older adults. Include anything that is associated with older people, regardless of whether it is favourable or unfavourable.*

This incorporated two minor modifications from Schmidt and Boland's original paper, which asked participants to list items they associated with the elderly, '*regardless of whether...you personally believe it to be true*' (Schmidt & Boland, 1986, p.256). It was decided to remove this additional instruction, in order to assess young participants' stereotypes of this group, and to ensure we were sampling older adults' auto-stereotype content, rather than their meta-stereotypes. Secondly, Schmidt and Boland did not stipulate an age-range for their target age-group. The present study specified the age range in order to increase consistency of participant responses across age-groups, by ensuring that all participants were considering targets of the same ages.

Three independent raters recoded the traits and characteristics generated in response to this question (e.g., *health and energy levels deteriorating*) into one or two-word descriptors associated with ageing (e.g., *ill-health, less energy*). Semantically similar items were removed (e.g., *illness, unwell*), and a single descriptor was chosen to characterize the traits (e.g., *ill-health*). Inter-rater reliability for this procedure was high (93.6%), and all disagreements were resolved by discussion. This produced a pool of 142 adjectives associated with old age (see Appendix V).

Experiences of the ageing process. Participants' own experiences of growing older were assessed through six items. The first two measures asked participants to indicate which features of growing older they believed constituted the best (e.g., *slower pace of life*), and worst aspects of ageing (e.g., *poor physical health*; see Appendix 4). Participants were given a choice of seven items (derived from a UK survey into quality of life; Bowling et al., 2005),

and were instructed to select as many options as they believed applied. Participants were also given the opportunity to enter any additional items.

The second set of items assessed perceptions and experiences of age discrimination. Participants were asked to '*give as many examples as possible of ways in which people are treated unfairly due to their age*'. An open-ended format was employed in order to elicit a wide range of responses. The number of responses generated by each participant (e.g., '*refused some treatments, various costs increase e.g., travel insurance*'; two responses) was calculated by two independent raters, with high inter-rater reliability (94.4%). Disagreements were again resolved through discussion. The remaining three items asked participants to indicate, on a scale from 1 (*Never*) to 7 (*All the time*), how often they had personally experienced unfair treatment as a result of their age, and how often they believed young and older adults (on average) experienced unfair treatment.

Age-group identification and demographic information. Two items were taken from Garstka and colleague's study (Garstka et al., 2004), to assess participants' identification with their respective age-groups. These asked participants to respond to the following statements: '*I believe that being a member of my age-group is a positive experience*' and '*I have a clear sense of my age-group identity and what it means to me*'. Participants responded on a 7-point Likert scale, ranging from 1 (*No, not at all*) to 7 (*Very much*), with higher scores representing more positive ingroup identification. Responses to these items were analysed separately, due to extremely low reliability of the composite score ($\alpha = .07$). Participants' chronological age was assessed through the question '*How old are you?*' with subjective age measured by asking '*How old do you (approximately) feel?*'. Subjective age bias was subsequently calculated by subtracting participants' subjective from their chronological ages (cf. Weiss & Lang, 2009). As previous research has revealed a relationship between education and reliance on stereotypes (Horton et al., 2010), the final item asked participants to indicate the number of years (from age 15 years old) they had spent in full-time education.

2.3.3: Procedure.

Paper copies of the questionnaire were dispersed at a local Rotary club meeting, fitness classes for the over 50s, and at the beginning of an undergraduate lecture. No time constraints were imposed for completion of the study, and self-addressed envelopes were

provided for return of the questionnaire. All participants were informed that the study was investigating people's experiences of the ageing process, and attitudes towards certain age-groups. Participants were also informed that involvement in the study was voluntary, anonymous, and that all responses were confidential. A subset of the younger adults opted to complete the survey online ($n = 21$). This group was younger than the remaining young adults who completed the paper questionnaire ($t(21) = 6.17, p < 0.001$), with fewer years spent in education ($t(31) = 8.43, p < 0.001$). The data from these participants was combined for analysis however, as both were representational of this age-group.

2.4: Preliminary analysis.

Following guidelines on data screening by Tabachnick and Fidell (1996, p.65-70), preliminary analyses were conducted to identify any outliers within the data (extreme responses (*Ibid*, p.65) that may represent contaminated data, i.e., responses obtained from a population other than the one under study; Zijlstra, Van der Ark, & Sijtsma, 2010, p.188). In line with these guidelines, participants with Z-scores greater than 3.29 on a specific measure had their data reclassified as missing, resulting in the removal of four data points from the analysis (data from one participant was removed for each of the following measures: number of illnesses associated with young and older adults; memory worry; years of education).

A validity check was subsequently conducted on participants' chronological and felt ages, via a 2 (participant age: young or older adult) x 2 (age: chronological and felt) ANOVA. In line with expectations, main effects of participant age were obtained on both dependent variables (each p value $< .001$). Planned comparisons were conducted, which indicated that young adults had lower chronological ($t(47.5) = 46.82, p < .001$), and subjective ages ($t(26.0) = 8.81, p < .001$) than their older counterparts. It should be noted, however, that a large number of older participants ($n = 13$; or 40.6% of the older sample) failed to give responses to the subjective age measure. This finding is in line with previous research (Westerhof & Barrett, 2005), which found a similar pattern.

2.5: Results

Section 2.5.1: Do older adults hold more positive and complex auto-stereotypes of old age than young adults?

Participants generated between 0 to 13 traits in association with the older adult age-group, covering a range of domains. As per Schmidt and Boland's (1986) study, these included

physical characteristics (e.g., *wrinkly*), health (e.g., *ill-health*), personality traits (e.g., *friendly*), social characteristics (e.g., *family-focussed*), and emotions (e.g., *happy*). Hummert and colleagues' (1994) additional domains of evaluative responses (e.g., *undervalued*), physical disabilities (e.g., *frail*), cognitive traits (e.g., *forgetful*), and physical well-being/activity (e.g., *fit*) were also replicated. To identify whether older adults displayed more positive and complex auto-stereotypes of later life than their younger counterparts, the number of generated stereotypical items was computed for each participant (see Table 2.1).

Table 2.1: *Number of generated traits (raw and transformed scores) by participant age*

		Young adults <i>n</i> = 33	Older adults <i>n</i> = 32
Generated traits (<i>n</i>)		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Total	Raw	4.85 (2.18)	4.63 (3.03)
	Square root	2.38 (0.45)	2.29 (0.64)
Positive	Raw	2.64 (1.54)	2.59 (2.18)
	Square root	1.86 (0.43)	1.81 (0.57)
Negative	Raw	2.21 (1.47)	2.03 (1.62)
	Square root	1.74 (0.43)	1.68 (0.46)
Proportion	Positive	.55 (0.26)	.53 (0.28)
	Arcsin transform	1.67 (0.76)	1.64 (0.83)
	Negative	.45 (0.26)	.47 (0.28)
	Arcsin transform	1.47 (0.76)	1.50 (0.83)

As count data is not normally distributed (i.e., is not symmetrically distributed around the mean; Fields, 2005), a square root transformation (adding a constant of plus one) was applied to normalise the distribution (square root transformations are appropriate for data that demonstrate positive skew: Tabachnick & Fidell, 1996, p. 82)²⁰. To explore any differences over the number of generated traits between age-groups, a one-way univariate analysis of variance (ANOVA) was conducted, with participant age entered as the between-subjects variable. In contrast with expectations, no significant differences emerged over number of generated traits for older targets, ($F(1, 63) = 0.52, p > .47$). In fact, young adults generated

²⁰ Following guidelines regarding skewed data by Tabachnick and Fidell (1996), log and square root transformations were both applied to the data. As square root transformations were the most successful (i.e., produced the lowest level of skew), this procedure was applied to the data.

slightly more terms ($M_{\text{raw}} = 4.88$, $M_{\text{sqrt}} = 2.38$) than their older counterparts ($M_{\text{raw}} = 4.63$, $M_{\text{sqrt}} = 2.29$; see Table 2.1), although this difference was not significant.

To explore the valence of the generated stereotype content, an independent sample of 6 young adults, aged 18-21 years ($M = 19.17$, $SD = 0.9$), and five older adults, aged 66-77 years ($M = 70.60$, $SD = 4.39$) rated each of the 142 generated traits (see Appendix 5) on their positivity, ranging from 1 (*Extremely negative*) to 7 (*Extremely positive*). Following criterion used in previous studies (Banaji, Hardin, & Rothman, 1993), all traits with a mean rating greater than 4.0 were classified as a positive trait, and all items coded as lower than 4 were classified as a negative trait. This rating procedure resulted in 80 traits being classified as positive (56.3%), versus 62 classified as negative (43.7%). This classification was used to calculate the number of positive and negative traits generated by each participant. The data were subsequently subjected to a 2 (participant age: young or older adult) x 2 (trait valence: positive or negative) MANOVA, with the data transformed to their square root values. In contrast to expectations, no significant main effects of participant age emerged for either positive ($F(1, 63) = .04$, $p > .70$), or negative traits ($F(1, 63) = .06$, $p > .58$).

Complexity of representations does not necessarily relate to the *number* of generated items, as individuals with wide vocabularies may use additional synonyms to describe the same underlying concepts. To counter this problem, the proportion of positive and negative traits that participants generated was also computed (see Table 2.1), by dividing the number of positive or negative terms by the total number of generated items. This analysis reduced the (potential)²¹ error in participants' scores by partially controlling for individual differences in vocabulary levels (see Section 3.5.2 for a greater discussion of this issue). In contrast with expectations, this also revealed no significant differences between age-groups over the proportion of generated positive or negative traits (both p values $> .88$).²²

²¹ As we did not assess participants' verbal intelligence in this study, it is impossible to determine whether vocabulary differences underwrote any of our effects. This occurrence does seem plausible, however, and is discussed in greater detail in Chapter 4.

²² NB some debate exists over the correct procedure for analysis of proportional data. Rather than employing arcsine transformations, it may have been more appropriate to analyse the data using relative growth rates (see Crawley, 2005). As the absolute values had been analysed using a MANOVA, however, to facilitate comparisons between analysis techniques the arcsine transformations were applied, which are appropriate for proportional data (*Ibid*).

To explore whether older adults showed more positive perceptions of the ageing process than young participants, analysis was conducted over the number of items chosen to represent the best and worst aspects of ageing. Following a square root transformation of the data (suitable for data with a moderate skew, cf. Tabachnick & Fidell, 1996, p. 82), a 2 (participants age: young or older adult) x 2 (aspect of ageing: best or worst) MANOVA was conducted. As shown in Table 2.2, no main effects were obtained between the two groups for the number of items selected as the worst aspects of ageing ($F(1, 63) = 3.12, p > .08$). In contrast, a significant main effect was obtained for the number of best items selected ($F(1, 63) = 9.79, p < .005$).

Table 2.2: *Number of selections for best/worst aspects of ageing (raw and transformed scores) by participant age*

		Young adults <i>n</i> = 33	Older adults <i>n</i> = 32
Selections (<i>n</i>)		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Best	Raw	3.00 (1.17)	4.09 (1.55)
	Square root	1.98a (0.30)	2.23b (0.35)
Worst	Raw	4.21 (1.52)	3.56 (1.61)
	Square root	2.26c (0.33)	2.09 (0.42)
Proportion	Best	.42a (0.11)	.55 (0.17)
	Arcsin transform	1.40 (0.24)	1.71 (0.46)
	Worst	.58c (0.11)	.45 (0.17)
	Arcsin transform	1.75 (0.24)	1.43 (0.46)

Note. Means with different subscripts are significantly different: ab; $p < .005$, ac; $p < .001$

Planned comparisons indicated that, following Bonferroni corrections (p level set at $< .013$), older adults selected more best options ($M = 4.09$) than their younger counterparts ($M = 3.00$; $t(63) = 3.21, p = .001$). Paired samples t -tests were also conducted on the number of best and worst selections as a function of participant age. In line with previous findings, whereas young adults made fewer best selections than worst ($t(32) = 4.05, p < .001$), older adults showed a tendency to make more best selections than worst, although this difference

only approached significance ($t(32) = 1.72, p < .048$)²³. This provides partial support for our hypothesis that older adults would display more positive conceptions of the ageing process than their younger counterparts.

Finally, to examine the impact of age-related identity on positivity of auto/stereotype content, a series of bivariate correlations were conducted between number of generated positive and negative traits, and participants' scores on the three identity measures. In line with expectations that higher levels of identity would be associated with more positive auto-stereotypes of later life, a significant correlation emerged for older adults between the number of generated positive traits and responses on the first identity measure²⁴ ($r = .44, p = .006$) after Bonferroni adjustments (critical p value $< .008$). In contrast, no significant correlations emerged for the number of generated negative descriptors (all p values $> .21$).

Section 2.5.2: Did differences emerge over level of age-related ingroup identification between age-groups?

Participants' responses on the two single age-group identification items displayed a significant and negative skew (i.e., responses clustered to the right of the distribution; Tabachnick & Fidell, 1996), so an inverse transformation was applied to the data. To determine whether age influenced levels of age-related ingroup identification, a 2 (participant age: young or older adult) by 3 (identity measure: subjective age bias, identity 1, identity 2) MANOVA was conducted. This revealed a main effect of age on subjective age bias ($F(1, 55) = 81.45, p < .001$), with scores on the remaining items revealing no significant differences (both p values $> .16$). Planned comparisons upheld the hypothesis that older adults would show significantly greater levels of subjective age bias (SAB; $M = 21.88, SD = 12.63$) than their younger counterparts ($M = 0.97, SD = 3.33; t(56) = 9.13, p < .001$).

To further explore this pattern, two paired-samples t -tests were conducted on participants' chronological and subjective ages. In line with expectations, this analysis indicated that older adults reported subjective ages ($M = 43.92, SD = 13.68$) significantly below their chronological age ($M = 65.53, SD = 4.82; t(24) = 8.66, p < .001$). Importantly,

²³ NB an analysis of the proportional data revealed the same pattern of results, with young adults selecting a significantly higher proportion of worst than best selections ($t(33) = 4.16, p < .001$) whereas the difference for older adults was not significant ($t(32) = 1.75, p = .045$), although displayed a trend in the opposite direction. As the best/worst selections were closed-response measures, however, the issue of verbal intelligence did not represent a confound to the results, and so were not appropriate for inclusion in the main body of the text. They are included here, however, for completeness.

²⁴ 'I believe that being a member of my age-group is a positive experience'

the reported subjective ages fell outside of the older adult age category (i.e., 60-75 years). In contrast, no significant difference emerged between young participants' subjective ($M = 19.33$, $SD = 3.18$) and chronological ages ($M = 20.30$, $SD = 2.62$; $t(32) = 1.67$, $p > .10$), both of which fell within the young adult age category.

Section 2.5.3: Did differences emerge over frequency and type of experience with age discrimination between age-groups?

To examine participants' experiences of age discrimination, a Mann-Whitney U -test was conducted, as variances between groups remained unequal following log and square root transformations (adding a constant of plus one). A main effect of participant age was obtained for number of generated examples ($U = 395.00$, $N_1 = 33$, $N_2 = 32$, $p < .05$), with young adults providing more examples (*median* = 2, *range* = 4) than older adults (*median* = 1, *range* = 6). An analysis of the content of these examples identified seven main themes (see Table 2.3). The three most frequently identified themes (by over 20% of the total sample) were employment-related discrimination (e.g., 'Refused work because of being too young/old'); financial discrimination (e.g., 'Travel insurance is more expensive'), and disrespect from others (e.g., 'Mocked in society').

Table 2.3: Age discrimination themes identified by each age-group

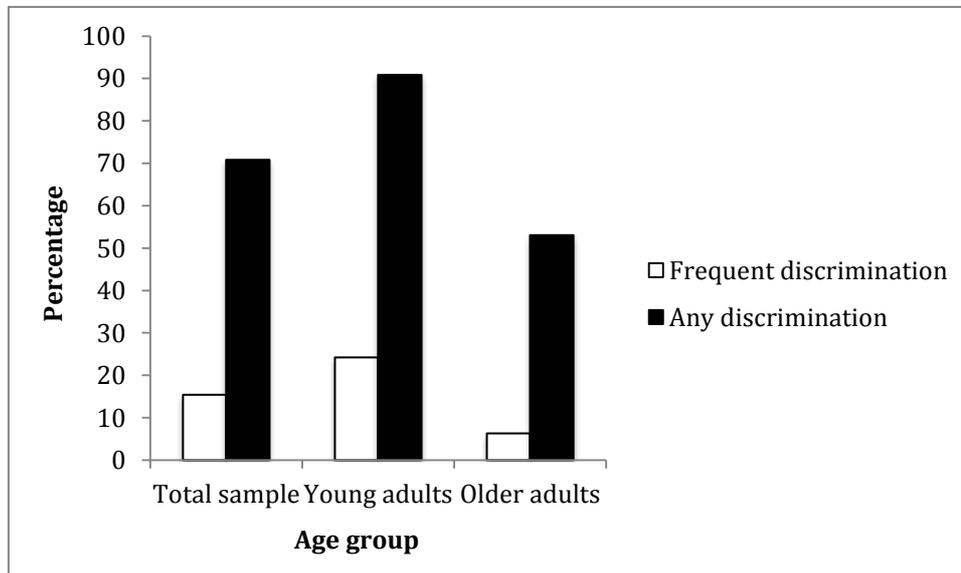
Discrimination theme	Young adults		Older adults		Total sample	
	<i>n</i>	Percentage of age-group	<i>n</i>	Percentage of age-group	<i>n</i>	Percentage of sample
Employment	13	39.4	13	40.6	26	40
Financial	3	9.1	11	34.4	14	21.5
Disrespect from others	8	24.2	5	15.6	13	20
Judged unfairly	11	33.3	1	3.1	12	18.5
Denied opportunities	7	21.2	4	12.5	11	16.9
Opinions discounted	5	15.2	2	6.3	7	10.8
Health	0	0	5	15.6	5	7.7

Although the most frequently generated type of age discrimination from both age-groups concerned work-related ageism (see Table 2.3), additional differences emerged between the other types of identified themes. Whereas a third of all young participants

reported being judged unfairly ($n = 11$), for example, only one older adult reported this kind of discrimination. In contrast, a similar (but opposite) pattern was obtained for financial discrimination, which was reported by more older ($n = 11$) than young adults ($n = 3$).

To examine frequencies of experienced discrimination, a 2 (participant age: young or older adult) x 3 (target of discrimination: personal, older adults, or young adults) MANOVA was conducted. Main effects were obtained for participants' own experiences of age discrimination ($F(1, 60) = 11.43, p = .001$), frequency of discrimination believed to be experienced by young adults ($F(1, 60) = 6.75, p = .01$), and frequency of discrimination believed to be experienced by older adults ($F(1, 60) = 4.52, p < .05$; see Figures 2.1 - 2.2). After Bonferroni corrections (critical p value $< .007$), findings supported our hypothesis that young adults would report greater frequency of experience with discrimination ($M = 3.18$) than their older counterparts ($M = 1.87; t(57) = 3.68, p < .001$).

Figure 2.1: Percentage of participants who had experienced unfair treatment due to age (did not indicate 1 on a scale that ranged from 1: 'never' to 7: 'all the time'), or had frequently experienced unfair treatment (indicated scores of 5 to 7).

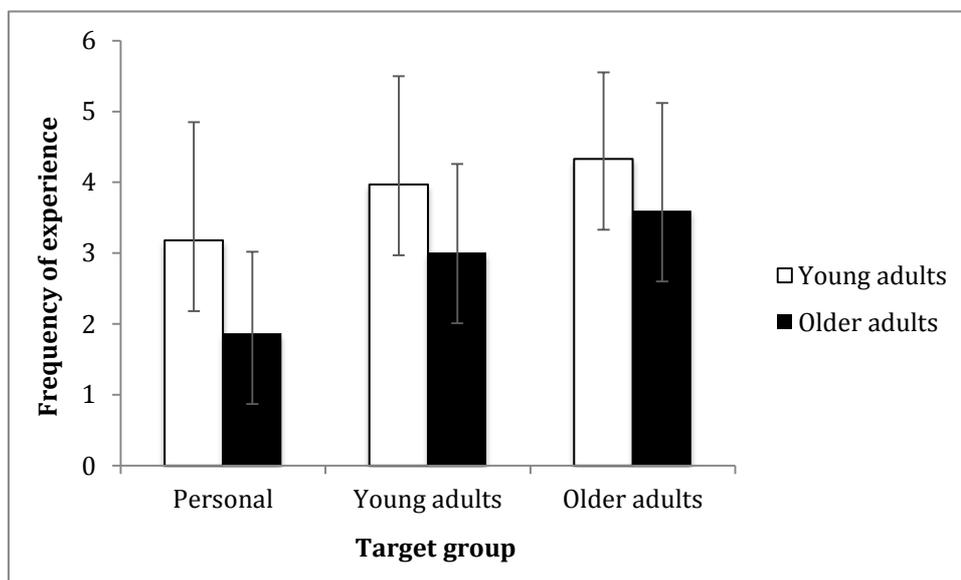


Following Abrams, Russell and colleagues' analysis (2011), the percentage of participants who reported ever having experienced age discrimination was calculated (i.e., participants who did not indicate 1 on a scale from 1: 'never' to 7: 'all the time')²⁵. As

²⁵ Note that a direct comparison is not possible, as Abram and colleagues' scale ranged from 0–4, rather than from 0–7.

indicated in Figure 2.1, whereas over 90% of young adults ($n = 30$) had experienced age discrimination at some point, considerably fewer older adults (50%; $n = 16$) reported experiencing such treatment. The percentage of participants who had frequently experienced age discrimination was also calculated (i.e., scored from 5-7 on the above scale), with a similar pattern of results: whereas 24.2% of young adults ($n = 8$) had frequently experienced unfair treatment due to their age, only 6.3% ($n = 2$) of older adults reported such discrimination.

Figure 2.2: *Frequency of personally experienced age discrimination, and expected frequencies for target age-groups*



To explore participants' own experiences of age discrimination further, two paired-samples t -tests were conducted. Findings supported the personal/group discrimination discrepancy effect (PGDD; Taylor et al., 1990), as young adults reported fewer instances of personally experienced age discrimination ($M = 3.18$), than they believed were experienced by other members of their own ingroup ($M = 4.0$; $t(32) = 3.21$, $p < .005$; see Figure 2.2), after making Bonferroni adjustments ($p < .025$). The same pattern was obtained for older adults, who reported fewer instances of personally experienced discrimination ($M = 1.93$) than they believed other older adults experienced ($M = 3.59$; $t(28) = 5.46$, $p < .001$).

Section 2.5.4: Do differences exist over the content of age-related auto/stereotypes between the USA and UK?

In order to explore whether any differences in auto/stereotype content emerged between the current study and previous work with samples from the USA (Hummert et al., 1994; Schmidt & Boland, 1986; Study 1), two independent raters examined the 99 traits from the previous studies. Any direct replications (e.g., ‘bored’), or semantically equivalent items (e.g., ‘arrogant’ and ‘snobbish’) were classed as a replication, with high inter-rater reliability over recordings (96.60%). Any initial disagreements were resolved by discussion. The recoding procedure indicated that 69 of the 99 traits (69.7%) from the previous studies were replicated in Study 1. An additional 73 terms were generated that were semantically distinct items from the previously generated descriptors.

To determine whether any difference in valence existed between the British and American samples (Hummert et al., 1994; Schmidt & Boland, 1986; Study 1), the percentage of generated positive and negative traits were calculated, to facilitate comparisons between the three studies (see Table 2.4). The percentage of positive traits (32.3%) generated in Schmidt and Boland’s (1986) study was low, with almost twice as many negative traits being produced (59.6%). In contrast, results from Hummert and colleagues’ study (1994) and the present research, show much smaller differences, with relative proportions of positive and negative terms being similar (see Table 2.4).

Table 2.4: *Proportion of positive and negative traits generated in each study*

Traits generated	Studies		
	Schmidt & Boland (1986)	Hummert et al., (1994)	Study 1 (Persson et al, 2009)
Positive (%)	32.32	52.58	56.34
Negative (%)	59.59	47.42	43.66
Total (n)	99	97	142

2.6. Discussion

This questionnaire study provided an array of data concerning participants’ stereotypes and auto-stereotypes of old age, and their own experiences of the ageing process. The results provided clear support for our hypothesis that British perceptions of ageing would be

complex. Generated traits were obtained across multiple domains (e.g., social characteristics, health), and reflected multi-dimensional (e.g., warmth, competence) and multi-valenced (e.g., positive, negative) perceptions of ageing. Interestingly, a number of contradictory traits were generated, often by the same participant (e.g., Participant 44: ‘boring, interesting’). The same finding was reported by Schmidt and Boland (1986), who argued that participants generated pairs of opposite traits that could not be simultaneously present in the same individual (e.g., ‘sedentary’ versus ‘active’; Schmidt & Boland, 1986).

In contrast with expectations, however, older participants in the current study did not demonstrate more complex auto-stereotypes of old age than the views expressed by young participants. This result was initially surprising, considering the widespread support that has been obtained for Linville’s ingroup complexity bias (ICB; e.g., Brewer & Lui, 1984; Linville, 1987; but see Locke, 2002). As reviewed in Section 2.2.1, however, the current pattern of responses is similar to that obtained in previous research (e.g., Hummert et al., 1994; Kite et al., 1991). In Kite and colleagues study, for example, young and older participants were asked to generate traits relating to a target individual, who could belong to the same or opposite age-group from themselves, and the same or opposite gender. Regardless of the target’s age, young adults generated more traits than their older counterparts, and women generated more traits than men²⁶. None of the interactions were significant.

Thus, participants in this study (Kite et al., 1991) did not generate more terms in relation to their ingroup members than to outgroup members. Considering these results, it is therefore less surprising that the older participants in Study 1 did not generate more terms relating to their own age-group than the young participants. In addition, other confounding variables such as participants’ verbal intelligence (e.g., Nelson & Willison, 1991) or manual dexterity (e.g., arthritis limiting a participants’ ability to write; Haberfehlner et al., 2011) may also have exerted a significant effect on the number of traits produced (cf. Hummert et al., 1994). As these factors were not controlled for in the current study, it is not possible to

²⁶ This finding does also suggest that gender should be entered into our MANCOVA as a covariate. We therefore re-ran our analysis, but still obtained no significant effects of either covariate or participant age. The effect of gender on number of generated positive terms was of marginal significance, however ($p = .056$), suggesting that with increased power (i.e., more participants) it may have an effect. In Study 2 we will therefore enter gender as a covariate, alongside education.

identify whether they influenced participants' responses. This limitation should therefore be addressed in future work, by controlling or these confounding factors.

Furthermore, although Linville's theory (1982) suggests that we hold more complex representations of our ingroups than outgroups, generating *more* traits is not necessarily evidence of more complex representations. This is particularly true if participants generate synonyms relating to the same underlying domain of ageing (e.g., health domain: ill-health, unwell, sick). As the same measures were used to assess participants' stereotype and auto-stereotype content in Studies 1 and 2, discussion of the issues surrounding the measurement of complexity is returned to in greater detail in Section 3.5.1. It is worth noting, however, that Linville also emphasizes that participants may hold complex representations of some domains (e.g., physical characteristics), but simple representations of others (e.g., social characteristics), depending on the individual's familiarity with each specific domain.

Thus, for example, young and older adults may share similar levels of complexity over the negative aspects of aging, as these stereotypes are prevalent in society and receive considerable media focus (e.g., Ellis & Morrison, 2005; Kite et al., 2005), whereas older adults may show a more elaborate understanding of the positive aspects of ageing (cf. Brewer & Lui, 1984) due to their own experiences of the ageing process. This suggestion is in line with hypotheses from the SIA, which suggest that participants hold more positive representations of their ingroups than of outgroups (e.g., Turner et al., 1994), and may hold more complex representations of specific aspects of group membership that are important to them (e.g., *social relationships in ageing*), rather than elements that have no personal meaning (for a review, see Reicher et al., 2010).

Indeed, results from the items assessing participants' perceptions about the best and worst aspects of ageing provide support for this suggestion. Whereas young adults selected significantly fewer best items than worst, older adults showed the opposite tendency (i.e., chose more best selections than worst, although this trend was not significant), and selected significantly more best items than their younger counterparts. Thus, the motivation to maintain a positive ingroup identity may have resulted in older participants displaying more complex representations of the positive aspects of ageing than the negative aspects (Reicher et al., 2010). Further evidence for this suggestion was obtained through the significant correlation that emerged for older participants over levels of ingroup identity (on one of the

two identity measures) and the number of generated positive traits. This finding should be treated with caution, however, considering the positive wording of the identity item ('I believe that being a member of my age-group is a positive experience'), which makes the significant correlation somewhat unsurprising.

Although these findings require replication and extension to determine their reliability, it seems feasible that a focus on the positive aspects of ageing could be an adaptive strategy in later life – or, rather, that a lack of elaboration of the *negative* aspects of age-group membership could allow participants to distance themselves from threatening aspects of age-group identity, and thus be a self-protecting strategy. These findings were also in line with the social identity approach's IPB (Tajfel & Turner, 1979, 1986), as older adults showed more positive auto-stereotypes of their own age-group than were displayed by young adults (although see Section 3.5.1 for a discussion of some possible problems with the current measures in relation to assessing older adults' auto-stereotype content).

The lack of a significant difference between age-groups over the negative aspects of ageing was interesting, however, considering work by Brewer (1999, 2007), who has drawn a distinction between ingroup positivity and outgroup negativity, arguing that the two represent separate processes that do not always occur concurrently. The current findings provide some (very) preliminary evidence that age-related ingroup auto-stereotypes may also be differentiated between 'more positive' and 'less negative' representations (see Section 3.2.2 for a wider discussion of this issue). This has important repercussions in terms of generating interventions aimed at improving societal perceptions of ageing, as may indicate specific areas that need further attention. As the more positive/less negative distinction in the current study was obtained with just two items, however, further research is required to determine the extent of this pattern.

An important caveat when considering these findings relates to subjective age bias (SAB; Weiss & Lang, 2009), however, as older adults in the current study reported subjective ages ($M = 43.92$) significantly below their chronological age. This finding corresponds to previous findings from the UK (Abrams, Russell et al., 2011), where almost half of participants aged 65-74 years old identified with the middle-aged group, rather than the older group. Although this finding was in line with expectations that differences would emerge between age-groups over the level of displayed ingroup identity, one unexpected aspect of

this finding was that older adults reported subjective ages that were significantly outside of the older adult age category (60-75 years). As previous research has indicated that subjective ages are more important to age-related identity than chronological ages (Bowling et al., 2005), this does suggest that older adults do not self-categorize themselves as members of the older adult age-group. Importantly, this finding could therefore also explain why older participants in the current study did not display more complex auto-stereotypes of later life than young participants' views – at least in relation to the number of generated traits. Further research is required to explore this possibility.

Unfortunately, a direct test of whether older adults identified with their own age category was not possible in the current study, due to the low reliability of the composite age-identification measure. Separate analyses of participants' responses on the two, single-item measures did not reveal a significant difference over levels of age-related ingroup identification. This finding must be treated with some caution, however, due to methodological limitations: Due to space requirements, only two of the four items previously used to assess age-group identification (Garstka et al., 2004) were included in Study 1. This was a major limitation of the study, as the reliability of the measure was severely compromised. Future work should therefore ensure that the full scale is employed, so that degree of age-group identity can be compared across age-groups. As work has indicated that scales with few items are less reliable than longer scales (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012; Emons, Sijtsma, & Meijer, 2007), it would be desirable to include as long a scale as possible to assess this variable.

Finally, in line with our hypothesis that significant differences would emerge between age-groups over levels of experienced discrimination, young adults generated significantly more examples of discriminatory experiences than older adults, and reported higher frequencies of experience. Interestingly, the majority of young and older adults seemed to share the same understanding of the types of discriminatory practices that occur because of age. Participants from both age-groups identified six of the seven (85.7%) discrimination themes (e.g., *financial restrictions, opinions being discounted*; see Table 2.2), showing consistency of experiences across ages.

The only theme to be generated by a single age-group was healthcare-based discrimination (e.g., participant 6: 'hospital and doctors etc. not really interested in over

65s'), which was only generated by older adults, and provided examples exclusively related to older people. Whereas participants of any age can experience work-related age discrimination, presumably the younger participants had little or no personal experience of healthcare-related discrimination, hence not identifying this theme. Overall then, young and older adults appeared to have similar perceptions of age discrimination, despite different frequencies of (current) experience with such treatment.

From a theoretical standpoint, a more interesting finding from the current study concerned the self-serving bias that participants displayed in relation to experiences of ageist behaviour. Corresponding to research with other societal groups (e.g., ethnic minorities and women Ruggiero & Taylor, 1997; Taylor et al., 1990), participants from both age-groups reported significantly lower levels of personal experience with age discrimination than they expected for other members of their group (i.e., the personal/group discrimination discrepancy effect; Taylor et al., 1990). Thus, participants demonstrated an inter-individual self-protective strategy in relation to experiences of discrimination (for a review, see Stroebe, Dovidio, Barreto, Ellemers, & John, 2011).

In contrast, however, participants did not display a corresponding ingroup bias: neither age-group reported the expectation that the contrasting age-group (i.e., young adult age-group for older participants) would experience ageist behaviours more frequently than other members of their own group, although a non-significant trend in this direction was obtained for older adults. The current findings therefore suggest that although young and older adults both display an individual level coping strategy to experiences of age discrimination, this response does not appear to apply to group-level responses.

Finally, a comparison of the generated traits between the present study, and previous research with samples from the USA, indicated considerable overlap in views between the two countries. Almost 70% of the terms previously generated were replicated in the current study, suggesting that stereotypes and auto-stereotypes of old age between the two studies consisted of a core set of traits, that were common to both cultures. Although current findings revealed an additional 73 traits that had not been identified in previous studies, this may reflect the inclusion of idiosyncratic terms in our analysis: Only 36 of the 142 generated terms were identified by more than one participant. Future research therefore needs to ensure that idiosyncratic terms are excluded from the analysis.

As emphasised in Section 2.2.4, however, the current study cannot truly examine cross-cultural differences in perceptions of later life, as a sample from a single nationality was employed. It is therefore impossible to determine whether any apparent differences (e.g., the greater proportion of positive traits generated in the current study, in comparison to the findings from Schmidt & Boland's (1986) study) reflect true cross-cultural variation, or whether additional factors account for this effect (e.g., changing perceptions across time). Furthermore, as certain demographic characteristics of the samples were not detailed in the earlier studies, such as participants' subjective ages, years in education, or the gender distribution (Hummert et al., 1994; Schmidt & Boland, 1986), the effects of these variables cannot be accounted for, and could also be exerting an effect.

A direct comparison between the current findings and results from the earlier studies is therefore problematic, although Study 1 does provide some preliminary evidence to suggest that a core set of traits are associated with later life across the two countries. Further research is therefore required to explore the similarities and differences between British and North American representations of ageing (see Chapter 4), before any firm conclusions can be drawn. Ideally, such studies would utilise samples from multiple countries (cf. Löckenhoff et al., 2009), to truly examine cross-cultural perceptions of old age.

Section 2.6.1: Conclusions, limitations and future directions

In summary, the current study only obtained limited support for our hypotheses that older adults would show more elaborate and positive auto-stereotypes of old age than the stereotypes held by young adults. Although older adults did demonstrate a greater appreciation of positive aspects of ageing, a similar pattern was not obtained over the number of generated traits. Further work should therefore explore differences over young and older adults' cognitive representations of the positive and negative aspects of ageing in more detail. Similarly, although older adults showed significantly greater SAB than young participants, the use of an incomplete identity scale meant that a direct comparison between overall levels of age-related ingroup identity was difficult. Despite this, a significant correlation was obtained between older adults' responses on one of the identity items, and the number of generated positive traits. In combination, these findings suggest that further studies investigating the content of age-related auto-stereotypes should ensure that this factor is controlled for, due to participants who report higher levels of identity being more likely to

also demonstrate high levels of ingroup positivity bias (e.g., Mummendey et al., 1992; Nigbur & Cinnirella, 2007).

Our last finding, in relation to age discrimination, revealed that young adults reported significantly more experience with age discrimination than older adults. This finding replicates previous work within the UK (e.g., ACE, 2004, 2008), but expands this research by indicated that young and older participants shared similar conceptions of the kinds of behaviour that count as discriminatory practice, with 6 of the 7 age discrimination themes identified by both age-groups. The only type of ageist behaviour that was mentioned by one (rather than two) age-groups concerned discrimination towards older adults within the healthcare system. As preliminary analysis indicated that our current sample of older adults might be somewhat atypical of the wider older population (i.e., had higher levels of education than is usually demonstrated by older adults (De La Fuente, 2012), and were recruited from active and professional groups), a replication of this finding from a wider sample would help to establish the reliability of this finding. In particular, the recruitment of participants with varying economic backgrounds and levels of physical health would allow us to determine whether these findings (and indeed, all of our findings) can be generalized to the wider population.

On the basis of these findings, a second questionnaire study was designed, to further explore participants' stereotypes and auto-stereotypes of later life. Due to the recruitment bias evident in our older sample (i.e., high levels of education, presumably reflective of the high levels of socioeconomic status enjoyed by residents of St Andrews (SNS, 2013), or a result of recruiting participants from active and professional leisure groups), Study 2 endeavoured to recruit participants from the wider district of Fife. This would enable us to recruit participants with a wider educational range, from a variety of socioeconomic backgrounds, as less affluent areas of Fife show more variability in average household income and level of educational attainment than is evident in St Andrews (SNS, 2013). This revised recruitment strategy allowed us to increase the generalizability of our findings.

Furthermore, as one criticism of previous research within this area has been the classification of participants aged 60 years and over into a single cohort (Bytheway, 2005), which may disguise age-related variability within this group (see Section 3.2.3 for a further discussion of this issue), an additional aim of Study 2 was the inclusion of a wider age-range

of participants, in order to explore differences in the positivity and complexity of age-related auto/stereotypes.

Chapter Three:

Study 2

3.1. Overview

The main aim of Study 2 was to examine perceptions and experiences of the ageing process by examining both stereotypes and auto-stereotypes of old age. The primary focus of Study 2 was an exploration of any differences in perceptions between three age-groups (young, older, and old-old adults). Considering that stereotypes of old-old adults are more negative than perceptions of older adults (Hummert et al., 1997; 1999), and that physical health declines rapidly from age 75 years, we expected significant differences in perceptions of ageing to emerge between the two oldest cohorts. A second aim of the study was to compare experiences of age discrimination and identity in all three age-groups. A specific focus was whether any differences would emerge between the types of discrimination that each cohort experienced, as suggested in Study 1, and whether level of identification and subjective age varied as a function of chronological age.

3.2. Introduction

Section 3.2.1: Do older and old-old adults hold more complex representations of old age than young adults?

The findings from Study 1 only provided partial support for our hypothesis that older adults would show more complex auto-stereotypes of old age than the stereotypes held by young adults. In line with expectations, older adults selected more items relating to the best aspects of ageing than young adults, suggesting that older participants may have held more elaborate understandings of the positive aspects of ageing. In contrast with our predictions (and Linville's (1982) ingroup complexity bias; ICB), however, no significant differences emerged over the number of traits generated to describe a 'typical' older adult, or over the proportion of positive and negative terms generated by participants from the two age-groups.

One limitation of both Study 1 and the previous research examining the content and structure of age-related stereotypes and auto-stereotypes in the USA concerns the classification of participants aged 60 years and over as a single older adult cohort. As emphasized in Section 1.2.3, this has often resulted in participants spanning a 30-40 year age-range being included as a single 'age-group'. For example, in a study by Hummert and

colleagues (1997), participants aged between 61-96 years were included in a single age category. As emphasized by Bytheway (2005), such age-group classifications obscures age-related variability within this group, and may result in participants with very different views (and even upbringings) being erroneously classified as a single cohort.

In terms of differences in complexity of stereotypes of old-age, two patterns of results seem feasible. First of all, as reviewed in Section 1.1.6, the developmental theory (Heckhausen et al., 1989) suggests that a correlation exists between participants' age and the complexity of their views surrounding ageing, as their own experiences as they age are incorporated into their age-related schemas. Although the results from Hummert and colleagues' (1994) study did not support the developmental theory (as middle-aged adults did not show more complex representations of ageing than young adults), it seems feasible that old-old adults' stereotypes of old adults would be more complex than young adults' views, due to their increased experience of the ageing process.

In contrast, Linville's ICB (1982) posits that we hold more complex representations of our ingroups than our outgroups. If an individual's chronological age is the determining factor in terms of age-related identity (but see Section 2.2.2 for a discussion of this issue in relation to the importance of subjective age), in the context of Studies 1 and 2 older adults represent the age-related ingroup, whereas both young and old-old adults are age-related outgroups. If the ICB hypothesis is correct, then older adults should display more complex representations of their own age-group than the views held by the two outgroups. As previous studies have not differentiated between the older and old-old adult age-groups (see Bytheway, 2005), however, there is currently little empirical support for this hypothesis. Additional work is therefore required to determine whether older adults' auto-stereotypes of old age are more complex than the representations held by old-old adults.

Section 3.2.2: Do older and old-old adults hold more positive auto-stereotypes and stereotypes of old age than young adults?

Older participants in Study 1 selected more items relating to the best aspects of ageing than young adults, providing partial support for our hypothesis that older adults' age-related auto-stereotypes would be more positive than young adults' corresponding stereotypes. This finding was in line with the social identity approach's (SIA) ingroup positivity bias (IPB: Tajfel & Turner, 1979). In contrast, no significant differences emerged between age-groups

over the number of selection for the worst aspects of ageing. Similarly, work by Brewer (1999, 2007) has also differentiated between ingroup positivity and outgroup negativity, arguing that the two represent separate processes that do not always occur concurrently.

A related but separate distinction can be drawn within auto-stereotypes of the ingroup, between *more positive* versus *less negative* self-perceptions (Mummendey & Otten, 1998; Sassenberg, Kessler, & Mummendey, 2003). Mummendey and colleagues (1998, 2003) propose that ingroup favouritism can be achieved by either perception (more positive/less negative), and so the direction of this difference is irrelevant in relation to an ingroup's positive distinctiveness. Research has also demonstrated a dissociation between these aspects of auto-stereotypes, suggesting that the two may be related but distinct concepts (e.g., Crisp & Nicel, 2004; Sassenberg et al., 2003).

In a study investigating racial stereotypes and auto-stereotypes, for example, white participants were asked to indicate which of six (paired) positive or negative traits (e.g., 'smart – not stupid' versus 'unambitious – lazy') related to white and black targets (Gaertner & Mclaughlin, 1983). In line with the IPB (Tajfel & Turner, 1986), participants associated more positive terms with their own ethnic group than with black targets, yet showed no differences over negative trait associations (Gaertner & Mclaughlin, 1983). Thus, although white participants' auto-stereotypes were more positive, they were *not* less negative. Similarly, a recent study by Zosuls and colleagues (2011) showed the same pattern, with children of both genders demonstrating more positive ingroup attitudes towards members of their own gender, without a corresponding increase in negative attitudes towards outgroup members.

A similar dissociation was demonstrated in an additional study investigating gender stereotypes (Susskind & Hodges, 2007), although the findings showed a different pattern. Children were asked to associate 38 traits (19 positive and 19 negative) with their own and/or opposite gender. Female participants demonstrated both more positive *and* less negative auto-stereotypes of their own group, by ascribing more positive and less negative traits to girls than to boys. This study also indicated that ingroup identity influenced performance: Children who demonstrated high levels of ingroup identity also perceived their group to be more positive *and* fewer negative than the outgroup, whereas children with low identity levels showed equally positive and negative perceptions of both in- and out-groups.

The influence of identity offers a potential explanation for the divergent pattern of responses across the three studies (Gaertner & Mclaughlin, 1983; Susskind & Hodges, 2007; Zosuls et al., 2011) for ethnic and gender stereotypes. As this variable was not assessed in the studies by Gaertner and Mclaughlin (1983) or Zosul and colleagues (2011), however, it is not possible to determine whether participants' identity mediated the relationship. Both studies do indicate, however, that more positive/less negative perceptions can be dissociated. Recent studies (Abrams, Russell et al., 2011; Crisp & Nicel, 2004) suggest that a similar dissociation may apply to both young and old-old adults' stereotypes of ageing, and older adults' auto-stereotypes.

In the study by Crisp and Nicel (2004), for example, young participants were asked to associate a series of positive (e.g., 'loyal' and 'caring') and negative traits (e.g., 'selfish' and 'greedy') with older adults. Participants were then primed with stereotype disconfirming information (i.e., the prime 'elderly' was paired with positive traits), and were asked to complete a lexical decision task, before again associating the positive and negative traits with older adults. In line with expectations, and confirming the dissociation between more positive and less negative perceptions, following exposure to the primes young adults associated more positive traits with older adults than they had done prior to exposure, but also associated fewer negative traits.

Work by Abrams, Russell and colleagues (2011) also suggests a similar pattern may apply to older and old-old adults' auto-stereotypes and stereotypes of ageing. In this study, older and old-old adults rated their age-group both more positively (e.g., as more competent) *and* less negatively (e.g., viewed with less contempt) than ratings by young adults. It should be noted, however, that five possible comparisons could have resulted in more positive ratings of the ingroup by the older cohorts (i.e., ratings of older adults' friendliness, competence, moral standards, respect, and admiration, and the extent that older adults are viewed with envy), with an additional two relating to negative comparisons (i.e., ratings of contempt and pity). Although older participants displayed less negative ratings than their younger counterparts on both of the negative dimensions, only two of the five positive comparisons (competence and envy) revealed more positive ratings, with only small differences emerging between age-groups on the remaining evaluations. This finding reinforces the suggestion that older adults' auto-stereotypes are not uniformly positive (cf. Gluth et al., 2010).

The conceptual distinction between more positive versus less negative views of ageing appears to have been addressed in relatively few studies which may reflect a gap in our understanding of stereotype content. To examine the extent of this pattern, we conducted a citation search on the four central studies that support this distinction (Brewer, 1999; Crisp & Nicel, 2004; Gaertner & Mclaughlin, 1983; Susskind & Hodges, 2007)²⁷. This identified 585 studies, of which only three (0.51%) examined the difference between more positive/less negative perceptions of ageing from in- or outgroup members (Abrams, Russell et al., 2011; Crisp & Nicel, 2004; Reynolds et al., 2000). We conducted a further citation search, based on the 64 studies that had cited these three articles²⁸, but none of the additional studies differentiated between more positive/less negative stereotypes in relation to ageing.

In total, three studies were identified which differentiated between more positive versus less negative perceptions of ageing. Two of these studies (Abrams, Russell et al., 2011; Crisp & Nicel, 2004) were reviewed above. The third article comprised a series of three studies using young participants (University students), which demonstrated that the allocation of positive and negative traits to in/outgroup members depended on whether these traits were perceived as applying to the relevant group memberships (Reynolds et al., 2000). In line with expectations, when positive traits were stereotypically associated to the ingroup, and negative traits were associated with the outgroup, the standard IPB emerged (Tajfel & Turner, 1979, 1986). In contrast, when positive traits were associated with the outgroup, and negative traits with the ingroup, *outgroup* favouritism occurred (Reynolds et al., 2000). This differentiation occurred on ratings of other young adults (university students and apprentices), and for ratings of young and older adults.

Importantly, the three studies by Reynolds and colleagues (2000) provided empirical evidence that ingroup favouritism could be revealed through more positive *and* less negative ratings, and depended on the relevance of the traits to the groups under consideration, rather than to the valence of the traits *per se*. This finding suggests that the more positive/less negative divide should apply to older adults, although primarily on those traits that are relevant to participants' stereotypes or auto-stereotypes of this age-group. Considering the

²⁷ The study by Abrams and colleagues (2011a) could not be included in this search, as it was not contained in the Web of Science database.

²⁸ The abstracts from two additional papers (Wentura, Drager, & Brandtstadter, 1997; Rothermund, Wentura, & Brandtstadter, 1995) suggested that these studies had also made the more positive/less negative distinction, but were in German so could not be assessed.

mixed valence of age-related auto/stereotype content (e.g., Cuddy & Fiske, 2002; Kite et al., 2005), it is therefore surprising that only 3 studies (Abrams, Russell et al., 2011; Crisp & Nicel, 2004; Reynolds et al., 2000) have differentiated between more positive versus less negative stereotypes of ageing. A closer examination of this distinction should therefore expand our understanding of age-related stereotype content.

Furthermore, the citation search based on the key articles (Brewer, 1999; Crisp & Nicel, 2004; Gaertner & Mclaughlin, 1983) also demonstrated that the wider social identity tradition has often (but not always) overlooked the distinction between more positive versus less negative ingroup auto-stereotypes, as research has tended to focus on differences between in/outgroup perceptions (e.g., Cameron, Alvarez, Ruble, & Fuligni, 2001; Molero, Navas, Gonzalez, Aleman, & Cuadrado, 2003; Ruback, Kohli, & Pandey, 2009), rather than differences in valence of ingroup representation (but see Sacchi, Rusconi, Russo, Bettiga, & Cherubini, 2012; Sassenberg et al., 2003; Susskind & Hodges, 2007, for studies that do make this distinction). A closer examination of this issue could therefore develop our understanding of ingroup favouritism.

An additional consideration relating to the more positive/less negative distinction is that, as reviewed above, older adults' auto-stereotypes of old age were not uniformly more positive and/or less negative than young adults' corresponding stereotypes (Abrams, Russell et al., 2011; Gluth et al., 2010). In the study by Gluth and colleagues (2010), for example, young adults gave more positive ratings of older adults' autonomy than older adults themselves (Gluth et al., 2010). In contrast, in the work by Abrams and colleagues (2011), few differences emerged between young and older adults' assessments of the friendliness or respect that older adults display. When investigating the content of older adults' auto-stereotypes, we should therefore expect to obtain multi-valenced perceptions. Indeed, the literature abounds with examples of the mixed valence of older adult's self-stereotypes (e.g., Hummert et al., 1994; Levy & Leifheit-Limson, 2009).

The mixed content of older adults' age-related perceptions reinforces the argument that the valence of auto/stereotypes of ageing depends on the specific area under investigation (Kite et al., 2005). This relates to the importance of using free-response measures to assess stereotype content alongside specific questionnaire items (e.g., semantic differential scales; see Section 2.1.6; Devine & Baker, 1991; Lockenhoff et al., 2009), so as

not to limit explorations of stereotype content to the specific areas contained within such questionnaires. As emphasized by Devine and Baker (1991), free-response measures can often represent a more ecologically valid way of assessing stereotype content than reliance of specific (and therefore limited) questionnaires.

A major limitation of the previous work, however, is that no differentiation has been made between older and old-old adults (e.g., Brewer & Lui, 1984; Weiss & Lang, 2012). Old age is associated with many significant life transitions and changes, such as retirement (Reitzes & Mutran, 2006), bereavement (Townsend, Godfrey, & Denby, 2006), or declines in physical health (Freedman, 1998), which older adults must adapt and respond to. Such transitions could exert significant effects on older individuals' attitudes and perceptions of ageing. A study conducted in the USA, for example, compared older (65-79 years) and old-old adults' (aged 80 years and over) ability to complete four measures of cognitive and physical functioning (e.g., difficulty reading a newspaper or climbing a flight of stairs; Freedman, 1998). For each of the four outcome measures, significantly more old-old than older adults reported difficulty with the relevant task. As declining physical health has been associated with more negative stereotypes of ageing (Levy & Myers, 2004; Stewart et al., 2012)²⁹, this could result in old-old adults displaying more negative perceptions of later life than the views held by older adults.

Furthermore, previous research has indicated that the older a person is, the more they identify with younger age-groups (i.e., give subjective ages below their chronological age; Weiss & Lang, 2009; see Section 3.2.3), and report increased desires to be younger than their chronological age (Montepare & Lachman, 1989). Considering that individuals who display stronger levels of ingroup identity also demonstrate more positive auto-stereotypes of their group (e.g., Postmes et al., 1999), these findings would suggest that old-old adults may display less positive conceptions of later life than older adults, due to an increased dissociation (i.e., weak age-related identity) from their age-group. It should be noted, however, that both of these studies subsumed older and old-old adults within their oldest age category (Montepare & Lachman, 1989; Weiss & Lang, 2009), so it is possible that no differentiation exists between these two cohorts on these variables.

²⁹ *Note.* The causal direction of this relationship is not clear, as work by Levy and colleagues suggests that more negative perceptions of ageing result in more negative health outcomes (e.g., Levy et al., 1999-2000).

An additional limitation of the previous research, is that only three studies (Abrams, Russell et al., 2011; Crisp & Nicel, 2004; Reynold et al., 2000) have differentiated between more positive/less negative auto/stereotypes of old age. This is despite the evidence to suggest that ‘more positive’ and ‘less negative’ perceptions are conceptually distinct (e.g., Sassenberg et al., 2003). Further work would therefore benefit from a greater differentiation between the ages of participants previously included in the ‘older adult’ age category (e.g., Levy, 1996), and examining whether any differences arise in auto/stereotype content along the positive-negative dimension.

Section 3.2.3: Do differences emerge between age-groups over levels of age-group identity and discrimination in later life?

One of the key assumptions of the Social Identity Approach (SIA) is that individuals are motivated to maintain a positive ingroup identity (e.g., Tajfel & Turner, 1979; Turner, 1982) when group membership is important for our self-definition. As we saw in Section 2.1.6, however, older adults often report subjective ages significantly below their chronological age (Logan, Ward, & Spitze, 1992-1993; Westerhof et al., 2003; Westerhof & Barrett, 2005), suggesting that they distance themselves from their age-related identity. Such a dissociation from the ingroup represents a social creativity response to low ingroup status, as a mechanism to protect the self from negative evaluations (see Section 1.1.3). If older adults dissociate themselves from their age-group, why would they also display ingroup positivity bias (see Section 3.2.1) – an additional social creativity response to negative appraisals (see Section 1.1.3, or for a review, see Reicher et al., 2010)? Two possible explanations for this juxtaposition between IPB and group dissociation are offered by previous research by Weiss and Lang (2009, 2012).

In the first study (Weiss and Lang, 2009), contextual influences on identification were investigated, by manipulating which of two age identities were salient for older adults: membership of the generic ‘older’ age-group (which focused on chronological age and intergroup processes), or a generation membership (which focused on shared social experiences and beliefs, or intragroup processes). In line with expectations, when generational membership was salient, older participants (65 – 88 years) displayed strong age-group identification, whereas when age-group membership was salient, low levels of identification were displayed. In contrast, no significant differences were obtained between the two types of identification for young or middle-aged adults.

Weiss and Lang (2009) suggest that dis/identification with a dual age identity in later life is an adaptive response to contextual factors. When intergroup processes are salient (e.g., social interactions with a young adult), age-group membership may be threatening to older adults, due to negative societal stereotypes about ageing and age-related decline (Levy & Banaji, 2002). In these situations, dissociating the self from the negative ingroup identity may be an effective coping mechanism for older adults, allowing them to deny that negative age stereotypes are self-defining (Weiss and Lang, 2009).

In contrast, when attention is focused on intragroup processes, displaying a strong generational identity may promote self-esteem and well-being, through a sense of belonging and inclusiveness (Brewer, 1999). In intergroup or age-identity threatening situations (e.g., salient negative auto-stereotypes), we should therefore expect older adults to demonstrate lower levels of age-group identity than when in intragroup or non-threatening situations (e.g., socializing with peers). To test this hypothesis, Weiss and Lang (2012) manipulated the valence of age-related stereotype activation. Participants were asked to complete an ‘ageing quiz’, which activated either a positive, negative, or neutral auto-stereotype of ageing through a series of questions relating to gains/losses in later life (e.g., gains in wisdom versus health problems). Subjective health and identity were subsequently assessed.

In line with expectations, older participants in the negative stereotype condition reported lower levels of age-group identity, and higher SAB, than participants in the neutral or positive auto-stereotype conditions (Weiss & Lang, 2012, Study 2). Thus lower age-group identity can be influenced by contextual factors. This finding could also explain the discrepancy over degree of identification in previous studies (e.g., ACE, 2008, Garstka et al., 2004). In studies where low levels of identification were obtained, intergroup processes were salient (e.g., older adults comparing their memory performance to a younger confederate’s; Persson & Cassidy, 2006), which could have resulted in lower levels of ingroup identification. In contrast, Gartka and colleagues’ (2004) study focused on intragroup processes, and obtained high levels of ingroup identification by older adults. These studies suggest that whether older adults dissociate or identify with their age-group may therefore depend on the external context.

Work by Weiss and Lang (2012, Study 1) offers an alternative explanation for this juxtaposition. This study included participants from three age-groups (young, middle-aged

and older adults), and assessed participants' age-group identification and subjective age bias (SAB): the difference between subjective and chronological ages (Weiss & Lang, 2012, p.155). A significant and positive correlation was obtained between participants' age and SAB: the older an individual was, the greater the difference between chronological and subjective age (Weiss & Lang, 2012). Similarly, a significant and positive correlation was obtained between age-group identity and education level. Thus, this study indicates that specific demographic differences between samples may also contribute towards variations in level of identification. As education levels were not provided in Garstka and colleagues' (2004) study, however, it is difficult to determine whether this could have influenced these findings.

One further consideration centres on the relationship between SAB and identity. In Weiss and Lang's (2012) study, a negative correlation was obtained between the two variables: Those who reported low levels of age-group identity reported subjective ages further from their chronological age, and thus displayed a greater degree of dissociation from their age-group. As work within the SIA has demonstrated that individuals with a weak social identity show less ingroup positivity bias (e.g., Gallagher & Cairns, 2011), this may help to explain the contrasting findings between subjective age and age-related ingroup positivity bias evident in previous research (e.g., Celejewski & Dion, 1998; Gluth et al., 2010). In other words, it may simply be the case that individuals with high age-group identity show IPB, whereas those with low identity dissociate from their group.

One limitation of the studies investigating SAB (Weiss & Lang, 2009, 2012), however, is that the ages of the 'older adult' sample ranged from 65–88 years. Just as in earlier work (e.g., Hummert et al., 1994; Levy, 1996), these studies did not differentiate between older and old-old adults. As differences in subjective age bias emerged between young, middle-aged and older adults (Weiss & Lang, 2012), this lack of differentiation could obscure differences occurring between older and old-old adults.

The lack of differentiation between older and old-old adults (e.g., Brewer & Lui, 1984; Hummert et al., 1994) leaves an important question unanswered: Where do old-old adults (i.e., 75+ years) fit into the SIA and ICB theories? These theories suggest that ingroup members will show more positive and elaborate conceptions of their own groups than of outgroups (Linville, 1982; Tajfel & Turner, 1979, 1986), due to a motivation for positive self-concepts, and a greater understanding of what it means to be a member of a specific

ingroup. As old-old adults have previously belonged to the older adult age-group (i.e., aged 60-74 years), we might therefore expect this cohort to show more positive and elaborate auto-stereotypes than young adults' stereotypes of ageing. As old-old adults have previously belonged to this group, they should show a more elaborate understanding of what it means to be an 'older adult' than young adults (cf. Linville, 1982).

In Weiss and Lang's (2012) study, however, the older an individual was, the younger their reported subjective age, and the greater the dissociation they displayed from their own age-group. This would suggest that old-old adults also dissociate themselves from the older adult age-group, and so may not display representations that are any more complex than young adults. In contrast, work by Abrams, Russell and colleagues (2011) showed that the majority (four fifths) of participants aged over 75 years identified with the 'old' age category, in comparison with just over half (53%) of those aged 65-74 years. Just as the work relating to older adults' age-group identity shows contrasting findings, with some studies demonstrating high levels (e.g., Garstka et al., 2004), and others low (ACE, 2008; Demakakos et al., 2007), a consistent pattern of age-group identity in the old-old group does not appear to have emerged (Abrams, Russel et al., 2011; Weiss & Lang, 2012). It is therefore difficult to predict whether old-old adults show more elaborate conceptions of ageing than young adults.

Furthermore, as physical health and mobility have been shown to deteriorate rapidly after 75 years (Freedman, 1998), and ill-health is strongly associated with old-old adults perceptions of ageing (Stewart et al., 2012), it seems likely that negative aspects of ageing may be more salient for old-old adults than older-adults. This might lead us to expect that old-old adults would display more complex representations of later life than young adults, but more negative perceptions than older adults. This reinforces the importance of differentiating between the two older age-groups (Bytheway, 2005), rather than subsuming both within an 'older adult' category, to examine whether any differences over perceptions of ageing emerge between these cohorts. As far as we are aware, no study to date has investigated age-related identity and subjective age concurrently with the old-old age-group (Weiss & Lang, 2012)³⁰. Further research would therefore benefit from concurrent

³⁰ One study was identified that distinguished between older and old-old adults in an examination of subjective age identity (Hummert, Garstka, O'Brien, Greenwald, & Mellott, 2002). Unfortunately this study combined

investigation of these two aspects of age-group identity, whilst differentiated between these two age-groups.

As well as displaying positivity biases related to group memberships (Tajfel & Turner, 1979), participants have been shown to rate their own characteristics or abilities more positively than their peers' (e.g., Rutter, Quine, & Albery, 1998; Zell & Alicke, 2011). This has been referred to as the 'self-serving bias' (e.g., Lewicki, 1983), with a range of studies demonstrating that individuals consistently rate their own abilities or characteristics as being above average, and/or better than others' abilities (for a review, see Dunning, Heath, & Suls, 2004). Recent research investigating attributions of personality traits, for example, showed that participants were significantly more likely to rate themselves as having socially desirable traits (e.g., 'independent') than undesirable traits (e.g., 'dependent'), whereas no differences were obtained between socially un/desirable traits for generic others (Pedregon, Farley, Davis, Wood, & Clark, 2012).

This 'above average' effect even occurs when comparing the self to other ingroup members on attributes and behaviours (e.g., Hodson & Esses, 2002; Rutter et al., 1998)³¹. When making such comparisons, personal identities become more salient than group-based or social identities (for a review, see Reicher et al., 2010), and individuals are motivated to view the self as positively distinct from other group members, rather than making comparisons at the inter-group level (Postmes, Branscombe, Spears, & Young, 1999). Considering the 'better than average' effect (e.g., Pedregon et al., 2012), we might therefore expect individuals to show more positive expectations about their own than others' ageing.

Previous research with young participants supports this expectation, with young adults demonstrating a reliance on positive age stereotypes when describing an imagined future self (i.e., older self; Remedios, Chasteen, & Packer, 2010), and reporting more positive self-evaluations for their imagined future selves than for an unknown older target (Celejewski & Dion, 1998). As emphasized by Zell and Alicke (2011), however, few studies have examined the 'better than average' effect with older adults as the majority of studies

items relating to subjective age with a more general attitudes towards ageing scale (a semantic differential measure). This confound made it impossible to compare subjective age between older and old-old adults.

³¹ It should be noted that the study by Pedregon and colleagues (2012) demonstrated that participants displayed the better than average effect for both themselves and close others (i.e., friends and family).

have relied on university samples using young adults (e.g., Hodson & Esses, 2002; Pedregon et al., 2012; Remedios, Chasteen, & Packer, 2010).

An exception to this is a study by Heckhausen and Krueger (1993), which asked young, middle-aged and older (60-80 years) participants to rate a series of expected gains and losses in trait attributes (e.g., 'nervous', 'affectionate') with advancing age. Although all participants expected some age-related decline to occur (e.g., declines in positive attributes), they also displayed a self-serving bias. Participants from all age-groups expected more gains in desirable attributes (e.g., 'affectionate'), and fewer losses on undesirable attributes (e.g., 'irresponsible') for the self than for others. Importantly, this study demonstrates that the more positive/less negative distinction from intra- and intergroup contexts (e.g., Crisp & Nicel, 2004) also applied to ratings of the self (i.e., more gains *and* fewer losses; Heckhausen & Krueger, 1993).

Additional research suggests that key differences may occur across age-groups over the 'above average' effect, however, depending on the specific area of functioning that is under investigation (Zell & Alicke, 2011). Participants from three age-groups (young, middle-aged and older adults, aged 60–85 years old) were asked to ascribe a series of 12 personality traits (e.g., 'honest') to themselves, or to an average member of their age-group. In line with expectations, participants from each age-group displayed the 'above average' effect on the majority of their trait attributions, although this effect was more pronounced for young and middle-aged than for older adults. Whereas young and middle-aged adults displayed self-serving bias on 9 of the 12 traits, older adults displayed this pattern for seven.

In contrast to the results from the other age-groups, however, older adults displayed a *worse* than average effect on four traits. These were health, attractiveness, skill with technology and athleticism: traits that constitute aspects of negative auto-stereotypes of ageing (Cuddy & Fiske, 2002) and are associated with age-related decline (Kite et al., 2005). Zell and Alicke (2011) explain this finding in terms of the egocentrism account of the above average effect (see Kruger, 1999). This account suggests that the mechanism underlying the above average effect is that individuals overstate their own characteristics (i.e., their strengths and weaknesses), whilst simultaneously understating the strengths and weaknesses of others (see Hodson & Esses, 2011, for alternative explanations).

As older adults have personally experienced age-related decline on certain characteristics (e.g., health), they perceive these declines as personal weaknesses, and do not consider that other members of their age-group will have experienced similar declines (Zell & Alicke, 2011). This results in more negative comparative self-assessments for characteristics traditionally associated with age-related decline (e.g., memory performance), although the above average age effect still occurs for characteristics that are not perceived to change across the lifespan (e.g., honesty). Neither of the other age-groups reported a worse than average effect, however, suggesting that this process affects individuals of different ages in different ways.

As reviewed in Section 2.2.2, one specific example of the above average effect relates to discrimination: participants expect other members of their own group to experience more discrimination than they have personally experienced (the personal/group discrimination discrepancy effect (PGDD); Taylor et al., 1990). The findings from Study 1 replicated this pattern, as both young and older adults reported less personal experience with age discrimination than they expected for target others (see Chapter 2). Considering the findings from Zell and Alicke (2011), this may be indicative that older adults do not perceive discrimination as an experience that is particularly associated with advanced age.

It is interesting that participants from Study 1 displayed the PGDD effect, considering the low levels of identification demonstrated by both young and older adults in this study. This is especially true considering our failure to obtain an ingroup positivity effect for expected levels of discrimination experienced by ingroup and outgroup members (e.g., young adults did not perceive older adults to experience discrimination more frequently than their own age-group, as the IPB would predict). This finding provides additional support for the argument that older adults do not associate age discrimination as being primarily aimed at the old (as they did not rate other older adults as being more likely to experience age discrimination than young adults).

Although a number of studies have investigated participants' experiences of age discrimination across the lifespan in the UK (e.g., Abrams, Russell et al., 2011; Bowling, 2007; Harries et al., 2007; Van den Heuvel & Van Santvoort, 2011), one limitation of these studies is that work has not focused on differences in the *types* of discrimination that participants from different age-groups have experienced (see Section 2.2.3). This is despite

evidence suggesting that variation may exist between age-groups (e.g., Bowling, 2007; Fiske et al., 2001; Harries et al., 2007), and research indicating that employment-related age discrimination has more severe effects on older than on younger workers (Rabl, 2010). Although both Study 1 and the work by Abrams, Russell and colleagues (2011) indicated that young adults report greater experiences of (perceived) ageism than their older counterparts, work by Garstka and colleagues (2004) suggests that older adults may be particularly susceptible to the negative effects of age discrimination (e.g., increased stress; Scott et al., 2011), as they are not able to leave their low-status age-group (although see the work reviewed above on SAB and dissociation from age-related identity; Weis & Lang, 2009, 2012).

Although a positive sense of age-group identity has been shown to reduce the psychological harm caused by experiences of ageism (Garstka et al., 2004), the low levels of identity displayed by older adults in the UK (Abrams et al., 2011; Persson & Cassidy, 2006; Study 1) could leave the older population vulnerable to these negative effects. A more developed understanding of the *types* of discriminatory behaviour that older adults experience (rather than just the frequency of these occurrences) could enable us to identify more effective interventions to counter the negative effects of discrimination (see Section 2.6 for a wider discussion of this issue). Although Study 1 provided some preliminary evidence in relation to age-based differences in types of experienced discriminatory practices, as emphasized in Section 2.6.1 a replication of these findings in a more representative sample would develop our knowledge of this area.

Furthermore, as argued by Nelson (2002, 2005) age discrimination is currently a neglected area of research, at least in comparison to other forms of discrimination such as racism or sexism. In a literature search of the PsychINFO database, for example, Nelson (2005) identified 3,111 articles related to sexism, with just 394 related to ageism (simply using 'sexism' and 'ageism' as the search terms). Considering the impact that perceptions of discrimination have been shown to have on older adults' quality of life (Banas et al., 2007), this is one aspect of individuals' experiences of the ageing process that warrants further attention.

In summary, in this section we have seen that identifying with the older adult age-group can have positive psychological effects for older adults (e.g., promoting psychological

well-being, or feelings of inclusion; Brewer, 1999, 2007; Weiss & Lang, 2009). In situations where intergroup processes are in operation, or negative stereotypes of ageing are salient (e.g., Weiss & Lang, 2012), however, identifying with their age-group may have negative consequences for older adults (Weiss & Lang, 2009). In these situations, we can therefore expect older adults to dissociate from their age-group, and show low levels of identity (Abrams et al., 2011; Demakakos et al., 2007). Thus, age-group identification represents an adaptive process for older adults, which can help to attenuate the negative consequences of age discrimination (Garstka et al., 2004), but may depend on the external context (Weiss & Lang, 2012).

Section 3.2.4: Summary and hypotheses

In summary, previous research has indicated that older adults display more positive (e.g., Celejewski & Dion, 1998) and/or elaborate (Brewer & Lui, 1984) auto-stereotypes of ageing than do young adults, although some contrasting findings have also emerged (Gluth et al., 2010; Hummert et al., 1994). Furthermore, previous research has indicated that auto/stereotype content can be differentiated into more positive versus less negative representations (e.g., Crisp & Nicel, 2004), although few studies have examined this issue. Similarly, previous studies have not differentiated between older and old-old adults, meaning that our understanding of whether differences exist between age-groups over auto/stereotypes of ageing remains unclear.

Based on previous work and the findings from Study 1, we therefore hypothesized that auto/stereotypes of ageing within the UK would be complex, including descriptors from multiple domains (e.g., *physical appearance, personality traits*), and valences (e.g., *positive, negative*), but that older and old-old adults would display more complex auto-stereotypes than young participants. As previous research has not differentiated between the oldest two categories, we predicted that differences in complexity of representations would emerge between these participants' representations, but did not stipulate in which direction they would lie.

Similarly, based on the ingroup positivity bias (that we hold more positive stereotypes of our ingroups than outgroups; Turner et al., 1987), and work by Abrams and colleagues (2011), we also hypothesized that older and old-old adults would display more positive and less negative auto-stereotypes of the older age-group than young adults (Hummert et al.,

1994), although we also expected differences in perceptions to emerge between the older two age-groups (Bytheway, 2005).

Finally, considering the results from Study 1 in relation to age discrimination, and the hypotheses from self-serving bias (e.g., Dunning et al., 2004), we expected individuals to report fewer personal experiences of age discrimination than they expected for target others. It was hypothesized that young adults would report more experiences of discrimination than their older counterparts (cf. Abrams, Russell et al., 2011). In terms of identification with their respective age-groups, we hypothesized that the three age-groups would display significant differences over levels of ingroup identification. Specifically, based on previous findings, we predicted that a positive correlation would emerge between participant age and subjective age bias (cf. Weiss & Lang, 2012).

3.3. Method

3.3.1. Participants.

Participants for this study were recruited in two waves. Initially, 572 participants were recruited (238 men, 334 women; aged 16-91 years, $M = 57.87$), across five age-groups (young: 5 men, 9 women, 17-25 years; mid: 28 men, 65 women, 26-44 years; middle-aged: 62 men, 83 women, 45-59 years; older: 97 men, 118 women, 60-74 years; and old-old adults: 44 men, 24 women, 75-91 years)³², from Fife People's Panel (FPP), and participated on a voluntary basis. This panel is broadly representative of Fife's adult population, and was selected in an attempt to avoid the sampling bias from Study 1 (see Section 2.3.1), as its members include participants from a range of socioeconomic backgrounds, ages, and a broad geographic area, rather than being restricted to St Andrews (i.e., highly educated and affluent area; see Appendix VII). It should be noted, however, that younger age-groups are under-represented in FPP. National census data, for example, indicated that 7.1% of Fife's population was aged between 16-24 years in 2004, whereas only 2% of the panel's membership fell within this age-range (General Register Office for Scotland, 2001; see Appendix VII). This panel is used as a consultative body on a range of public issues (e.g., recycling) by Fife Council.

³² *Note.* The remaining participants ($n = 10$) did not indicate their gender.

An examination of the frequencies of participant ages indicated that only a small number of young adults ($n = 17$; 3.0% of sample) returned the questionnaire. A second wave of participants was therefore recruited, consisting of 36 young adults (5 men, 31 women, aged 17- 24 years, $M = 18.72$) from undergraduate psychology classes at St Andrews University, and received course credit on completion of the study. Planned comparisons were conducted, to examine whether there were any significant differences in the demographic composition between the samples from the two waves (e.g., in terms of education, age, and subjective age).

Analyses indicated significant differences between the chronological ($U = 114.00$, $n_1 = 16$, $n_2 = 36$, $p < .001$) and subjective ages of the samples ($U = 134.00$, $n_1 = 15$, $n_2 = 33$, $p = .011$) as those recruited in the first wave of testing were older ($M = 20.8$ years, $SD = 2.66$), and reported older subjective ages ($M = 22.8$ years, $SD = 5.16$) than those from the second wave (chronological $M = 18.7$ years, $SD = 1.21$; subjective $M = 19.3$ years, $SD = 2.86$). As both means fell well within the young adult age category (17-25 years), however, both samples were included in the subsequent analysis. No difference was obtained for years in education ($U = 261.50$, $n_1 = 15$, $n_2 = 35$, $p > .98$). This resulted in a total sample of 608 participants, of which 585 provided their ages (243 men, 335 women, $M = 55.5$ years).

3.3.2. Materials.

As this questionnaire was to be included as part of a wider, non-academic survey, we were required by Fife Council to use non-technical language, and were allotted a precise space allowance. The questionnaire was designed accordingly. Questions included in Study 2 (see Appendix VI) were identical to those used in Study 1 (e.g., stereotype content question used the same wording³³, asking participants to generate all of the traits that they associated with older adults, defined as those aged from 60-74 years old), with the following exceptions:

Experiences of the ageing process. Participants' own experiences of growing older were assessed through nine items. Two new questions asked participants to indicate 'what pleases (*worries*) you personally the most about growing older'? Each question was

³³ Stereotype-content question was worded: *How would you personally describe a typical older person (aged 60-75 years)? In the space below please write down all the things you typically think, hear or read about older adults. Include anything that is associated with older people, regardless of whether it is favourable or unfavourable.*

followed by asking participants to respond to the best/worst aspects of ageing items from Study 1, with two minor modifications (i.e., insertion of *more travel opportunities* and *fixed income*). This order was adopted in an attempt to reduce bias, and to assess participants' personal views of pleasing and worrying aspects of ageing. These questions also related to participants' auto/stereotypes of the ageing process. The remaining questions assessing experiences of growing older were identical to Study 1 (e.g., asking participants to give examples of ways in which people are treated unfairly due to their age).

Age-group identification. A modified version of Simon and colleagues' identity scale (Simon et al., 1998) was used to assess participants' age-group identity. This scale asked participants to indicate, on a scale from 1 (*not true*) to 5 (*very true*) their reaction to four statements (e.g., *I identify with my age-group*). A mean identity score was computed from the four responses, and high reliability was obtained for both the total sample ($\alpha = .91$), and for each age-group separately (e.g., young adults $\alpha = .84$). Finally, participants' subjective age bias was calculated, by subtracting participants' subjective ages from their chronological age (cf. Weiss & Lang, 2012). Higher values reflected younger felt ages.

Demographic information. Alongside questions assessing participants' chronological and subjective ages, two additional demographic variables were assessed. These were participants' gender, and current occupational status. Participants were asked to indicate whether they were employed, unemployed, or retired. Young adults who completed the online questionnaire were also given the opportunity to indicate whether they were students, employed full or part-time, and whether they were involved in any voluntary work. Due to space restrictions these additional choices were not included in the paper questionnaire.

3.3.3. Procedure.

Paper questionnaires were distributed to members of Fife People's Panel ($n = 1770$) alongside a wider survey investigating participants' attitude to recycling. Question order could not be counterbalanced across participants because only one version of the questionnaire was distributed by Fife Council. Self-addressed envelopes were provided for participants to return the questionnaires, and individuals were asked not to confer with other household members whilst completing the survey. Response rate was relatively low (32.3% of panel). Although this was disappointing, recent research indicates that the response rate of

a questionnaire may be unrelated to its quality, and/or how representational it is of the wider population (for a review, see Johnson & Wislar, 2012).

Our sample appeared to be broadly representative of Fife’s wider population, with 7.7% unemployed in our sample, versus 7.6% in Fife (GRO, 2001), for example, and a similar proportion of men (see Table 3.1). Our sample showed a significant response bias from older adults, however, (38.3% of returned questionnaires were from older adults, who constitute 13.9% of Fife’s population; Office for National Statistics, 2001), and an under-representation of younger age-groups (e.g., young adults constituted 2.6% of responses, yet comprise 10.8% of Fife’s population; Office for National Statistics, 2001). We attempted to (partially) rectify this issue by recruiting additional young adults (see Section 3.3.1), which raised the proportion of young participants to 8.7%. Similarly, although the proportion of men in the total sample (39.6%) was similar to the percentage from Fife’s population (44.4%), this masked variability within particular age-groups. This was particularly pronounced for young and old-old adults (see Table 3.1).

Table 3.1: *Demographic characteristics of Fife’s population, versus sample composition*

	Young (17 - 25)	Mid (26 - 44)	Middle-aged (45 -59)	Older (60 – 74)	Old-old (75 – 91)	<i>M</i>
Fife population (<i>n</i>)	37844	94274	69430	48623	26082	-
% Fife population	10.83	26.98	19.87	13.91	7.41	-
% sample	8.72	15.46	24.32	36.02	11.68	-
% men Fife	45.87	48.27	48.78	45.96	33.12	44.4
% men sample	19.20	29.80	41.90	45.00	62.00	39.6

3.3.4. Preliminary analysis.

Following guidelines by Tabachnick and Fidell (1996) concerning skewed data (i.e., data that deviate from a normal distribution), a square root transformation (adding a constant of plus one) was applied to all count data (e.g., number of generated positive traits), and variables that demonstrated a positive skew (i.e., score distributions clustered to the left of the histograms; Field, 2005). The results were subsequently examined for uni- and multi-

variate outliers (data points with unusual patterns of scores, but not necessarily the extreme scores of univariate outliers; Barnett & Lewis, 1994; Tabachnick & Fidell, 1996), using Mahalanobis distances (a measure of the distance between individual cases and the sample mean; Field, 2005). This analysis is recommended when researchers do not know if their data is contaminated (i.e., contain responses from different populations from the one under study; Zijlstra, Van der Ark, & Sijtsma, 2010), and resulted in the reclassification of data from three participants as missing (two older adults and one old-old adult). To examine demographic differences between included and excluded participants, a Mann-Whitney non-parametric test was conducted, due to unequal variances between samples. No significant differences emerged (all p levels > .09).

As previous research (Hummert et al., 1994) has highlighted that certain aspects of the ageing process can reduce older adults' completion of free-response measures (e.g., general slowing and reduced working memory capacity; Salthouse, 1985; Light, 1990), we classified participants' responses on the four free-response items (i.e., stereotype content, the most pleasing/worrying aspects of ageing, and examples of age discrimination) as either 'missing' or 'complete'. Pearson's chi-square analyses (statistic for determining whether there is a significant association between two categorical variables; Field, 2005) was subsequently conducted between age-group and the completion categorisation for each of the free response items.

Confirming that old-old adults were more likely to provide missing responses, significant differences emerged between young and old-old adults on the stereotype content ($X^2(1) = 18.83, p < .001$) and examples of age discrimination measures ($X^2(1) = 22.28, p < .001$; see Table 3.2). Based on the odds ratios, young adults were 7.85 times more likely to provide stereotype content responses than old-old adults, and 13.11 times more likely to provide age discrimination items. Similarly, a significant effect was obtained between older and old-old adults on these two items (both p values $\leq .002$), although the magnitudes of these effects were smaller (i.e., odds ratio demonstrated that older adults were 3.03 times more likely to provide responses to the stereotype content item, and 2.09 times more likely to respond to the age discrimination item than old-old adults).

Table 3.2: *Descriptive statistics for the number and percentage of missing responses by question type and participant age*

	Young adults		Older adults		Old-old adults	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Free-response question						
Stereotype generation	3	5.88a	29	13.68a	23	34.33b
Pleases	5	9.62	18	8.22	15	21.13
Worries	3	5.77	30	13.64	13	18.31
Discrimination examples	3	5.77a	59	27.44b	32	45.71bc

Note. Means with different subscripts (within columns and rows) are significantly different.
 ab: $p < .001$. bc: $p < .005$

The final difference was obtained between young and older adults on the discrimination item ($X^2(1) = 10.59, p < .001$), with young adults 5.86 times more likely to provide responses than older adults. Direct comparisons between age-groups over the number of items generated in response to the stereotype content and examples of age discrimination items may therefore be misleading, and must be interpreted with caution (with the exception of comparisons between young and older adults on the stereotype content measure). In contrast, examining the content of these responses, and the relevant proportions (e.g., number of positive versus number of negative descriptors produced on the stereotype-content measures) are more valid comparisons (Hummert et al., 1994).

Following these preliminary measures, a series of validity checks were conducted. Participants' chronological and felt ages were assessed through a 5 (participant age: young, mid, middle-aged, older, or old-old adult) x 2 (age: chronological and subjective) MANOVA. In line with expectations, main effects of participant age were obtained on both dependent variables (each p value $< .001$). After Bonferroni corrections, planned comparisons demonstrated significant differences between each age-group for both variables (all p values $< .001$). Older adults reported significantly younger subjective ages ($M = 51.96, SD = 12.04$), for example, than old-old adults ($M = 60.72, SD = 16.83; t(85.20) = 3.90, p < .001$).

The education level of each age-group was also compared, revealing high levels for the overall sample ($Median = 7$ years³⁴, range = 23 years). A Shapiro-Wilks test assessed

³⁴ Education was calculated from age 11 years, whereas the UK mean ($M = 9.4$ years) is from age 5 years (IHDI, 2012).

whether the sample was normally distributed, and was appropriate for samples smaller than 2000 (Field, 2005). The analysis indicated that the data were not normally distributed for older adults ($S-W(212) = .88, p < .001$). A Kruskal-Wallis test was therefore applied (the non-parametric equivalent of a one-way ANOVA, used when multiple groups are being tested; Field, 2005) and revealed a significant main effect of participant age ($X^2(4) = 26.82, p < .001$). After Bonferroni corrections, planned comparisons indicated that this difference was due to young adults having more years in education ($Median = 8$ years, range = 10 years) than older adults ($Median = 6$ years, range = 17 years; $U = 3860.50, n_1 = 50, n_2 = 212, p < .005$), in line with previous findings (e.g., De La Fuente, 2012). The remaining differences were insignificant (all p values $> .02$). Education was subsequently entered as a covariate in future tests, as a potential confound of any apparent differences between age-groups.

Three independent raters recoded the traits and characteristics generated in response to the stereotype content question (e.g., ‘some have money problems’) into short descriptors associated with ageing (e.g., *money-worries*). When items were judged similar by both raters (e.g., *afraid, frightened*), the descriptor with the highest frequency was chosen to represent the traits (e.g., *frightened*). Inter-rater reliability for this procedure was acceptable (84.1%). If raters disagreed on the descriptor, both suggested recordings were included. This produced a list of 611 items. Idiosyncratic responses were subsequently removed, resulting in a pool of 263 descriptors associated with old age (see Appendix VIII).

Finally, due to some concerns over our measure to assess stereotype content (see Section 3.5.1), an independent sample ($n = 16$) of young ($M = 20.50, SD = 2.45$) and older adults ($M = 67.31, SD = 5.22$)³⁵ were asked to rate each of the 100 most frequently generated stereotype and auto-stereotype terms on how characteristic they were perceived to be (in the participant’s own opinion) of older adults. The scale ranged from 1 (*not characteristic*) to 7 (*very characteristic*), and descriptors that scored above the cut-off point of 4.5 were perceived to be characteristic of the older age-group. This analysis indicated that only 62 of the 100 most frequent traits were perceived as characteristic of older adults (see Appendix X, and Section 3.5.1 for a discussion of the implications of this finding).

³⁵ The same inclusion criteria were applied as in Study 3 (e.g., British participants who had grown up in the UK).

3.4. Results

Although participants from the five age-groups (see Table 3.1) were included in this study, Field (2005) explicitly warns against conducting planned comparisons across all groups, to prevent inflation of Type 2 error. For this reason, planned comparisons were conducted only across the three groups of primary interest for this thesis (young, older, and old-old adults). Whilst employing this procedure, Bonferroni corrections were also applied to all results (unless stated otherwise), to minimize the chance of Type 1 error. If alternative corrections were applied (e.g., Games-Howell procedure), the reasons for these applications are explained below. Results of central importance to the thesis are presented in the main text, with additional findings (e.g., effects of covariates) presented in Appendix VIII.

Section 3.4.1. Stereotype content items: Do participants hold complex auto/stereotypes of old age?

Participants generated between 0 to 24 traits in association with older adults ($M_{\text{raw}} = 4.19$, $SD = 3.41$, $M_{\text{trans}} = 2.15$, $SD = 0.74$). In line with our hypothesis that participants would display complex auto/stereotypes of ageing, generated traits covered the seven domains identified in previous research (e.g., *emotions, physical disabilities*; Hummert et al., 1994; Schmidt & Boland, 1986; Study 1). An additional five domains also emerged, of hobbies and activities (e.g., ‘attends OAP clubs’), attitudes towards others (e.g., ‘disparaging of the young’), desires and fears (e.g., ‘wants respect’, ‘fear of crime’), lifestyle choices (e.g., ‘stays at home’), and attitudes of/treatment by others (e.g., ‘ignored’).

The number of generated stereotypical items was computed for each participant. To check the reliability of this process, an independent rater classified 20% of participants’ responses ($n = 125$), with high inter-rater reliability (98.4%). If participants generated two descriptors that had been judged to be semantic equivalents (e.g., ‘afraid, scared’) during the recoding process (see Section 3.2.4), this was classified as a single response. Participants who provided no responses (potential missing data) were scored as generating no descriptors (0) rather than being coded as ‘missing’, as this classification was reserved for participants who explicitly declined to provide a response (e.g., ‘no typical older person’)³⁶. The number

³⁶ The check the applicability of this procedure, responses were also recoded as ‘missing’, and the data was re-analysed. The pattern of results was similar for the three age-groups of interest, although the effect of age-group only approached significance ($p = .073$). Independent samples t -tests indicated the same pattern of results, however, as the difference between young and older adults was not significant ($p > .28$), whereas old-old adults still generated significantly fewer traits than either of the other groups (both p levels $< .01$).

of generated traits was subjected to an ANCOVA with participant age-group (young, mid, middle-aged, older, and old-old adults) entered as the between-subjects variable, and education and gender as covariates³⁷, with the data transformed to their square root values to normalize the distribution (see Section 3.2.4)³⁸.

A significant main effect was obtained for participant age ($F(4, 529) = 3.49, p < .01$). In contrast to expectations that older and old-old adults would display more complex representations of the older adult age-group than young adults, planned comparisons indicated that old-old adults generated significantly fewer descriptors than young ($t(115) = 4.80, p < .001$) and older adults ($t(277) = 4.18, p < .001$), with no significant difference between young and older adults (see Table 2.2). As outlined in section 3.3.4, however, due to old-old adults' tendency to provide missing responses, this finding must be treated with some caution.

Section 3.4.2: Do older and old-old adults show more positive and/or less negative auto-stereotypes of old age than young adults' stereotypes?

To examine valence differences over generated terms, each term was classified as being either positive or negative, with two independent raters each coding 20% of the terms³⁹ to determine reliability. Inter-rater reliability for this process was high (94.4%), with disagreements resolved through discussion. Following square root transformations (adding a constant of plus one), results were subjected to a 2 (trait valence: positive or negative) x 5 (age-group; young, mid, middle-aged, older, and old-old adults) MANCOVA, with gender and education entered as covariates. Significant main effects of participant age were obtained for the number of generated positive traits ($F(4, 529) = 2.54, p < .05$) and the number of generated negative traits ($F(4, 529) = 3.24, p = .012$).

In contrast to expectations, paired samples *t*-tests indicated that each age-group generated significantly more negative traits than positive (all *p* values < .005; e.g., for old-old

³⁷ Please see Appendix VIII for the results from the covariates.

³⁸ As the total number of generated traits is the sum of the positive and negative traits, according to statistical principles, an ANCOVA should not have been conducted on the total number (M. Oram, personal communication, January 2013), as these measures are not independent. We ran this analysis to facilitate comparison with previous findings (e.g., Hummert et al., 1994), however, as this study did not differentiate between positive and negative descriptors.

³⁹ Due to the large number of traits generated in Study 2 ($n = 263$), it was not feasible to use the more objective measure of asking an independent sample of participants to rate these terms, as had been employed in Study 1.

adults $t(65) = 3.14, p < .005$), and no significant difference emerged between young and older adults over the number of generated positive terms ($t(262) = 1.00, p > .46$). In support of our hypothesis that older adults would display less negative auto-stereotypes of their own group than young adults' stereotypes, independent samples t -tests indicated that older adults generated fewer negative terms than their younger counterparts ($t(262) = 2.34, p = .01$; see Table 3.3)⁴⁰.

Table 3.3: *Number of generated traits (raw and transformed scores) by participant age*

		Young adults $n = 51$	Older adults $n = 213$	Old-old adults $n = 66$
Generated traits (n)		$M (SD)$	$M (SD)$	$M (SD)$
Total	Raw	4.90 (2.93)	4.32 (3.45)	2.55 (2.80)
	Square root	2.35a (0.63)	2.18a (0.75)	1.75b (0.70)
Positive	Raw	1.49 (1.47)	1.58 (1.86)	0.71 (1.05)
	Square root	1.51c (0.46)	1.52a (0.53)	1.26b (0.36)
Negative	Raw	2.76 (2.04)	2.11 (1.92)	1.42 (1.72)
	Square root	1.87e (0.51)	1.68d (0.54)	1.47b (0.51)
Proportions	Positive	.29 (0.26)	.35 (0.30)	.32 (0.34)
	Arcsine transform	0.97 (0.77)	1.14 (0.91)	1.02 (1.02)
	Negative	.56 (0.21)	.52 (0.37)	.58 (0.34)
	Arcsine transform	1.74 (0.58)	1.61 (0.94)	1.83 (1.05)

Note. The total number of traits does not equal the sum of positive and negative traits as some terms were classified as neutral during the ratings task. Means with the following subscript combinations (within rows) are significantly different: bc; $p < .05$. be; $p = .01$. cd; $p < .005$. ab; $p < .001$.

In contrast to expectations that old-old adults would display more positive representations of later life than young adults, planned comparisons indicated that old-old adults generated fewer positive terms than young adults ($t(91.8) = 3.20, p < .005$), plus fewer positive traits than older adults ($t(160.18) = 4.54, p < .001$; see Table 3.3). As emphasized in Section 3.3.4, however, this finding must be interpreted with some caution due to old-old adults' reduced tendency to provide responses on this measure. In order to correct for this confound, the proportion of generated positive and negative traits was computed (cf. Study

⁴⁰ If planned comparisons were conducted across all five age-groups, following the Games-Howell procedure (see Field, 2005) this difference was no longer significant.

1). This analysis reduced the error in participants' scores by partially controlling for individual differences in vocabulary levels (see p. 62). Following an arcsine transformation (cf. Crawley, 2005), results were subjected to a 2 (trait valence: positive or negative) x 5 (age-group; young, mid, middle-aged, older, and old-old adults) MANCOVA, with gender and education entered as covariates. No effect of age was obtained for the number of generated positive traits ($F(4, 450) = 1.45, p > .22$). Although the effect for negative traits approached significance ($F(4, 450) = 1.45, p = .054$), no significant differences emerged between age-groups on the planned comparisons (all p values $> .09$).

The varying degrees of freedom between tests were reflective of different sample sizes (see Table 3.4), and unequal variances between groups on specific measures (e.g., young and old-old adults for number of generated positive traits). For instances where variances were unequal, statistics were controlled for using Levene's statistic. Non-parametric tests (i.e., Mann-Whitney's U test) were also conducted, to check the reliability of these findings, which revealed a similar pattern of results in all cases (e.g., for positive traits between young and old-old adults, ($U = 1163.50, n_1 = 51, n_2 = 66, p = .001$). Results from the independent samples t -tests were therefore reported, to facilitate comparisons with previous research.

To further explore whether older and old-old adults showed more positive and less negative auto-stereotypes of old age than young adults, analysis was conducted on the number of items generated representing the most pleasing and worrying aspects of ageing. Due to issues relating to old-old adults' generation of free-response measures (see Section 3.3.4), the proportion of pleasing versus worrying items was also calculated and subjected to an arcsine transformation. A 5 (age-group) x 3 (aspect: pleases, worries, proportion) MANCOVA was subsequently conducted, with education and gender entered as covariates. As shown in Table 3.4, a main effect of age was obtained on the number of items generated for the most worrying aspects of ageing ($F(4, 403) = 5.05, p < .001$), as well as an effect for the proportion of pleasing and worrying traits ($F(4, 403) = 3.94, p < .005$). The effect of age on the number of pleasing aspects of growing older was not significant ($F(4, 403) = 1.88, p > .11$), and neither covariate exerted an effect (all p values $> .13$).

In support of our hypothesis that older would show less negative auto-stereotypes of ageing than their younger counterparts, following Bonferroni corrections (p levels set at $<$

.006) planned comparisons indicated that young adults generated more items relating to worries about growing older than older adults ($t(59.49) = 3.77, p < .001$), although the results from the proportion of generated worried terms between these age-groups only approached significance ($t(69.6) = 2.03, p < .02$). Further support for our hypotheses was obtained through paired samples t -tests on the proportion of generated worrying aspects of ageing versus pleasing aspects, which indicated that whereas older adults generated a significantly lower proportion of worrying aspects of ageing than pleasing ($t(153) = 4.17, p < .001$), the difference in proportions was not significant for young or old-old adults (both p values $> .15$). The difference over proportion of pleasing versus worrying terms also supports our hypothesis that older adults would show more positive perceptions of their age-group than young adults.

Table 3.4 *Number of items generated for most pleasing/worrying aspects of ageing (raw and transformed scores) by participant age*

Generated items (n)		Young adults	Older adults	Old-old adults
		$M (SD)$	$M (SD)$	$M (SD)$
Pleases	Raw	2.57 (1.73)	2.14 (1.83)	1.57 (1.19)
	Square root	1.85a (0.41)	1.70a (0.48)	1.56b (0.37)
Worries	Raw	2.71 (1.84)	1.71 (1.09)	1.50 (0.94)
	Square root	1.87a (0.46)	1.61b (0.31)	1.55b (0.30)
Proportions	Pleases	.49 (0.16)	.55a (0.15)	.52 (0.15)
	Arcsine transform	1.56 (0.34)	1.68 (0.32)	1.62 (0.31)
	Worries	.51 (0.16)	.45 (0.15)	.48 (0.15)
	Arcsine transform	1.58 (0.34)	1.46b (0.32)	1.52 (0.31)

Note. Analysis was only conducted on the transformed scores, as t -tests are not appropriate for count data. Means with different subscripts (within columns and rows) are significantly different: ab; $p < .001$.

Additional support for this hypothesis was obtained on the analysis of the absolute values, as paired-samples t -tests indicated that older adults generated more items relating to the most pleasing aspects of ageing than worrying ($t(185) = 2.59, p = .005$), whereas this difference was not significant for young adults ($t(46) = 0.67, p > .50$). Older adults also showed a tendency to generate a greater proportion of pleasing traits than young adults ($t(198) = 2.12, p < .018$). It should be noted that young adults were the only age-group to generate a higher proportion of worrying aspects than pleasing (see Table 3.4), although this

difference was not significant. In contrast to expectations, however, no significant differences emerged between older and old-old adults over the number of generated pleasing or worrying terms, on either the absolute values or the proportions of generated items (all p levels $> .03$)

To further explore whether differences emerged over age-groups' positivity of representations of later life, a 5 (age-group) x 3 (aspect: best, worst, and proportions) MANCOVA was conducted on the number of selections for the best and worst aspects of growing older, and the proportion of best versus worst selections (following arcsine transformations), with education and gender entered as covariates⁴¹. As shown in Table 3.5, a main effect of age was obtained on the number of items selected for the best ($F(4, 507) = 17.49, p < .001$) and worst aspects of ageing ($F(4, 507) = 4.29, p < .005$), plus the proportion of selections ($F(4, 507) = 9.51, p < .001$). After Bonferroni corrections (p levels $< .006$) and in line with expectations, young adults chose significantly more items relating to the worst aspects of ageing than older and old-old adults (see Table 3.5), although the difference between young and old-old adults only approached significance ($t(121) = 1.92, p < .03$).

In terms of the proportional data and in line with expectations, young adults selected a greater proportion of worst aspects of ageing than older ($t(112.5) = 5.17, p < .001$) and old-old adults ($t(113) = 3.13, p = .001$). Similarly, paired-samples t -tests indicated that young adults selected significantly more items relating to the worst aspects of ageing than the best aspects, on both the transformed absolute scores ($t(51) = 4.79, p < .001$; see Table 3.5) and the relevant proportions ($t(49) = 4.35, p < .001$). In contrast, older adults showed the opposite pattern, choosing a higher proportion of best than worst selections ($t(201) = 2.82, p < .003$), with an insignificant trend for the same pattern on the absolute number of selections ($t(219) = 1.64, p = .052$). No significant differences emerged for old-old adults over the proportion of best versus worst selections ($t(64) = 0.44, p > .66$), or between older and old-old adults (both p levels $> .34$) on either of the measures.

⁴¹ NB as the data from the best versus worst selections were not based on free-response measures, it was not necessary to examine the proportional data, as these items should not have been overly influenced by the issues associated with the free-response measures. The proportional data was considered, however, as it adds to our understanding, and its inclusion helps to facilitate comparisons with the remaining positivity measures.

Table 3.5: *Number of selections for best/worst aspects of ageing (raw and transformed scores) by participant age*

		Young adults <i>n</i> = 52	Older adults <i>n</i> = 220	Old-old adults <i>n</i> = 71
Selections (<i>n</i>)		<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Best	Raw	3.35 (1.71)	3.70 (1.79)	3.59 (1.72)
	Square root	2.04a (0.43)	2.12 (0.45)	2.10 (0.44)
Worst	Raw	4.31 (1.95)	3.43 (1.71)	3.56 (1.39)
	Square root	2.26b (0.47)	2.06c (0.43)	2.11 (0.34)

Note. Means with different subscripts (within columns and rows) are significantly different: ab, bc; $p < .005$

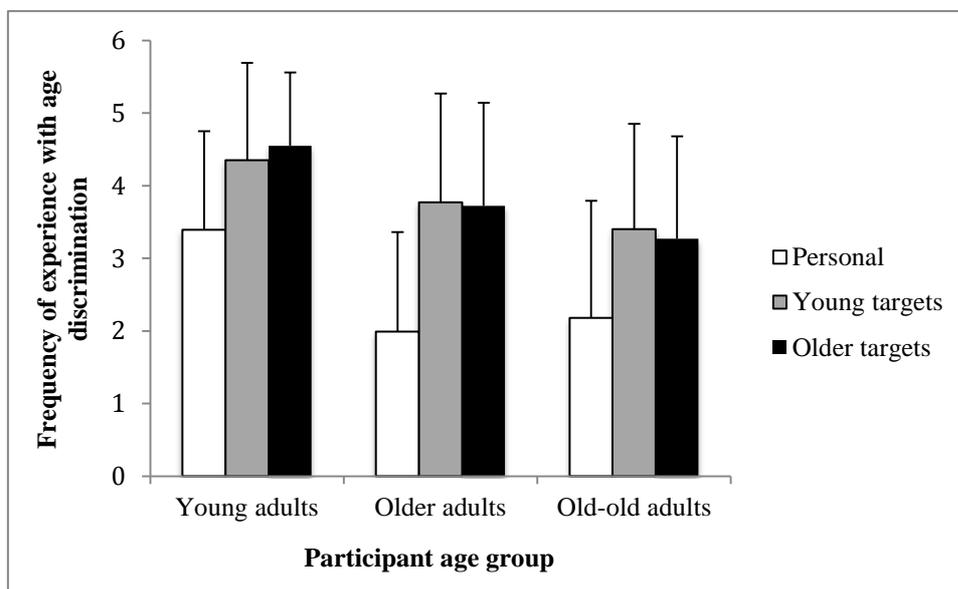
As level of ingroup identity has been shown to influence ingroup positivity ratings (Susskind & Hodges, 2007), we conducted Spearman's correlations between level of identity and the number of best selections for each age-group. In line with expectations, a significant and positive correlation was obtained for young ($\rho = .34, n = 51, p < .005$) and older adults ($\rho = .15, n = 583, p < .001$), although for older adults this correlation was relatively weak. The effect for old-old adults was not significant ($p > .08$).

Section 3.4.3.1: Did differences emerge between age-groups over experiences of age discrimination?

To explore the frequency with which participants had personally experienced age discrimination, a univariate ANCOVA was conducted with participant age as the between-subjects variable and education entered as the covariate. A main effect of age was obtained ($F(4, 546) = 11.28, p < .001$), although years of education did not exert a significant effect ($F(1, 546) = 1.10, p > .30$). In line with our hypothesis that young adults would report more experiences of age discrimination than their older counterparts, young adults reported more frequent experiences ($M_{\text{raw}} = 3.39, SD = 1.36, M_{\text{trans}} = 1.81, SD = 0.36$) than older ($M_{\text{raw}} = 1.99, SD = 1.37, M_{\text{trans}} = 1.34, SD = 0.43; t(265) = 7.18, p < .001$) and old-old adults ($M = 2.18, SD = 1.61, M_{\text{trans}} = 1.40, SD = 0.49; t(116.96) = 5.34, p < .001$), with no significant difference between the oldest two age-groups ($t(282) = 0.80, p > .23$; see Figure 3.1). As outlined in section 3.3.4, however, young adults were more likely than the other two groups to provide responses to this question, so the results should be treated with some caution.

To examine the proportion of the sample that had ever experienced age discrimination, the frequencies of each age-group scoring between 2 to 7 was assessed (i.e., excluding participants who reported 1; ‘never’). Providing additional support for our hypothesis that young adults would report higher frequencies of discrimination, almost twice as many young adults (98%) reported ever having experienced age discrimination than older (49.5%) and old-old adults (48.5%). A similar pattern was obtained for individuals who had frequently experienced discrimination (see Figure 3.2), although the percentages were greatly reduced.

Figure 3.1: *Experienced and expected levels of age discrimination by participant age-group.*

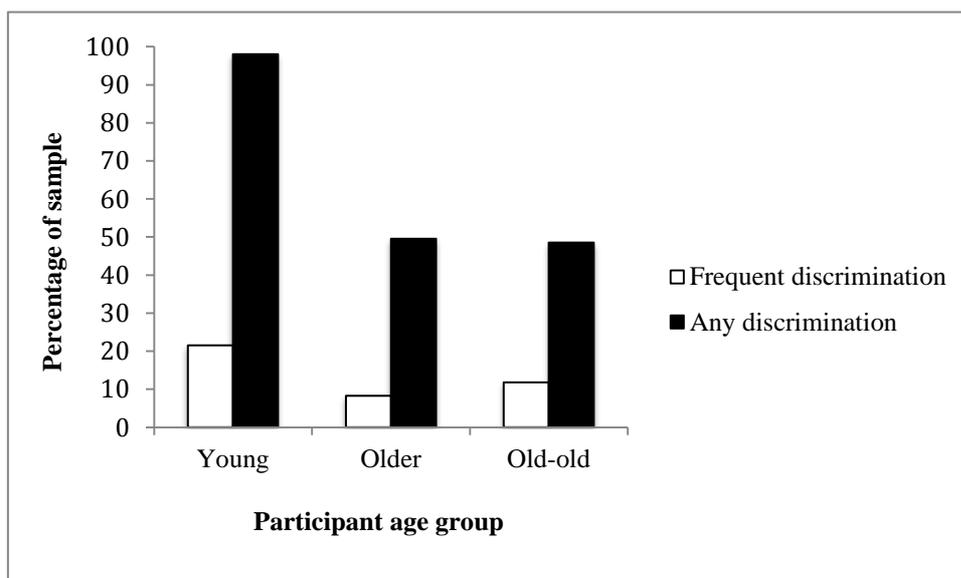


To explore participants’ experiences with age discrimination in relation to SIA’s self-serving bias (Tajfel & Turner, 1979, 1986) and the personal/group discrimination discrepancy effect, paired samples *t*-tests were conducted. These compared the frequency of personally experienced discrimination for young and older adults to expected levels for other members of participants’ own age-group. Such comparisons were not possible for old-old adults, as expected levels of experiences for those aged over 75 years had not been assessed. In line with expectations, young and older adults both reported lower personal experiences than they expected for other members of their age-group (young; $t(50) = 5.64, p < .001$, older; $t(208) = 13.09, p < .001$).

To explore generated examples of age-based discriminatory behaviour, a univariate ANCOVA was conducted on the number of items generated, with age-group entered as the

between subjects variable and education as the covariate. In line with the results from Study 1, a main effect of age was obtained ($F(4, 544) = 15.96, p < .001$), although the influence of education was not significant ($F(1, 544) = 0.48, p > .49$). As sample sizes were unequal, and variance between age-groups was heterogeneous, the Games-Howell procedure was employed as the most appropriate technique to compare differences in experiences of discrimination between age-groups (Hilton & Armstrong, 2006). In line with our hypothesis that young adults would report greater experiences of age discrimination than their older counterparts, young adults generated significantly more examples of discriminatory treatment than both of the older age-groups (see Table 3.8).

Figure 3.2: Percentage of participants who had experienced unfair treatment due to age (did not indicate 1 on a scale that ranged from 1: 'never' to 7: 'all the time'), or had frequently experienced unfair treatment (indicated scores of 5 to 7).



Again confirming the hypothesis that differences would also emerge between the two oldest age-groups, the analysis of the number of generated examples indicated that older adults produced more examples than old-old adults (see Table 3.6; all p levels $< .001$). As participants were asked to provide examples of ways in which people *could* be treated unfairly due to their age, rather than examples of discrimination that they had personally experienced, we cannot assume that generation of more examples related to greater personal experiences of discrimination. It seems plausible, however, that participants would be more likely to report examples of discrimination that they, or their close friends and family, had personally experienced. In support of this hypothesis, a significant and positive bivariate

correlation was obtained between frequency of personal experience with age discrimination and number of generated examples ($\rho = .38, n = 572, p < .001$).

Table 3.6: *Number of generated examples of age discriminatory behavior (raw and transformed scores) by participant age*

	Young adults <i>n</i> = 52	Older adults <i>n</i> = 211	Old-old adults <i>n</i> = 69
Generated examples (<i>n</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Raw	2.96 (1.81)	1.70 (1.68)	0.74 (1.11)
Square root	1.61a (0.60)	1.04b (0.79)	0.54c (0.67)

Note. Means with different subscripts (within rows) are significantly different:
ab, bc, ac; $p < .001$

To further explore any differences between age-groups, content analysis was conducted on the examples, confirming the seven themes identified in Study 1 (e.g., *employment*; ‘employment-wise for the aged’, *health*; ‘illness put down to old age’). An additional three age discrimination themes were also identified. These were use of complex technologies/paperwork (e.g., ‘the elderly are often not IT literate but everything... involves this technology’), lack of support/care (‘not enough voluntary sector provision’), and being treated with no patience (e.g., ‘younger drivers are less patient with older car divers’), with two distinct sub-themes emerging from the categories of being judged unfairly and having views discounted: Being stereotyped (e.g., ‘demonization of the young’) and being ignored or becoming invisible (e.g., ‘ignored because are “past-it”’). Examples relating to the three new themes (use of complex technology/paperwork, lack of support and treated with impatience) were exclusively related to older adults (see Table 3.7).

Suggesting a consistency of experience across the lifespan, groups generated examples relating to 8 of the 10 identified themes, with one (reliance on complex technology/paperwork) exclusively generated by older adults, and one (treated with impatience) generated by the two older cohorts. Similarly, examples related to being judged unfairly and work-related discrimination were generated with the most frequency by young and older adults, and were within the most four frequently themes for old-old adults (see Table 3.7), suggesting that these kinds of experiences were the most common across the lifespan.

In line with our hypothesis, however, differences did emerge between age-groups over the number of generated examples relating to each theme. Whereas almost 50% of all examples generated by young adults related to being judged unfairly, for example, only a fifth of older adults' examples related to this topic (see Table 3.7). Similarly, whereas health-related and financial discrimination constituted a quarter of examples generated by the two older age-groups (24.99%), only 6.87% of young adults' examples related to these themes. This provided preliminary support for the hypothesis that experiences of age discrimination would vary between groups.

It should be noted, however, that examples generated in relation to each theme did not exclusively apply to participants' own age-group. Young and older adults alike provided examples of discriminatory behaviour that applied to both age-groups. To examine the extent of this pattern, the number of examples generated relating to each age-group was calculated. As the data was skewed in different directions (i.e., negative skew for young adults, but a positive skew for old-old adults), a Kruskal-Wallis test was performed. This obtained a main effect of age for the number of examples relating to young ($X^2(2) = 102.75, p < .001$) and older adults ($X^2(2) = 24.74, p < .001$). Wilcoxon signed-rank tests obtained a significant difference for older adults ($z = 6.67, p < .001$), which generated more examples relating to young (*median* = 0, range = 0 - 2) than older adults (*median* = 1, range = 0 - 6). The difference young adults approached significance in the opposite direction ($z = 6.67, p = .03$)⁴², in line with SIA's ingroup positivity bias (Tajfel & Turner, 1979).

Section 3.4.3.2: Did differences emerge between age-groups over level of age-related ingroup identification?

To examine participants' identification with their age-groups, a 2 (identity measure: composite scale and subjective age bias) by 5 (participant age-group) MANCOVA was conducted, with gender entered as the covariate. In contrast with expectations that different levels of identification would emerge between different age-groups, no effect was obtained on the composite scale for level of age-group identification ($F(4, 520) = 1.13, p > .34$). Indeed, mean levels of identification were very similar across age-groups (see Table 3.8), with the differences across means ranging from 0.03 to 0.17 ($M = 0.11$). Scores were particularly close between older and old-old adults (see Table 3.8).

⁴² After Bonferroni corrections, significance level was set at $p < .017$.

Table 3.7: Age discrimination themes identified by each age-group, and number of generated examples

Discrimination theme	Young adults <i>n</i> = 52			Older adults <i>n</i> = 220			Old-old adults <i>n</i> = 71			Total examples by theme	
	% age- group	<i>n</i> examples	% examples	% age- group	<i>n</i> examples	% examples	% age- group	<i>n</i> examples	% examples	<i>n</i>	%
Judged unfairly/stereotyped	63.46	63	48.09	21.82	65	19.12	8.45	7	13.73	135	25.86
Employment	34.62	25	19.08	22.27	56	16.47	8.45	7	13.73	88	16.86
Financial	11.54	6	4.58	17.73	48	14.12	9.86	9	17.65	63	12.07
Views discounted and/or ignored	15.38	11	8.40	13.64	37	10.88	7.04	6	11.76	54	10.34
Disrespect from others	19.23	12	9.16	11.36	25	7.35	8.45	8	15.69	45	8.62
Health	5.77	3	2.29	13.64	35	10.29	5.63	4	7.84	42	8.05
Lack of assistance/care	5.77	5	3.82	9.55	27	7.94	1.41	1	1.96	33	6.32
Denied/lack of opportunities	7.69	6	4.58	7.27	20	5.88	2.82	3	5.88	29	5.56
Treated with impatience	-	-	-	7.73	19	5.59	8.45	6	11.76	25	4.79
Complex paperwork/technology	-	-	-	3.18	8	2.35	-	-	-	8	1.53
Total examples by age-group		131			340			51		522	

To further explore this pattern, one-sample *t*-tests were conducted across all age-groups, to determine whether levels of identification significantly differed from the midpoint of the scale (3), and from scores representing a positive identity rating (i.e., 4-5). Identity scores were significantly above the midpoint of the scale for young ($t(50) = 3.40, p < .001$) and older adults ($t(216) = 3.15, p = .001$), but were significantly below scores demonstrating positive ratings (4) of identity for all age-groups (all *p* values $< .001$; e.g., young adults; $t(50) = 5.37, p < .001$), indicating that levels of identification with their age-groups were relatively low.

Table 3.8: *Age group identification by participant age*

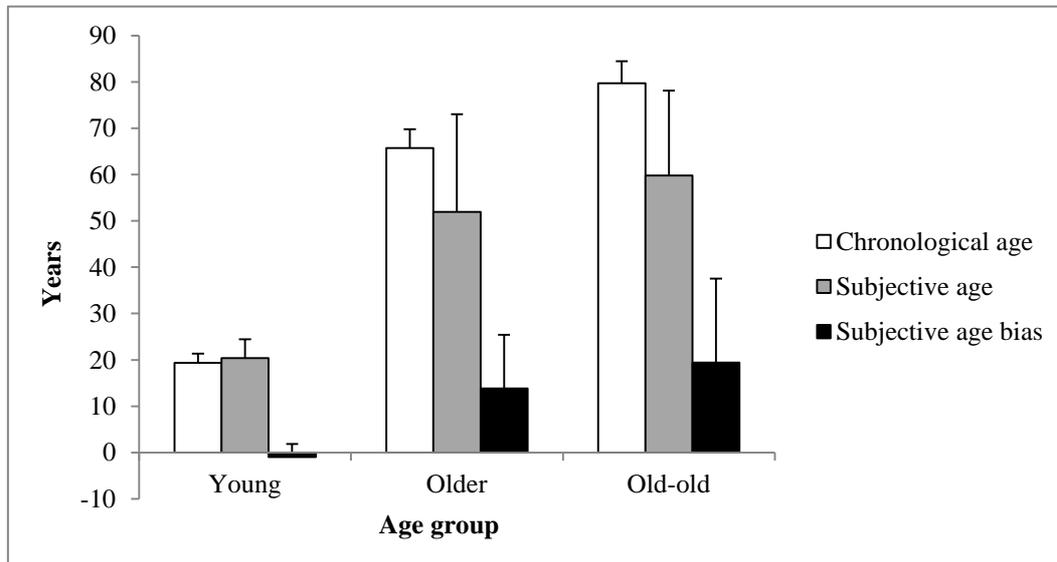
Identity scale	Young adults		Older adults		Old-old adults	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Composite score	3.39	(0.81)	3.25	(4.00)	3.24	(1.26)
Subjective age bias	-0.98	(2.83)	14.03	(11.37)	17.98	(15.34)

In line with expectations that older and old-old adults would show greater dissociation from their respective age-groups than young adults, a main effect of age emerged in relation to subjective age bias ($F(4, 520) = 28.95, p < .001$; see Figure 3.3), alongside a significant effect of gender ($F(4, 520) = 1.11.15, p = .001$). As variances were unequal between all groups, Mann-Whitney *U*-tests were subsequently performed, with the significance level set at $p < .017$ after Bonferroni corrections. Significant differences were obtained between young and older adults ($U = 846.50, n_1 = 48, n_2 = 210, p < .001$), young and old-old adults ($U = 177.0, n_1 = 48, n_2 = 66, p < .001$), and older and old-old adults ($U = 5731.50, n_1 = 210, n_2 = 66, p = .017$; see Table 3.8).

Following Weiss and Lang (2012), bivariate correlations were conducted to explore the relationship between chronological age and subjective age bias (SAB). These demonstrated a significant and positive correlation between the two variables ($\rho = .43, n = 585, p < .001$): The older the participant, the greater the difference between chronological and subjective ages. Bivariate correlations were also conducted between SAB and individuals' composite identity score within each age-group, revealing additional differences between groups. A significant and positive correlation was obtained for young adults ($\rho = .46, n = 48, p < .001$), indicating that those who identified most strongly with their age-group reported feeling older than their chronological age. It should be noted, however, that the

reported subjective ages for young adults ($M = 20.39, SD = 4.03$) still fell within the young adult age category. The positive correlation for young adults therefore suggests that those with the strongest age identity showed the lowest levels of age-group dissociation.

Figure 3.3: *Chronological and subjective ages, and subjective age bias by participant age*



In contrast, the correlation between SAB and age-group identity was not significant for older adults ($\rho = -.06, n = 207, p > .19$), although the negative correlation for old-old adults approached significance ($\rho = -.17, n = 66, p = .086$). This suggested that, for the oldest age-group, those with weak age-group identification showed the greatest dissociation from their group. To further explore this possibility, a tertiary split was performed on the data according to SAB score, followed by a Mann-Whitney U -test between low and high scorers. This revealed a significant main effect of SAB on age-group identification ($U = 155.50, n_1 = 21, n_2 = 22, p < .05$), confirming that less identification from one's age-group was associated with a greater discrepancy between chronological and suggested ages for old-old, but not older adults (but see McCallum et al., 2002, for a criticism of this approach)

3.5. Discussion

Section 3.5.1: Do participants hold complex auto/stereotypes of old age, and are older and old-old adults' auto/stereotypes more complex than young adults' stereotypes?

As expected, and in line with Study 1, young and older British participants in the current study demonstrated complex stereotypes/auto-stereotypes of ageing. Each of the seven domains identified from previous research with US samples (Hummert et al., 1994; Schmidt

& Boland, 1986) were replicated in the current study (e.g., *cognitive traits*; ‘memory loss’, *social characteristics*; ‘family-orientated’), plus an additional five domains (see Section 3.3.1). This reinforces arguments from previous studies that age-related stereotypes are multidimensional (e.g., Kite et al., 1991, 2005), and although such stereotypes tend to be negatively valenced (e.g., Levy, 1996; Schmidt & Boland, 1986), consist of both evaluatively positive and negative elements (Kite et al., 2005; Remedios et al., 2010).

As reviewed in Section 3.2.1, Linville’s (1982) ingroup complexity bias (ICB) suggests that ingroup members should hold more complex representations of their own groups than the stereotypes held by outgroup members. The current study provided little support for this theory, as young adults generated significantly more traits in association with older adults than either of the older two age-groups. This finding replicates results from previous studies, where young adults generated significantly more traits describing older adults than older adults themselves (Hummert et al., 1994; Kite et al., 1991): The opposite pattern from the results predicted by ICB.

As emphasized in Section 2.6, however, generating *more* traits is not necessarily reflective of holding more complex views, as participants may have varying levels of verbal intelligence. Thus, individuals with high vocabulary levels may generate more stereotype descriptors than an individual with lower vocabulary levels, but due to the use of synonyms, the number of underlying domains that the two participants generate may actually be the same. Linville (1982) argues that any true representation of complexity must take the number of generated traits *and* the redundancy of concepts into account.

In order to address the problem of redundancy, Linville (1982) and Locke (2002) suggest using Scott and colleagues’ (1979) *H* statistic to measure complexity. Calculation of this statistic involves the total number of generated traits, plus the use of a sorting task (cf. Coxon, 1999) to assess complexity. Considering the number of traits generated in the current study ($n = 611$), this procedure was not tenable for the current results. Future studies could employ sorting procedures, however, to provide more accurate indications of stereotype and auto-stereotype complexity.

An additional caveat when considering these results (as emphasized by Hummert and colleagues, 1994) is that older adults’ ability to complete free-response measures may be

limited by age-related restrictions, such as physical ill-health (Stewart et al., 2012) or cognitive slowing (Light, 1991). Neither the current study nor Hummert and colleagues' (1994) earlier work assessed either of these variables, however, making it impossible to determine whether they were influencing participants' responses on the stereotype generation measures. As reviewed in Section 3.3.4, older and old-old adults both generated fewer descriptors than young adults on two (stereotype content and age discrimination examples) of the four (i.e., the most pleasing/worrying aspects of ageing) free-response measures from the study, although this trend was more pronounced for old-old adults. In contrast, the proportion of missing responses on the closed-question items was similar across age-groups (ranging from 2.11% for young adults, to 5.21% for old-old adults). This implies that absolute differences between young and old-old adults on the stereotype-content items are more likely to be an artifact of measurement than a valid assessment of the complexity of each age-group's representation.

Two additional factors should also be considered when interpreting the results of the current study in terms of the ICB hypothesis. First of all, one factor that may have influenced young adults' increased trait generation is social desirability concerns. As generating few traits may have been indicative of prejudicial attitudes, young adults may have been motivated to produce more descriptors, to counter this potentially negative self-representation (for a review, see Greenwald & Banaji, 1995, or Hummert et al., 2002). As separating participants' attitudes and social desirability motivations in explicit measures is problematic (Greenwald & Banaji, 1995), it is difficult to determine whether the increased number of descriptors generated by young adults provides evidence countering Linville's ICB (1982), or whether additional confounding factors (e.g., old-old adults' physical restrictions, social desirability concerns) can explain the current pattern of results.

A second consideration concerns the wording of our measures to assess stereotype content. As discussed in Section 1.1.2, differences can be drawn between participants' auto-stereotypes (i.e., perceptions that individuals hold about their own ingroups) and *meta*-stereotypes (i.e., stereotypes which individuals believe out-group members hold about their ingroups; Vorauer et al., 1998). When designing Studies 1 and 2, it was felt that the measure used in previous research (see Section 2.3.2) to assess stereotype content confounded meta- and auto-stereotypes, as participants were asked to write down *'anything that is typically associated with the elderly, regardless of whether it is favourable or unfavourable or*

whether you personally believe it to be true' (see Section 3.3.2; Schmidt & Boland, 1986, p. 256).

In order to rectify this problem, two modifications were made to our content measure (see Appendix III and Section 3.3.2): We classified 'older adults' as those aged 60-75 years within the wording of the questions, to ensure that all participants were describing individuals from the same age category. The final line of instructions concerning personal belief or disbelief in the stereotype content was also removed, in an attempt to assess participants' own stereotype and auto-stereotype content (i.e., stereotypes that participants actually held, rather than socio-cultural representations of the age-group that they were aware of but did not endorse). This modification was primarily implemented in an attempt to measure older adults' auto-stereotypes of later life, rather than their meta-stereotypes.

One limitation of the current study, however, was that we did not assess the degree to which participants actually endorsed the stereotype content that they generated, which makes it difficult to differentiate between auto- and meta-stereotype content for our older participants. Indeed, the results of our ratings study (see Section 3.3.4) indicated that a third of the most frequently generated terms were not perceived to be characteristic of the older age-group. This trend is likely to be more pronounced for the terms that were generated less frequently.

Although our revised wording of the stereotype content question did represent an improvement on the measures used in previous studies (Hummert et al., 1994; Schmidt & Boland, 1986) it was still ambiguous, particularly as the instructions asked participants to include anything that they heard or read about older adults. This may have resulted in our participants including meta-stereotype content in their descriptions, regardless of whether they personally believed them or not. If participants from all three age-groups were reporting stereotypes from their shared cultural background, rather than personally endorsed views, this could explain the lack of difference in complexity between older and young adults' representations.

In summary, although the results from the current study did not support Linville's ICB (1982), a number of methodological issues may account for the failure to obtain the expected results. In particular, although free-response measures are an ecologically valid

method for assessing stereotype content (Devine & Baker, 1991), the confounding factors of lack of assessment of verbal fluency, social desirability concerns, and the wording of our stereotype content measure makes interpretation of our findings in relation to the ICB problematic (Linville, 1982). Future research should therefore utilize alternative methods to assess stereotype content in an elderly sample, which are not as heavily influenced by these confounding factors, and reword the content generation measure to remove the likelihood of older adults reporting meta-stereotypes alongside auto-stereotypes. To truly assess age-related differences in stereotype content, additional studies should try to ensure that participants from all age-groups generate stereotype and auto-stereotype descriptors that they personally endorse.

Section 3.5.2: Do older and old-old adults show less negative and/or more positive auto-stereotypes of old age than young adults' stereotypes?

In this section, we will first address the issue of the positivity of older adults' auto-stereotypes of ageing in comparison to young adults' stereotypes, before moving on to address old-old adults' perceptions of ageing. In line with predictions and the ingroup positivity bias (IPB) from the Social Identity Approach (SIA; Tajfel & Turner, 1979, 1986), older adults showed less negative auto-stereotypes of ageing than young adults' stereotypes of old age. From six possible comparisons of the absolute number of generated or selected items demonstrating less negative views of ageing (e.g., selecting less aspects relating to the worst aspects of ageing), significant differences were obtained between young and older adults on four items (e.g., generating fewer items relating to the most worrying aspects of ageing), demonstrating less negative views by older participants.

As outlined in Sections 2.6 and 3.5.1, however, differences in participants' vocabulary levels may exert significant effects on the number of generated terms. To address this issue, proportional data were considered, in order to reduce (although not eliminate) inter-individual error between participants. A similar pattern of results emerged from this analysis as per the absolute values, as older adults demonstrated less negative perceptions of ageing than young adults on three of the six possible comparisons (e.g., selected a lower proportion of worst aspects of ageing than young adults), with an additional comparison approaching significance (i.e., generating a lower proportion of worries about aging than young adults).

Furthermore, considering the confounding issue of the wording of our auto-stereotype content measure outlined above (i.e., assessing auto- versus meta-stereotype content), an argument could be made for excluding the generation of auto/meta-stereotypical terms from the positivity analysis. In this case, older adults showed less negative perceptions of ageing than their younger counterparts on three of the four absolute negativity measures (i.e., young adults generated more worries about ageing and selected more worst aspects of ageing than older adults, and chose more worst selections than best, whereas older adults showed a trend in the opposite direction), and three of the four proportional items. Thus, older adults in the current study did demonstrate less negative perceptions of ageing than their younger counterparts, which confirms and extends the results from previous studies (e.g., Abrams, Russell et al., 2011; Hummert et al., 1994).

In contrast, although partial support was obtained for our hypothesis that older adults would show more positive auto-stereotypes of ageing than their younger counterparts, this pattern was not as consistent as the less negative perceptions. From eight possible comparisons (including the proportional data but excluding the auto/meta-stereotype content measures) demonstrating more positive perceptions of ageing by older than by young adults, three significant effects emerged (e.g., older adults generated a higher proportion of pleasing aspects of ageing than worrying, whereas young adults showed the opposite pattern), with an additional two approaching significance (e.g., older adults selected more items relating to the best aspects of ageing than young adults). Although the current study did demonstrate some support for the increased positivity of older adults' perceptions of ageing in comparison to young adults, the results were not as consistent as for the less negative representations. The current literature would benefit from a closer examination of the differences that may underlie less negative representation of one's ingroup, versus more positive representations.

Overall, the IPB (Tajfel & Turner, 1979, 1986) therefore received partial support in the current study. Although older adults' responses on the majority (75%) of negatively valenced auto-stereotype ratings were less negative than young adults' perceptions, only a minority (37.5%) of older participants' ratings were more positive. It is also worth considering that Mummendey and colleagues (1998, 2003) argue that ingroup favouritism can be achieved by either more positive *or* less negative group-based perceptions. In this respect, the direction of this difference is irrelevant in relation to an ingroup's positive distinctiveness, meaning that the current study showed strong support for the IPB.

It should also be noted that, if trends are included in the above analysis, the proportion of less negative perceptions by older adults increases to 87.5% of the possible comparisons, and 62.5% of the more positive aspects. Furthermore, no ratings by young adults were significantly more positive than older adults' responses. This finding is similar to the pattern of results reported by Abrams, Russell and colleagues' (2011), where older adults demonstrated less negative responses than did young adults on both of the (2) negatively valenced auto-stereotypical ratings, but more positive responses on 2 out of 5 (40%) of the positively valenced items.

In addition, as reviewed in Section 3.1.2, two studies by Weis and Lang (2009, 2012) demonstrated that, in threatening situations (e.g., when intergroup comparisons or negative age-related stereotypes are salient), older adults show greater dissociation from their group, and lower levels of ingroup identity. As the SIA proposes that participants are motivated to maintain positive ingroup identities when these identities are self-defining (i.e., when membership in a particular group is a key aspect of an individual's self-concept; Tajfel & Turner, 1986), the intergroup context of Study 2 may have led older participants to distance themselves from self-definitions based on age, thus resulting in a lower motivation to maintain a positive age-related identity. In line with this suggestion, participants in the current study showed low levels of ingroup identity and large subjective age biases (i.e., they dissociated from their age-group; Westerhof & Barrett, 2005), which may help to explain the less consistent results in terms of displayed positivity.

This argument does not account for the reduced negativity in older adults' auto-stereotypes, however. If participants were not motivated to maintain more positive representations of their group (due to low levels of identity), why would they be motivated to display less negative auto-stereotypes? One potential explanation for this finding relates to the negativity effect (Kanouse & Hanson, 1971); that is, that evaluatively negative information has a stronger impact on individuals than positive information (Peeters & Czapinski, 1990, p. 33). This effect has consistently been demonstrated in relation to person perception and impression-formation tasks (e.g., Kanouse & Hanson, 1971; Kervyn & Dolderer, 2009). If negative information has greater impact on evaluations of others, it is therefore logical that even weakly identified group members would be motivated to protect their own self-concepts by denying negative stereotypes of their group (see Chapter 5 for a further discussion of this issue, or Burkley & Blanton, 2009).

It is worth noting that older participants (aged 50-74 years) in Abrams and colleagues' (2011) study also demonstrated low levels of identity, and a similar pattern of less negative but not more positive auto-stereotypes of old age (although identity was only assessed through one item in this study and may therefore be unreliable; Diamantopoulos, et al., 2012)⁴³. The specific pattern of results (less negative, but not more positive auto-stereotypes) in Study 2 and the study by Abrams and colleagues (2011) may therefore be reflective of participants with weak age-group identities. In line with previous research with gender stereotypes (Susskind & Hodges, 2007), we would therefore expect older adults with high levels of ingroup identity (or in a situation which focuses on intra-, instead of inter-group processes) to show both less negative *and* more positive auto-stereotypes of ageing. In line with this suggestion, a positive correlation was obtained between level of identity and the number of best aspects of ageing selections for young⁴⁴ and older adults, although this pattern was insignificant for the old-old age-group.

One additional caveat should also be considered in relation the more positive versus less negative distinction outlined above: Although issues relating to the wording of the auto-versus meta-stereotype content measure have already been discussed (see Section 3.5.1), an additional difference is evident between this measure and the other two questions that address positivity of (auto/meta)-stereotype content (i.e., the generation of pleases and worrying aspects of ageing, and the selection of aspects representing the best and worst aspects). Due to the ambiguous wording of the (auto/meta)-stereotype question, this measure simultaneously assesses participants' own auto-stereotypes and stereotypes of older adults, and the way that older adults are viewed from a wider perspective (i.e., socio-cultural perspectives on older adults, that are influenced by the media and participants' cultural backgrounds; e.g., Donlon et al., 2005; Ellis & Morrison, 2005). In contrast, the latter questions assess participants' actual *experiences* of the ageing process, rather than the way that older adults are viewed. Although both types of measure feed into participants' (auto/meta)-stereotypes of ageing (see Stewart et al., 2011), different processes and issues may underlie these aspects of representation.

⁴³ Note: a greater proportion (80.1%) of old-old adults identified as 'old' in this study, in comparison to just 35.2% of those aged from 50 – 74 years.

⁴⁴ This finding corresponds with previous research, which has demonstrated that young adults with high levels of ingroup identification also show more positive expectations about their own ageing (Lineweaver et al., 2009). Although this is an interesting finding, considering the wealth of data generated in Study 2, we have focused on issues relating to older and old-old adults.

A recent study (Weiss and Lang, 2009), for example, asked participants to compare themselves to others from either their generation or their chronological age-group (see Section 3.2.3). The authors argued that whereas the first placed an emphasis on shared experiences of the ageing process (e.g., experience of World War II) that promoted a sense of belongingness to the group, the second focused more on stereotypes about the age-group (e.g., ill-health) that concentrated on the way that the age-group was viewed, rather than shared experiences. Results supported this argument, as promoting comparisons with participants' generation produced higher levels of age-group identification than focusing on chronological age-group membership. Although the current analysis has therefore dealt with perceptions of ageing and perceptions as older adults as related concepts, we do acknowledge that different processes and issues may underlie these aspects of age-related stereotypes and auto-stereotypes. Further studies should therefore try to differentiate between these processes, to explore the similarities and differences that underlie perceptions of ageing versus perceptions of older adults in greater detail.

Although results comparing young adults' stereotypes of old age to older adults' auto-stereotypes do demonstrate an IPB effect for older adults, the findings from old-old adults were less conclusive. On both of the free-response measures that assessed stereotype content (i.e., number of generated positive and negative stereotypical traits, and items relating to the most pleasing and worrying aspects of ageing), old-old adults generated significantly fewer traits than young adults, regardless of item valence (e.g., old-old adults generated both fewer positive *and* negative stereotypical traits). These effects disappeared, however, when proportions were considered, with no significant differences emerging between the two age-groups. This suggests that these findings may be an artefact of measurement, possibly caused by old-old adults' physical limitations (see above; Hummert et al., 1994; Stewart et al., 2012)⁴⁵, rather than genuinely reflecting different levels of positivity related to stereotypes of old age.

⁴⁵ This potential explanation does not assume that *all* old-old adults will be restricted by physical limitations. Indeed, research suggests that old-old adults' subjective ratings of health are equal to those of younger ages (e.g., Townsend et al., 2006). Our preliminary analyses did indicate that young adults were over 7 times more likely to provide responses on the stereotype generation task than old-old adults, however, and physical limitations does represent a *possible* explanation for this occurrence although other explanations (e.g., young adults are more familiar with psychological testing and are therefore more willing to take part) may be more applicable.

Old-old adults' performance on the closed-question items (number of selections for the best and worst aspects of ageing) relating to stereotype content provide some, albeit limited, support for our hypothesis that old-old adults would show more positive perceptions of ageing than young adults, as responses were more consistent in relation to valence: Old-old participants selected a significantly greater proportion of the best aspects of ageing, and a significantly lower proportion of worst selections than young adults. Thus, this provides some preliminary evidence that old-old adults *may* show more positive and less negative stereotypes of ageing than young adults. As outlined in Section 3.2.2, although old-old adults represent an age-related outgroup in the current study (i.e., do not fall within the ingroup age-range of 60-75 years), their greater experience of the ageing process may have given them a more elaborate understanding of the positive aspects of ageing. It should be emphasized, however, that this suggestion is based on the results from two single-item questions, which were not supported by the free-response measures. Further work is therefore required before any conclusions can be drawn, and this finding must be treated with extreme caution.

Similarly, the methodological limitations of the current study (i.e., reliance on free-response questions) makes comparisons between older and old-old adults responses problematic. As indicated by our preliminary analyses (see Section 3.3.4), older adults were more likely to provide answers to the stereotype content item than old-old adults. When coupled with the ambiguous wording of the question, this makes comparisons between the two older cohorts on this item difficult. On the remaining eight items (number of selections for best and worst aspects of ageing, number of items generated relating to the most pleasing and worrying aspects, and the relevant proportional data), only 1 out of 8 possible significant differences emerged between the two older groups: Older adults generated more items relating to the most pleasing aspects of ageing than old-old adults (but similar numbers of items relating to the most worrying aspects).

In addition, whereas older adults generated a greater proportion of pleasing aspects of ageing than worrying, and chose a greater proportion of best aspects of ageing than worst (thus displaying positive ingroup auto-stereotypes), no significant differences emerged over the relevant proportions for old-old adults. These findings may suggest that old-old adults' perceptions of ageing are be less positive than older adults' views (in line with IPB (Tajfel & Turner, 1986), as old-old adults represent an age-related outgroup), but are far from

conclusive. As emphasized by Field (2005), for example, a lack of significant effect does not indicate that the null hypothesis is correct, merely that we cannot reject it. We therefore cannot be confident about the positivity of old-old adults' perceptions. Thus, further work is required investigating the content of old-old adults' stereotypes of older adults, before differences in perceptions between these two older cohorts can be confirmed.

In summary, the findings from Study 2 did support our hypothesis that older adults would show less negative auto-stereotypes of ageing than the age-related stereotypes held by young adults. Partial support was also obtained for the hypothesis that older adults would also show more positive auto-stereotypes than young adults' perceptions, but these findings were not as consistent. Preliminary evidence was promising, however, and did suggest that the more positive/less negative distinction in age-related stereotype content is an important one, despite being neglected in the relevant literature (e.g., Kite et al., 1991; Levy & Myers, 2004; Schmidt & Boland, but see Abrams, Russell et al., 2011; Zell & Alicke, 2011).

Section 3.5.3.1: Did differences emerge between age-groups over experiences of discrimination?

In line with expectations, our results demonstrated a self-serving bias (Lewicki, 1983) in relation to young and older adults' experiences of age-discrimination. As hypothesized, participants from both age-groups expected other members of their age-groups to experience more frequent age discrimination than they reported for themselves, in line with the PGDD (personal/group discrimination discrepancy effect; Taylor et al., 1990). Although this may appear to be in opposition to SIA's ingroup positivity bias (Tajfel & Turner 1979), this finding can be accounted for by the salience of a personal rather than social identity when responding to this item.

Indeed, denying personal experiences of age discrimination may be a self-protective mechanism, reflecting a motivation to distance the self from negative aspects of group membership (Hodson & Esses, 2002), or a way to positively distinguish the self from other group members (Brewer, 1999, 2007). The PGDD effect may be a particularly important defensive mechanism for older adults, considering the low levels of age-group identification (a protective factor against negative consequences of discrimination; Garstka et al., 2004)

often displayed by this group (ACE, 2008; Demakakos et al., 2007; Weiss & Lang, 2012)⁴⁶. Considering the range of negative consequences of age discrimination for the elderly, including inappropriate medical treatment and reduced well-being (e.g., Blanas et al., 2007; Harries et al., 2006), an examination of self-protective factors for older adults warrants further attention. This finding does support previous research, suggesting that older adults display the ‘above average’ effect in relation to age discrimination (Zell & Alicke, 2011) in a similar manner to other stigmatized groups (Taylor et al., 1990).

In line with predictions, young adults also generated significantly more examples of age discrimination than the older two age-groups, with older adults generating more examples than old-old adults. Interestingly, almost half of all examples generated by young adults related to being judged unfairly or stereotyped. Further research could therefore explore the stereotypes that other age-groups hold about young adults (cf. Matheson et al., 2000), to identify whether stereotypes about young people underlie their experiences of ageist behaviour. This could be an interesting area for further research.

Importantly, considering the levels of ingroup dissociation displayed by the older age-group (see Section 3.5.2.2), older adults generated more examples of discriminatory behaviour relating to young adults (i.e., their age-group outgroup), with a trend for young adults to show the opposite pattern. This is in line with the IPB (Tajfel & Turner, 1979), as both groups perceived their outgroup to experience more discriminatory behaviour than their ingroup. Considering the findings relating to PGDD, this suggests that individuals doubly dissociated from experiences of discrimination, distancing both the self from the ingroup’s experience, and the ingroup from the outgroup. Thus two sets of related protective strategies were employed, by comparing the self favourably both on an intragroup and intergroup level.

As emphasized by Abrams (2010), however, individuals may be motivated to deny experiences of discrimination (e.g., Hodson & Esses, 2002), and a lack of *perception* of age discriminatory practices does not equate to a *lack* of discriminatory practices (Abrams, 2010). Although a comparison of the number of examples of discriminatory behaviour was limited by the low response rate of old-old adults¹², an examination of the *proportion* of examples generated in relation to each theme, rather than the absolute number (or the

⁴⁶ Note: this strategy is likely to be less important for young adults, who can anticipate leaving their stigmatized young age-group, by moving into the higher status, middle-aged category as they age (Garstka et al., 2004).

percentage of the old-old sample generating themed items), should give an indication of the different frequencies of discriminatory practice experienced by each group.

In contrast with expectations that differences would emerge in participants' experiences of age discrimination, broad similarities occurred across all groups. Most notably, and in line with Study 1, participants' experiences appeared to fall within the same broad themes, suggesting a shared understanding of age discrimination across the lifespan. Examples relating to being judged unfairly and work-based discrimination were within the four most frequently generated themes for all age-groups (see Table 3.7), for example, and constituted almost half (42.72%) of all examples across the sample. This finding has important repercussions for interventions aimed at reducing ageist practices (for a review, see Braithwaite, 2002), as specific interventions directed at these areas should be optimally effective in reducing discriminatory behaviour.

As emphasized by Abrams and colleagues (2011b), as well as causing significant psychological and physical distress for individuals themselves (e.g., Scott et al., 2011), age-related discriminatory practices can have negative impacts on society as a whole, in terms of lost productivity and/or expertise from older workers (European Older People's Platform, 2007). Addressing the negative effects of age discrimination, and attempting to reduce ageism through challenging the negative stereotypes that abound about older adults (Braithwaite, 2002), should therefore be a priority in future research.

Interestingly, differences over types of ageist behaviour experienced emerged between the older two age-groups. The proportion of examples related to being treated with impatience and disrespect from others was over twice as high for old-old adults than older adults. These forms of discriminatory practice are highly related to negative stereotypes of ageing, which conceptualise the elderly as lacking in competence, and result in older adults being treated with pity instead of respect (e.g., ACE, 2008; Cuddy & Fiske, 2002). Indeed, intergenerational contact between young and older adults often consists of patronizing and disrespectful speech, such as shortening of sentences and use of simple grammar (Giles & Reid, 2005). The increased reporting of such experiences by old-old adults, in comparison to both young and older adults, suggests that this tendency is positively correlated with participant age, although further work is required to support this hypothesis, and again points to the necessity of countering negative age-related stereotypes.

In summary, the current study extended previous research investigating perceived age discrimination (e.g., ACE, 2008; Abrams, Russell et al., 2011) by identifying specific themes related to these experiences. Although differences did emerge between age-groups over the specific kinds of discriminatory behaviour that were experienced, in contrast to expectations overall patterns were consistent across age-groups, with the same four themes (*judged unfairly, employment discrimination, views being discounted, and disrespect*) accounting for 61.69% of all examples. Our results were in line with predictions from SIA and PGDD theories (Tajfel & Turner, 1979; Taylor et al., 1990), and suggested that individuals doubly dissociate themselves from experiences of discrimination, presumably as a defensive mechanism against the negative effects that such experiences can have (e.g., Agerstrom & Rooth, 2011; Heim, Hunter, & Jones, 2010). One important consideration in relation to discrimination is the role of identity, however, as this can also serve as a protective factor against the negative consequences of discrimination (e.g., Garstka et al., 2004). In the next Section we shall therefore explore the reported levels of identification from our participants.

Section 3.5.3.2: Did differences emerge between age-groups over levels of age-group identification?

In contrast to expectations, no significant differences emerged between groups over the level of age-group identification on the composite score (Simon et al., 1998). Indeed, the results were strikingly consistent across age-groups, showing little variability. This is consistent with previous research, which indicated that participants of all ages (young, older and old-old) self-identified as young (Hummert et al., 2002). Of particular importance, and in line with previous findings (ACE, 2008; Demakakos et al., 2007; Persson & Casidy, 2008), participants of all ages showed low levels of age-group identity; all means were close to the midpoint of the scale. This is presumably reflective of the intergroup nature of the current study (cf. Weiss & Lang, 2009), or the salience of negative age-related auto-stereotypes (Weiss & Lang, 2012), as participants were asked to concurrently rate young and older adults, making age-group identity salient. Future work investigating these processes should therefore employ between subjects designs, rather than asking all participants to rate both young and older adults simultaneously.

Distancing the self from identifying with the older age-group may serve as a protective mechanism for older adults, allowing them to dissociate themselves from the negative connotations of old age (Levy & Banaji, 2002; Weiss & Lang, 2012). The findings

from the subjective age data support this interpretation, as, in line with expectations, the older a participant was, the greater the difference between their chronological and subjective ages. Furthermore, old-old adults who reported the lowest levels of age-group identification also showed the largest SAB. This suggests that old-old participants were dissociating themselves from their age-group: a tendency that has previously been associated with increased psychological well-being (Logan et al., 1992-1993; Westerhof & Barret, 2005).

As reviewed in Section 2.6, experiencing age discrimination can have a range of detrimental effects on older adults, however, including application of inappropriate medical treatment (Harries et al., 2006), and increased stress (Scott et al., 2011). As a positive age-related identity has been shown to alleviate the negative effects of such discrimination (Garstka et al., 2004), dis-identifying the self from their age-group may leave older adults vulnerable to these negative effects. In the current sample, however, older adults reported low levels of experience with age discrimination: a finding replicating previous work within the UK (Abrams, Russell et al., 2011; Van den Heuvel & Van Santvoort, 2011).

In contrast, negative stereotypes and auto-stereotypes of ageing appeared to be salient (e.g., all age-groups generated more negative than positive traits to describe older adults; see Section 3.5.2). Dissociating the self from chronological age, as opposed to accepting age-group identity as a defining aspect of the self, may therefore reflect an efficient, adaptive, and self-protecting function for older adults, considering the intergroup context of the study. Further research could therefore explore the contextual basis for low versus high age-group identification, and explore under which (if any) conditions older adults display positive age-group identification.

Indeed, the low levels of ingroup identification displayed in by this sample do contrast with SIA's core principles of positive distinctiveness and the IPB (Tajfel & Turner, 1979, 1986). A possible explanation for this (in addition to the intergroup context/auto-stereotype salience hypothesis outlined above) concerns the social identity scale that was employed in the current research (Simon et al., 1998). Research by Cameron (2004) suggests that social identities are multi-faceted, consisting of three related but separate components (*ingroup ties*, *centrality*, and *ingroup affect*). Items relating to positive perceptions of the age-group are contained within the ingroup affect subscale (e.g., reverse scored: 'I don't feel good about being an older adult'). Although the scale from Simon and colleagues' (1998)

study related to ingroup ties and centrality, none of the items related to Cameron's (2004) ingroup affect subscale. Thus, the low levels of age-group identity obtained in the current study were largely unrelated to perceptions of ingroup positivity, and therefore do not contradict SIA's positive distinctiveness principle (Tajfel & Turner, 1979). Failure to assess this aspect of age-group membership was a limitation of the current study, and should be addressed in future research.

A greater limitation of Studies 1 and 2 in relation to the identity measures concerns the wording of the scales. In each study, participants were asked to indicate the extent that they identified with 'their age-group', or other people 'their age' (see Appendices IV and VI). Neither scale stipulated the age-range for these groups, which provided us with no control over the age-group with which participants chose to identify (e.g., whether based on chronological or subjective ages). Importantly, this means that different participants (both within and/or between age-groups) could have interpreted the scales in very different ways, so responses cannot be assumed to have been consistent across participants. Considering this oversight, it is surprising that participants still reported low levels of age-related identity, as the wording of the question allowed participants to self-categorise with (essentially) the age-group of their choice. Future studies should address this problem by classifying as a specific age-range for each age-group within the wording of the question. Although such a modification would create additional issues (e.g., if participants disagree with the 'older adult' age categorization), it would increase the validity of our findings.

Furthermore, although the identity scale employed in Study 2 met the minimum requirements for reliable scale length (i.e., four items; Diamantopoulos et al., 2012), and demonstrated high levels of reliability ($\alpha = .91$), future studies should employ longer measures, assessing the ingroup affect subscale from previous work (Cameron, 2004). This would allow a greater exploration of SIA's principles in relation to age-group membership, and would facilitate comparisons between the older and old-old age-groups.

Section 3.5.4: Conclusion, limitations and future directions

In summary, the findings from the current study do suggest that perceptions of ageing in the UK are complicated, spanning a wide range of domains (from personality traits, to physical appearance, to lifestyle choices), and consisting of both positive and negative elements. Although only partial support was obtained for Linville's ICB (1982), our findings did

support the SIA's ingroup positivity bias (Tajfel & Turner, 1979, 1986). Interestingly, this bias was characterized by older adults demonstrating *less negative* auto-stereotypes of ageing than young adults' stereotypes, whereas the corresponding *more positive* representations received less consistent support. This evidence does indicate that the positive/negative distinction is an important one, and future work investigating stereotypes and auto-stereotypes of ageing would benefit from a closer examination of this distinction. Indeed, research from the wider social identity tradition would benefit from considering this differentiation, which has tended to be overlooked (S.D. Reicher, personal communication, February 2013; e.g., Molero et al., 2003; Ruback et al., 2009).

The current study also adds to a limited body of research that differentiates between older and old-old adults (e.g., Abrams, Russell et al., 2011; Hummert et al., 2002), rather than subsuming both cohorts within the same age category (e.g., Hummert, 1994; Levy, 1996). Although some preliminary findings indicated that perceptions of ageing differed between the two older age-groups, our ability to assess these differences was limited by our reliance on free-response measures, and confusion over the measure assessing auto- and meta-stereotype content. Although previous research has emphasized the ecological validity of free-response approaches when assessing auto/stereotype content (e.g., Devine & Baker, 1991; Schmidt & Boland, 1986), these studies used young adult samples, rather than old-old adults. As emphasized in Section 3.5.1.1, a number of background factors (e.g., physical restrictions, or lack of experience with psychological testing) may have limited old-old adults' ability to respond to the measures. Similarly, a number of confounding factors that may have influenced participants' responses were not controlled for (e.g., subjective health status, verbal intelligence), and the wording of our stereotype generation measures meant we could not determine whether older adults were generating auto- or meta-stereotype content.

Future studies examining auto-stereotypes and stereotypes of ageing should therefore try to use methodologies that do not rely on manual dexterity (i.e., writing ability), and should try to control for additional factors that could influence participants' responses. One potential methodology, taken from the previous studies with American samples, is a sorting task followed by cluster analysis (cf. Hummert et al., 1994; Matheson et al., 2000; Schmidt & Boland, 1986). In a typical free-sorting task, participants are presented with a series of cards, each printed with a single descriptor (e.g., traits associated with a social category). These descriptors constitute a superordinate or general stereotype (cf. Rosch, 1975), which can be

subdivided into a series of categories or subtypes through the sorting task, where participants are asked to divide the cards into groups. In the previous research with American samples (Hummert et al., 1994; Schmidt & Boland, 1986), these cards represented traits associated with older adults, which were divided into subtypes (see Section 1.1.5). Whereas the trait-generation tasks from these studies (and from Studies 1 and 2 from the present research) explored the content of age-related auto/stereotypes, the sorting task subsequently assessed the stereotypes' structure.

Importantly, sorting tasks can be less cognitively demanding than free-response measures, as they correspond to natural thinking patterns (e.g., grouping book titles by categories; Coxon, 1999), and use existing materials rather than asking participants to generate items. Furthermore, sorting tasks can be used with large numbers of objects (e.g., Matheson et al., 2000), yet take relatively little time to complete (Coxon, 1999), thus reducing the cognitive demands placed on participants. Free-sorting procedures should therefore be suitable for use with older participants (cf. Hummert et al., 1994). Utilisation of this method with a UK sample would therefore allow us to explore the structure of age-related stereotypes, and would ensure that we were able to examine old-old adults' perceptions of ageing.

Study 3 was therefore designed to examine participants' auto/stereotypes of ageing in the UK using a free-sorting procedure, whilst simultaneously controlling for background factors that could also influence participants' performance (i.e., verbal intelligence, subjective health, and prescribed medications). To expand on the results from Study 2, it was decided to assess young and old-old adults' stereotypes of old age, and older adults' auto- and meta-stereotypes. As the previous research in this domain has not distinguished between older and old-old adults, and has exclusively been conducted in the USA, we aimed to expand our understanding of age-related stereotypes through their exploration in a UK sample consisting of young, older and old-old adults.

Chapter Four:

Study 3

4.1: Overview

The main aim of Study 3 was to examine differences between young, older, and old-old adults in the content and structure of age-related auto/stereotypes. A limitation of Studies 1 and 2 had been the reliance on free-response measures, which are susceptible to age-associated restrictions, such as reduced cognitive or physical capacity (cf. Hummert et al., 1994). To address this issue a trait sorting task was employed in Study 3. Trait sorting procedures are not cognitively challenging, and can be completed within a short time-frame (Coxon, 1999). This paradigm should therefore be less susceptible to the confound of cognitive slowing (Light, 1991) that many old-old adults experience (Craik, 2006). An additional advantage of sorting procedures is that they constitute ecologically valid methods of assessment (Coxon, 1999), as they assess participants' own perceptions of their physical and social worlds, rather than relying on experimenters' assumptions (Black, 1963).

In order to facilitate comparisons to previous studies with American samples (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986), participants were asked to sort the 100 most frequently generated traits from Study 2 into groups, representing all of the traits that could apply to an individual older adult, who was aged between 60-75 years. Participants' trait groupings were subjected to hierarchical cluster analysis, which allowed us to determine how the traits were clustered to form subtypes of the superordinate elderly stereotype. Our main aim was to establish whether older and old-old adults' representations were more complex than those displayed by young participants, as the ingroup complexity bias (Linville, 1982) would suggest, and to determine whether any differences emerged between the older two age-groups. To control for demographic factors that may have exerted an effect on the results from Studies 1 and 2, participants' verbal intelligence was assessed using the national adult reading test (the NART; Nelson & Willison, 1991), and participants were asked to provide subjective health ratings, and to indicate any medications that they were currently taking. A secondary aim of the current study was the investigation of age-group identity between the three age-groups.

4.2: Introduction

Section 4.2.1.1: Do older and old-old adults hold more complex representations of the older adult auto/stereotype than young adults, and how do these representations differ?

As reviewed in Section 3.2.1, Linville's ingroup complexity bias (ICB; 1982) suggests that we hold more complex representations of our ingroups than of groups to which we do not belong. In support of this hypothesis, work by Brewer & Lui (1984) indicated that older adults (aged 70 years or older) showed more complex representations of the older age-group than young participants (see Section 1.1.5 for full description), through free-sorting photographs of older adults⁴⁷ into significantly more subcategories than their younger counterparts.

The results from Studies 1 and 2 found little support for the ICB, however, as no significant differences emerged between young and older adults when they were asked to generate traits that they associated with the older adult age-group (60-75 years). As emphasized in Section 3.5.1, however, this may have been related to the ambiguous wording of the stereotype content measure encouraging older adults to generate meta-stereotype content, rather than auto-stereotype content⁴⁸. Furthermore, although young adults generated more traits describing older adults than old-old participants (in direct opposition to our hypothesis), this finding may have been an artefact of measurement (cf. Hummert et al., 1994; see Section 3.5.1), caused by confounding variables that were not controlled for in Studies 1 or 2 (e.g., verbal intelligence or physical health).

In addition, as emphasized in Sections 2.5.1 and 3.5.1 and by previous researchers (Linville, 1982, Locke, 2002), generating *more* traits does not necessarily correspond to more complex representations, as this may simply be reflective of additional synonyms, used to describe the same underlying concepts. To address these issues, the current study employed a methodology that controlled for potential physical restrictions of old age (i.e., a free-sorting task; see Section 4.1), and controlled for the confounding variables of verbal intelligence and subjective health. This enabled a more direct test of the ICB hypothesis to be conducted.

⁴⁷ No ages were provided for the photograph models, who were merely described as '*unequivocally identifiable as "old"*' (Brewer et al., 1981, p. 658).

⁴⁸ It should be noted that the materials employed in Study 3 were derived from the stereotype terms most frequently generated in Study 2, and are therefore susceptible to the same criticism concerning the ambiguous wording of the auto-stereotype content measure. Unfortunately this criticism was not identified until after Study 3 had been conducted, so we were not able to address this issue in the current study.

Further support for the ICB in relation to ageing was obtained in the study by Hummert and colleagues (1994), where elderly participants (aged 62-84 years) created significantly more subtypes than middle-aged (but not young) adults when sorting traits into stereotype groupings. Elderly participants' subtypes represented subsets of young and middle-aged adults' broader stereotype subcategories, suggesting that older respondents did hold more complex representations of their age-group than either of the younger samples (e.g., elderly participants' *Activist* and *Golden Ager* subtypes were both subsumed within middle-aged participants' *Golden Ager* category). A major aim of Study 3, therefore, was to explore whether older and old-old adults' auto-stereotypes and stereotypes of ageing would reflect more refined subtypes than those displayed by young adults, as had been found in previous work using the sorting paradigm.

Section 4.2.1.2: Do older adults show more complex auto-stereotypes of their age-group than old-old adults?

As emphasized in Section 3.1, one limitation of previous studies has been the failure to differentiate between older and old-old participants (e.g., Brewer & Lui, 1984; Hummert et al., 1994). This is despite evidence to suggest that stereotypes of these two age-groups differ (with more negative views being held about old-old adults; Hummert, Garstka, & Shaner, 1997; Hummert, Mazloff, & Henry, 1999), and that significant differences exist in health and cognitive ability levels between the two cohorts (Christensen et al., 1994; Freedman & Martin, 1998). As these factors have previously been shown to influence participants' perceptions of ageing (e.g., correlation between poor health and negative auto-stereotypes of ageing; Levy & Myers, 2004; Stewart et al., 2012) an additional aim of the study was to compare perceptions of ageing across these cohorts, to examine any differences that might exist between the two.

Furthermore, as emphasized in Section 3.3.4, old-old adults showed a reduced tendency to provide answers on the free-response measures from Study 2, which limited the reliability of our findings. Hummert and colleagues (1994) argue that content-generation measures may be problematic for elderly adults, due to the high cognitive burden that such tasks may place on participants. Previous research has indicated, however, that older adults' cognitive performance can equal young adults' when participants are provided with sufficient environmental cues (e.g., (Craik & McDowd, 1987; Sauz on, Rodrigues, Corsini, & N'Kaoua, 2013), particularly if these cues reduce the self-initiated task demands that older

adults are subjected to (for a review, see Morrow & Rogers, 2008).

Whereas free-response measures require high levels of self-initiated processing (e.g., generating responses), sorting procedures use existing materials (e.g., list of previously generated traits), and should therefore exert a lower cognitive burden on old-old adults. Thus, the sorting methodology utilized in the current study should be suitable for use with this age-group (cf. Hummert et al., 1994)⁴⁹, and should enable us to draw comparisons between the two older groups with a greater degree of confidence.

A final point of consideration when comparing the results from older and old-old adults is that participants were explicitly instructed to consider individuals aged between 60-75 years (i.e., older adults) when sorting the traits. This meant that old-old adults were an age-related outgroup in the current study, and thus their representations of older adults were stereotypes of an outgroup. In line with the ICB, we should therefore expect older adults to display more complex auto-stereotypes of their own group than old-old adults' outgroup stereotypes. The differentiation between older and old-old adults in the current study allows us to explore the ICB hypothesis with greater precision than was possible in the previous literature (e.g., Hummert et al., 1994).

Section 4.2.2: Do differences exist between age-groups over level of age-group identification?

Findings from Studies 1 and 2 provided partial support of our hypothesis that levels of age-related ingroup identification would vary as a function of participant age, as a significant and positive correlation emerged between age and SAB (i.e., difference between chronological and subjective age; Weiss & Lang, 2009). Furthermore, significant differences were obtained between levels of SAB between all three groups: Older adults showed greater dissociation from their age-group than young adults, and old-old adults showed more dissociation than older adults (see Section 3.4.5).

As reviewed in Section 3.2.1, results concerning differences between age-groups over level of ingroup identity have been inconsistent, with some studies displaying lower levels of

⁴⁹ NB Hummert and colleagues did not differentiate between older and old-old adults. Thus, their argument applied to 'elderly adults' who spanned both the older and old-old cohorts, rather than merely applying to the elder group.

identity in older than young adults (e.g., Persson & Cassidy, 2006), and others displaying the opposite pattern (e.g., Garstka et al., 2004). In Study 2, participants of all ages reported low levels of ingroup identity on the composite identity scale (see Section 3.4.5)⁵⁰, with no significant differences emerging between cohorts (in contrast to hypotheses). This may have been due to the use of a short identity scale, which did not assess levels of ingroup affect (see Section 3.5.4; Cameron, 2004). A secondary aim of the current study was therefore the further examination of age-group identity, using a more detailed composite scale (Cameron, 2004),

Section 4.2.3: Hypotheses

Considering the above review, the main aims of the current study were to explore differences between age-groups over auto/stereotype structure, and to compare this structure to the previous findings with American samples. The following four hypotheses were therefore formulated:

1: Based on the ICB and previous research (Brewer & Lui, 1984; Hummert et al., 1994; Linville, 1982), we predicted that older adults would show more complex representations of their age-group than young adults (i.e., would generate more subtype groupings), and hypothesized that differences would emerge between the two older age-groups. We tentatively predicted that older adults' auto-stereotypes would be more complex than old-old adults'. As the oldest age-group has passed through the target age-range (60-75 years), however, it was also predicted that they would show more complex representations than young adults.

1.1: A related hypothesis was that differences would emerge over the structure of age-related auto/stereotypes, with the greater complexity of older and old-old adults' stereotypes resulting in their subtype groupings consisting of subsets of young participants' broader categories.

2: Considering previous research relating to age-group identity (e.g., Abrams et al., 2011a; Garstka et al., 2004), we again predicted that significant differences would emerge between age-groups over levels of ingroup identification. In line with work by Weis and

⁵⁰ Due to low levels of reliability, we could not assess the composite identity scale score from Study 1.

Lang (2009, 2012) and the results from Study 2, we hypothesized that a significant and positive correlation would occur between age and SAB.

4.3: Method

4.3.1: Participants.

Individuals in the trait sorting task ($n = 114$) consisted of 39 young adults (aged 17–24 years; $M = 19.64$; 16 men, 23 women), 39 older adults (aged 60–74 years; $M = 67.15$; 14 men, 25 women), and 39 old-old adults (aged 75–89 years; $M = 79.36$; 20 men, 19 women). Young participants were recruited from the Universities of St Andrews and Edinburgh, and received either £5 for their participation, or experimental course credit.

The older age-groups were recruited through advertisements in the local media and at recreational groups aimed at the over 60s. In order to counter the recruitment bias that had been evident in our older sample in Study 1 (e.g., high levels of education in our older sample; see Section 2.3.1), advertisements were also placed in doctors' surgeries, hospitals, local council offices, and local community centres. Advertisements were also placed in geographic areas with low levels of affluence and high indices of deprivation (e.g., Tayside, Cowdenbeath; GRO, 2001). This was in an attempt to recruit participants to the study from a range of educational backgrounds, socioeconomic statuses, and with varying levels of physical well-being, to ensure that our sample was as representative as possible of the wider population. All older participants received £5 in return for their time. All participants completed a consent form before participating, and were fully debriefed once the study was completed.

Inclusion criteria stipulated that participants had to be British, with English as their first language, had grown up in the UK, and were not on any medication which could interfere with cognitive functioning. A square root transformation (adding a constant of plus one) was applied to all count and non-normally distributed data (e.g., the number of created groups), followed by examination for uni- and multi-variate outliers using Mahalanobis distances (Zijlstra, Van der Ark, & Sijtsma, 2010). Testing indicated that an additional exclusion criterion was required, as a wide range emerged over the number of the traits classified as 'miscellaneous' (see Section 4.3.3 below; ranged from 0 to 75, $M = 6.81$, $SD = 13.33$). Twelve participants classified a significant proportion of traits (over 25%) as

miscellaneous, reporting that these traits did not apply to the older adult age-group, or applied to people of all ages.

To test the extent of this pattern, an independent sample ($n = 16$) of young ($M = 20.50$, $SD = 2.45$) and older adults ($M = 67.31$, $SD = 5.22$)⁵¹ were asked to rate each of the 100 terms selected for inclusion in the study on how characteristic they were perceived to be of older adults, on a scale from 1 (*not characteristic*) to 7 (*very characteristic*). A cut-off point of 4.5 was selected to represent traits that were perceived to be characteristic of older adults. This analysis indicated that 62 of the 100 traits were perceived as characteristic of older adults (see Appendix X, and Section 4.4.5 for a discussion of the implications of this finding). Thus, a final inclusion criterion stipulated that participants who classified over 38 traits as miscellaneous were excluded from the analysis. This resulted in the exclusion of 19 participants in total (four young adults, ten older adults, and five old-old adults), including one due to experimenter error.

To test for differences between included and excluded participants, a one-way MANOVA was conducted, with the six demographic factors (gender, chronological and subjective age, health status, education, and NART errors) entered as the dependent variables. No significant differences emerged between included and excluded participants on any of the demographic variables (all p values $> .09$).

4.3.2: Materials.

Stereotype descriptors. Each of the 100 stereotypic terms was printed in black ink on white cards measuring 3.7cm by 8.6cm, and was presented in size 15 typeface.

Questionnaire measures. Participants were administered the National Adult Reading Test (NART; Nelson & Willison, 1991), which assessed verbal intelligence. Two paper and pencil questionnaires were subsequently distributed, assessing age-group identity (Cameron, 2004), experiences of the ageing process (cf. Bowling et al., 2002), and demographic variables.

The NART. The NART (Nelson & Willison, 1991) is a measure of verbal

⁵¹ The same inclusion criteria were applied as in Study 3 (e.g., British participants who had grown up in the UK).

intelligence, which can be used to estimate pre-morbid ability. It consists of a series of 50 English words with irregular phonetic pronunciations (e.g., ‘banal’) that are presented in increasing order of difficulty. Scores are calculated based on the number of errors (i.e., higher scores equals worse performance), and previous research indicates that the NART has high levels of inter-rater and test-retest reliability (Crawford, Deary, Starr, & Whalley, 2001; O’Carroll, 1987), and validity (Crawford et al., 2001).

Age-group identity. Cameron’s (2004) social identity scale was used to assess age-group identity. This 12-item measure assesses identity across three dimensions, with high internal reliability for the subscales, and the overall scale mean ($\alpha = .84$ to $.92$, *Ibid*). The three subscales relate to centrality (e.g., ‘The fact that I am an older adult rarely enters my mind’), ingroup affect (e.g., ‘In general, I’m glad to be an older adult’) and ingroup ties (e.g., reverse scored: ‘I find it difficult to form a bond with other people my age’). Six of the statements were phrased in the negative direction. Participants were asked to respond to the 12 statements on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Minor modifications were made to the scale in order to assess age-group identification, and a mean score was calculated for each participant, with higher values representing greater identification.

Demographic information. The demographic questions from Study 2 were incorporated into the current study, and assessed participants’ chronological and subjective ages, years in education, gender, and current occupational status (see Appendix X). Additional questions asked participants to indicate whether they were currently taking any prescription medication, and how they rated their subjective health on a scale from 1 (*very poor*) to 7 (*excellent*).

4.3.3: Procedure.

All participants were tested individually in a quiet room, with the researcher in attendance for the duration of the experiment. Participants were given the 100 traits in random order, and were asked to sort the traits into groups, representing all of the traits which they believed could be found in one and the same individual older adult (aged 60-75 years). Instructions indicated that participants could use as many or as few groups as they believed to be appropriate, with no restrictions or time limits placed on the procedure. If participants felt that any of the traits did not fit into any of the groups, they were instructed to

place these cards to one side, into a “miscellaneous” category. Similarly, any trait (or traits) that they believed belonged in multiple groups could be placed into as many groups as they wished.

Whilst sorting, participants were told to keep each card facing upwards, and to place the cards into the appropriate groups. The positioning of traits was not fixed; participants were allowed to look back through their groups at any point, and change the placement of any traits whose positions they had reconsidered. Instructions stressed that there were no right or wrong answers to the sorting procedure, as it was the participants’ own opinion that was the important factor. After completing the sorting phase of the experiment, the NART was administered, followed by the remaining questionnaire measures. Participants were fully debriefed on completion of the study, and were asked not to discuss the content of the experiment with others who might participate. An inter-rater reliability check was completed for twenty percent of the NART scores, with acceptable levels of reliability.

4.3.4: Preliminary analysis.

Following guidelines by Tabachnick and Fidell (1996) concerning skewed data, a square root transformation (adding a constant of plus one) was applied to all count data (e.g., number of ‘best’ selections), and variables that demonstrated a positive skew⁵². Where the transformation was successful and variances between groups were equal, *t*-tests were conducted to examine differences between groups. Where variances were unequal between all groups, either Kruskal-Wallis tests (appropriate for non-parametric data, which are resistant to transformations; Field, 2005) or Mann-Whitney *U*-tests were employed (cf. Field, 2005).

Reliability checks were conducted through a 3 (participant age) by 2 (demographic variables: subjective and chronological age) MANOVA. In line with expectations, significant effects emerged on subjective ($F(2, 106) = 302.00, p < .001$) and chronological ages ($F(2, 106) = 3670.95, p < .001$). Independent samples *t*-tests confirmed that these differences were in the expected direction (i.e., in ascending order, higher subjective and chronological ages for young, older and old-old adults, all *p* values < .001).

⁵² We also examined the effect of natural log transformations, but square root transformations were more successful in all cases.

To examine the effects of age on NART scores, education level, and subjective health, Kruskal-Wallis tests were performed. Significant effects of age were obtained on NART performance ($X^2(2) = 31.13, p < .001$), with young adults reporting more errors than older ($U = 298.50, n_1 = 39, n_2 = 39, p < .001$) and old-old adults ($U = 258.50, n_1 = 39, n_2 = 38, p < .001$), in line with previous findings (Crawford, Stewart, Garthwaite, Parker, & Besson, 1988). No significant difference emerged on NART scores between the two older age-groups ($U = 649.50, n_1 = 36, n_2 = 38, p > .17$).

In contrast with previous studies (that demonstrated higher levels of subjective health (G. Kaplan & Baron-Epel, 2003; Reile & Leinsalu, 2013) and education levels (De La Fuerte, 2012) in young than in older samples) no effect of age was obtained on educational levels ($X^2(2) = 1.03, p > .60$) or ratings of subjective health ($X^2(2) = 2.87, p > .12$). One sample *t*-tests indicated that all age-groups showed mean education levels significantly above the national mean (all *p* values $< .001$; IHDI, 2012), although no differences emerged between young adults and the older two cohorts. This suggested that our older samples were atypical of the wider population (cf. Study 1; see Section 4.5.4 for a discussion of this issue)⁵³.

4.4: Results

Section 4.4.1.1: Did older and old-old adults show more complex auto/stereotypes of ageing than young adults?

Guidelines for analysis of multivariate statistics by Tabachnick and Fidell (1996) state that, when planned comparisons between groups are the statistic of interest, direct comparisons should be performed rather than omnibus ANOVAs (p.51). As a significant difference had emerged over verbal intelligence scores between age-groups, however, a one-way ANCOVA was initially conducted, with age-group as the between-subjects factor and NART errors as the covariate, to examine the impact of verbal intelligence on the number of created subgrouping. No significant effect of NART scores emerged ($F(1, 112) = 0.45, p > .51$), indicating that planned comparisons could be conducted without being confounded by verbal intelligence scores (see Table 4.1).

⁵³ Unfortunately it was not possible to compare each age-group's mean education level to the national age-group means, as this data is not available (A. Malloy, personal communication, November 2013).

Table 4.2: *Number of generated subgroups by participant age and study*

Study	Chronological age		
	Young adults	Middle-aged / older	Old-old / elderly
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Hummert et al., (1994)	6.98	6.28a	8.28b
Study 3	6.54 (3.14)	6.15 (3.02)	8.18 (5.46)
Square root	2.49 (0.58)	2.41b (0.58)	2.72c (0.90)

Note. Means with different subscripts (within rows) are significantly different.

ab: $p < .02$. bc: $p < .05$.

Independent samples *t*-tests were therefore performed to examine whether any differences emerged between participants over the number of created auto/stereotype subtypes. In contrast to our hypothesis that young adults would show less complex stereotypes of later life than the older two cohorts, no significant differences emerged between young and older adults ($t(76) = 0.59, p > .28$), although a non-significant trend did emerge for old-old adults to create more subtype groupings than young adults ($t(64.98) = 1.31, p = .097$). In support of our hypothesis that differences would emerge between the two oldest age-groups, a significant difference over the number of generated groups was obtained between older and old-old adults ($t(64.72) = 1.76, p < .05$). In contrast to expectations, however, this difference was due to old-old adults generating more groups than their younger counterparts (see Table 4.1).

As older adults reported subjective ages significantly below the age-range for their age group, however (see Section 4.4.3), the number of generated subtypes was also calculated as a function of subjective age. Unfortunately, very few participants self-identified with the old-old age group ($n = 4$), which made comparisons between the younger cohorts and this group untenable. The number of generated subgroups was subsequently calculated (see Table 4.2), and independent samples *t*-tests were conducted between participants' scores. In contrast to the results from the chronology-based age analysis, self-identified older adults showed a trend towards creating more groups than young adults (t

(69.5) = 0.92, $p = .18$), although this difference was not significant⁵⁴.

Table 4.2: *Number of generated subgroups by subjective age*

	Subjective age		
	Young $n = 35$	Older $n = 41$	Old-old $n = 4$
Number of groups	$M (SD)$	$M (SD)$	$M (SD)$
Raw data	6.31 (3.01)	7.38 (4.93)	11.75 (7.00)
Square root	2.45 (0.56)	2.60 (0.80)	3.28 (1.14)

Section 4.4.1.2: Did differences emerge over the structure of age-related auto/stereotypes between age-groups?

To identify participants' stereotype subtypes, the data from the sorting task were placed into three 100 x 100 similarity matrices, one for each age-group. These matrices represented the number of times the same two traits were placed into the same group. All traits placed into the miscellaneous category were scored as being grouped separately from all other traits, including other traits in the miscellaneous group (cf. Schmidt & Boland, 1986). The similarity matrices were transformed into squared Euclidean distances (Green, 1978) between all pairs of traits, and were analysed separately for each group. Average linkage hierarchical cluster analysis was employed (Coxon, 1999), whereby each pair of traits within a cluster had higher average similarity ratings to members of their own cluster than to members of alternative clusters. Low-level clusters are created through the combination of pairs of traits that are the most similar to each other. Successive clustering levels are created through the combination of similar traits using the average linkage method until all traits are combined, forming the superordinate elderly stereotype (i.e., all 100 traits associated with older adults; cf. Schmidt & Boland, 1986).

In line with previous findings (Hummert et al., 1994; Schmidt & Boland, 1986) and expectations that the broad structure of participants' auto/stereotypes of ageing would be

⁵⁴ Hummert and colleagues (1994) claimed that the difference between young and elderly participants 'approached significance in the expected direction' (p. 244) in their study, with a significance level of $p < .12$. Although debate exists surrounding the cut-off point for statistics that approach significance, we believe that a value of $p = .18$ is beyond the acceptable range for these values, hence only arguing that a trend emerged.

similar, analysis indicated that two high level clusters emerged from the cluster analysis: one negative (Figures 4.1 to 4.3) and one positive (Figures 4.4 to 4.6). In general, participants of all age-groups appeared to agree over the classification of traits as positive or negative descriptors. Disagreements only emerged over two traits (*receives age-related entitlements*, and *watches TV*) that were included in young adults' negative subtypes, whereas older and old-old adults classified these items as positive.

When identifying middle-level clusters (i.e., subtypes of the superordinate older adult stereotype) a minimum of three traits was required to represent a distinct subtype (cf. Schmidt & Boland, 1986; Hummert, 1990), in order to ensure that the groupings were meaningful. This analysis identified 6 middle-level clusters from older adults, eight from young adults, and 10 from old-old adults (see Figures 4.2-4.7). In contrast to previous work (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986) where the researchers chose labels to describe the stereotype subtypes, a small and independent sample of participants ($n = 18$) generated and selected descriptors⁵⁵ for each of the mid-level clusters, to provide meaningful descriptors for each auto/stereotype subtype.

In support of our hypothesis that old-old adults would show more complexity/differentiation over subtype groupings, the greater number of clusters generated by old-old adults represented subsets from the broader subtypes identified by young and older adults. The majority of traits (86.36%) included in old-old adults' *good neighbour* and *traveller* subtypes were subsumed within young and older adults' *golden ager* subtype, for example, whereas almost three quarters (71.43%) of traits associated with old-old adults' *self-centred* subtype were contained within older adults' *grumpy old man* stereotype (see Appendix XI).

In terms of the consistency of auto/stereotype subtypes across age-groups, in line with expectations that the broad structure of participants' auto/stereotypes would be similar, participants of all ages all created negative clusters of: a *Grumpy Old Man*, consisting of a common core of 13 traits (e.g., *selfish*, *moaning*) plus one additional characteristic (*uses age*

⁵⁵ A small sample of participants ($n = 6$, aged 21-60, $M = 33.50$ years) initially generated descriptors for each of the 10 stereotype subtypes. An independent sample ($n = 12$, aged 23-89, $M = 74.00$ years) subsequently selected the label that they felt best described each subtype. Although a larger sample would have been preferable, this methodology represents a more objective measure than the methods employed in previous studies (e.g., Hummert et al., 1994).

as an excuse) shared between young and old-old adults; and a *Marginalised* subtype with a common core of 10 traits (e.g., *lonely*, *vulnerable*) plus an additional three traits shared between young and old-old adults (*slow*, *dependent*, and *physical limitations*; see Figures 4.1 to 4.3). Similarly, for the positive clusters, all three age-groups created the subtypes of: a *Golden Ager* with a core of 17 common traits (e.g., *wise*, *kind*) plus eight additional traits shared between older and old-old adults (e.g., *friendly*, *resourceful*); and *Grandparents*, with a core of four traits (e.g., *retired*, *carer*) plus an additional two generated by older and old-old adults (*looks after children*, *talkative*; see Figures 4.4 to 4.6).

Section 4.4.2: Did differences emerge between age-groups over level of age-group identification?

As mean scores on the ingroup affect and ties subscales demonstrated a negative skew for young and older adults, but a positive skew for old-old adults, a Kruskal-Wallis test was performed to examine whether any differences emerged between cohorts over level of age-group identification. A main effect of age was obtained on the ingroup affect dimension ($X^2(2) = 24.73, p < .001$), with no significant differences emerging between groups on the ingroup ties ($X^2(2) = 2.96, p > .23$) or centrality dimensions ($X^2(2) = 2.82, p > .24$). Mann-Whitney *U*-tests (critical value of $p < .006$) indicated that these differences were due to young adults demonstrating higher ingroup affect than older ($U = 273, n_1 = 39, n_2 = 36, p < .001$) and old-old adults ($U = 359.500, n_1 = 39, n_2 = 39, p < .001$; see Table 4.3)⁵⁶. No significant difference emerged between the older two age-groups ($U = 661.500, n_1 = 36, n_2 = 39, p > .33$).

⁵⁶ Young adults also demonstrated significantly higher scores on the overall identity scale than both of the older age-groups (both p values $< .001$). As scores on the overall scale median represent sums of the three subscales, however, these results are not independent, so separate analyses are not reported.

Figure 4.1: Tree diagram of young adults' negative trait clusters (stereotype subtype labels on left).

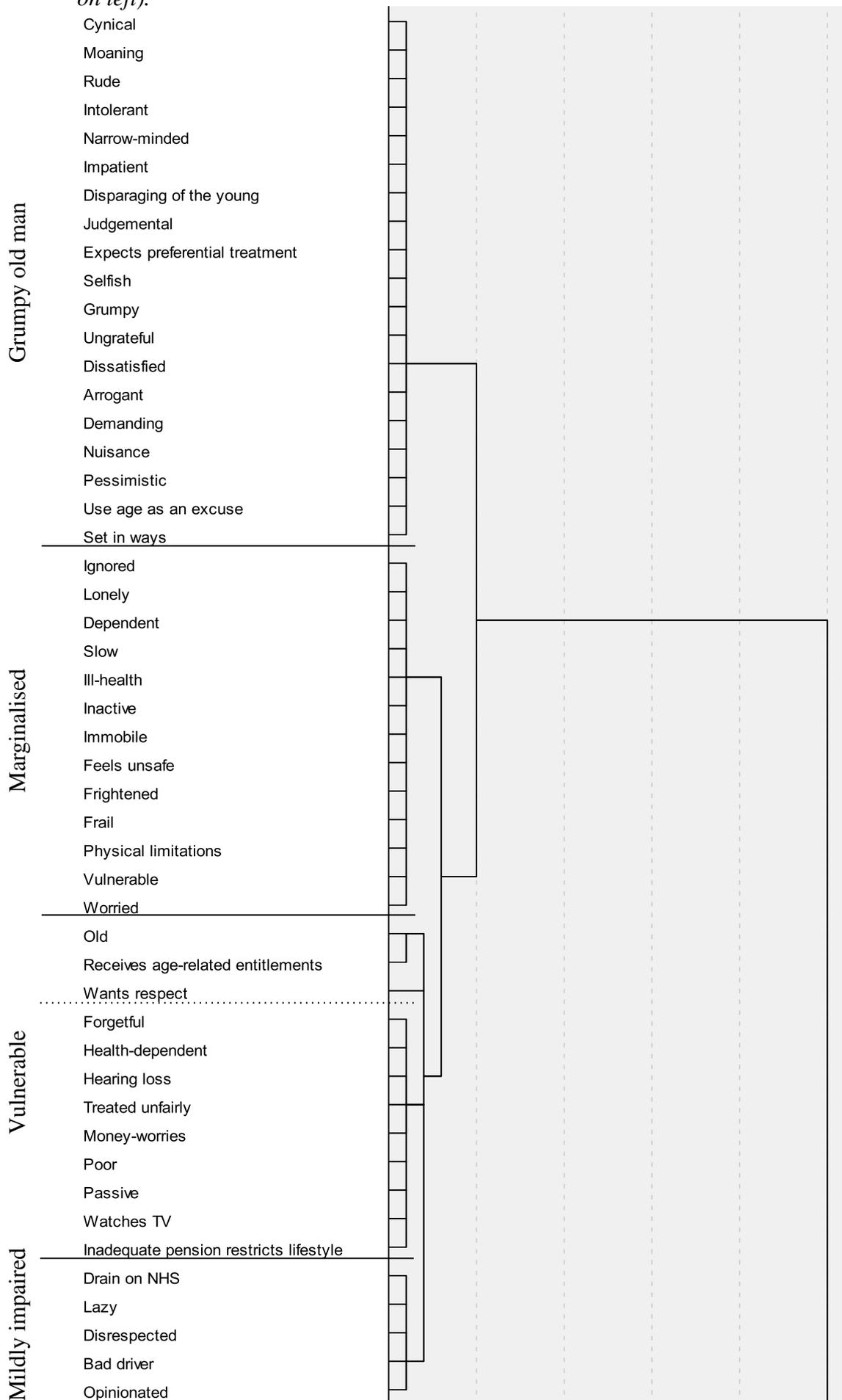


Figure 4.2: Tree diagram of older adults' negative trait clusters (auto-stereotype subtype labels on left)

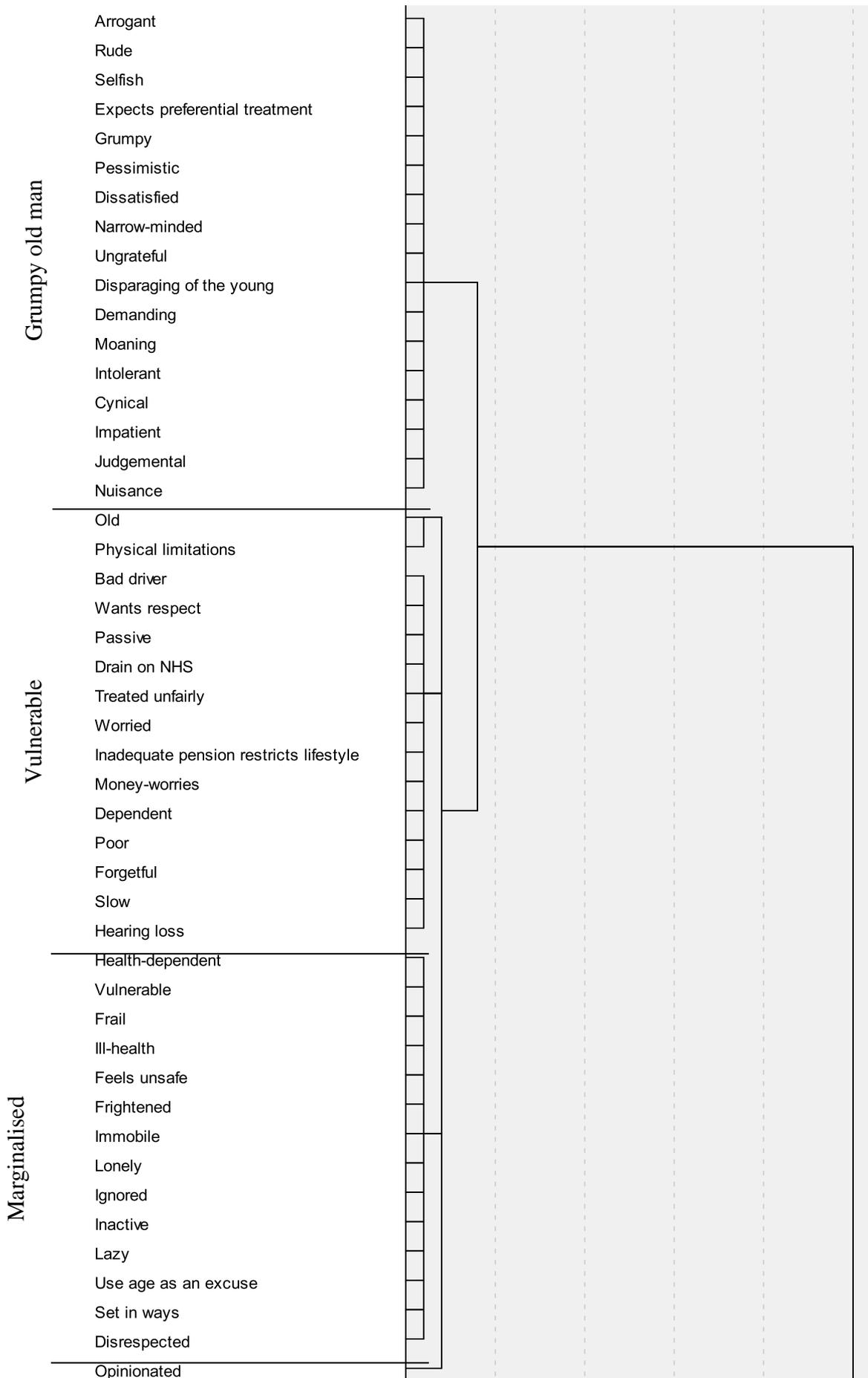
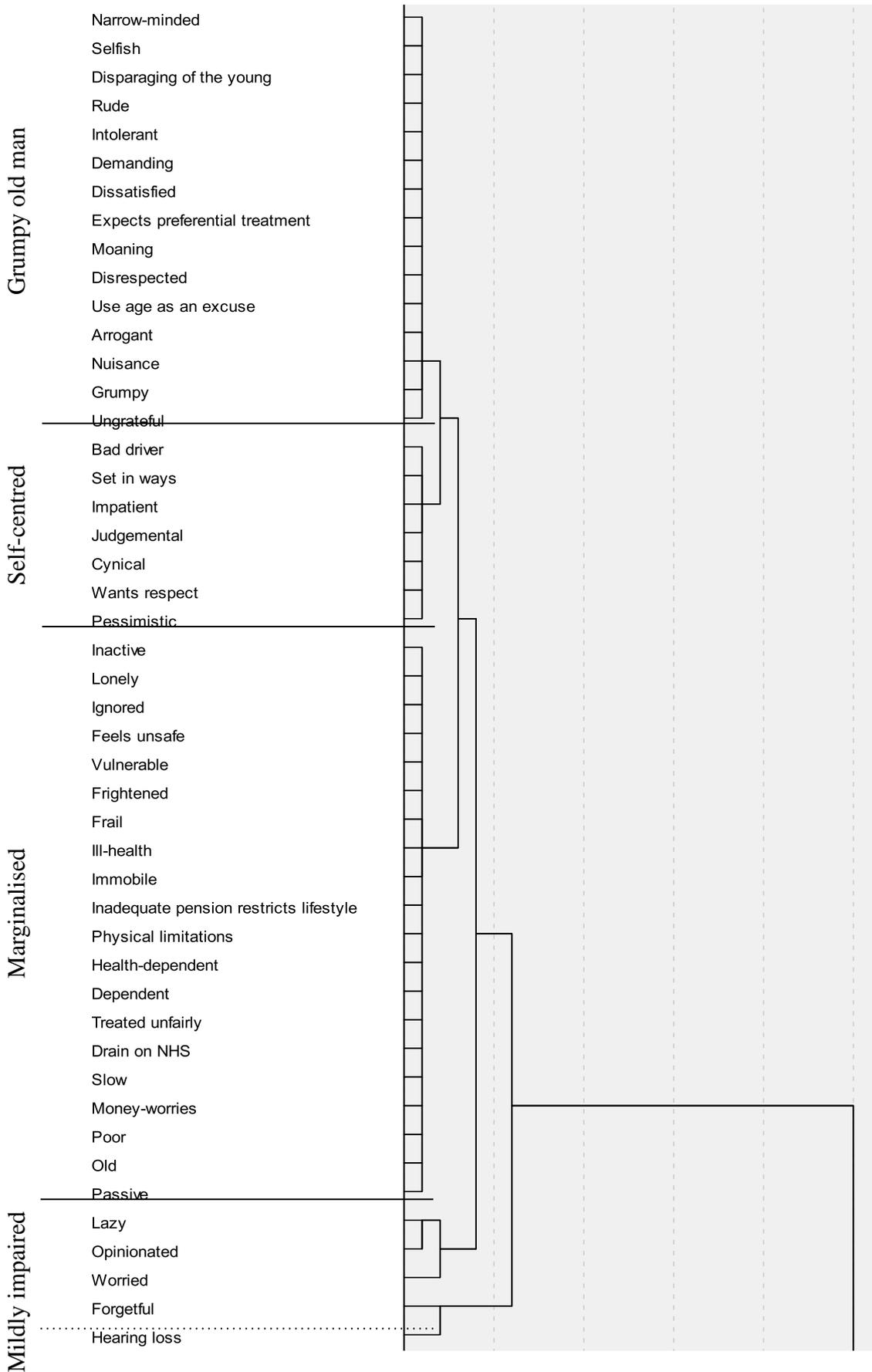


Figure 4.3: Tree diagram of old-old adults' negative trait clusters (stereotype subtype labels on left)



To further examine the differences between groups, a series of Wilcoxon signed-rank tests (non-parametric equivalent of a one-sample *t*-test) were conducted to establish how strongly participants identified with their age-group (critical value set at $p < .003$ after Bonferroni corrections). This allowed us to determine whether scores were significantly greater than the midpoint of the scale (4), and whether they constituted a positive identity rating (i.e., scores ranging from 5-7). Analyses indicated that all age-groups showed positive ties with other ingroup members, with scores significantly above the midpoint of the scale (all p values $< .003$; e.g., for old-old adults $z = 4.14, p < .001$)⁵⁷. The analysis also provided support for the hypothesis that levels of identity would vary as a function of participant age, as older adults were the only group to show scores (*median* = 3.50, *range* = 3.25) significantly below the midpoint of the scale on the centrality dimension ($z = 4.20, p < .001$). As noted above, young adults also showed significantly higher levels of ingroup affect than either of the older age-groups.

Table 4.3: *Age-group identification by participant age*

	Young adults <i>n</i> = 39		Older adults <i>n</i> = 36		Old-old adults <i>n</i> = 39	
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)
Ingroup affect	5.72	1.00	4.77	1.07	4.63	1.40
Ingroup ties	5.13	1.17	4.69	1.20	4.85	1.05
Centrality	3.66	0.99	3.37	0.71	3.58	0.93
Composite scale	4.84	0.80	4.28	0.74	4.37	0.70

To further examine the relationship between age and ingroup identity, a Kruskal-Wallis test was performed on subjective age bias (SAB, cf. Weiss & Lang, 2012), indicating a main effect of age ($X^2(2) = 48.46, p < .001$). To further explore this effect, Mann Whitney *U*-tests were conducted (critical value $p < .017$). Confirming the expectation that differences would emerge in levels of identity between age-groups, young adults demonstrated significantly less SAB (see Figure 4.7) than older ($U = 145.500, n_1 = 38, n_2 = 36, p < .001$) and old-old adults

⁵⁷ NB although scores for older (*median* = 4.75, *range* = 5.00) and old-old adults (*median* = 4.75, *range* = 4.00) were slightly below those denoting positive ratings (i.e., a median of 5), this difference was not significant for either age-group (both p values $> .17$).

Figure 4.4: Tree diagram of young adults' positive trait clusters (stereotype subtype labels on left)

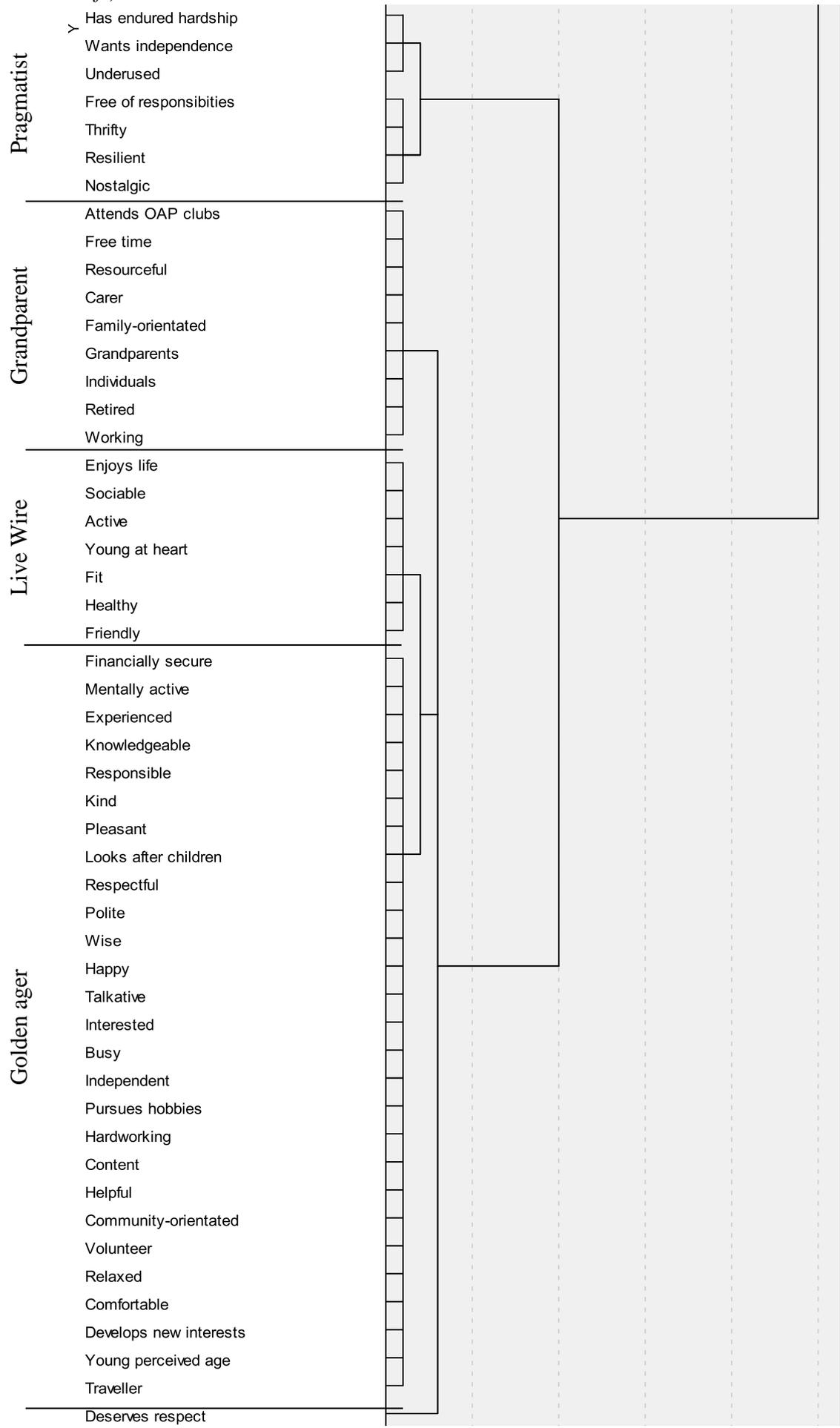


Figure 4.5: Tree diagram of older adults' positive trait clusters (stereotype subtype labels on left)

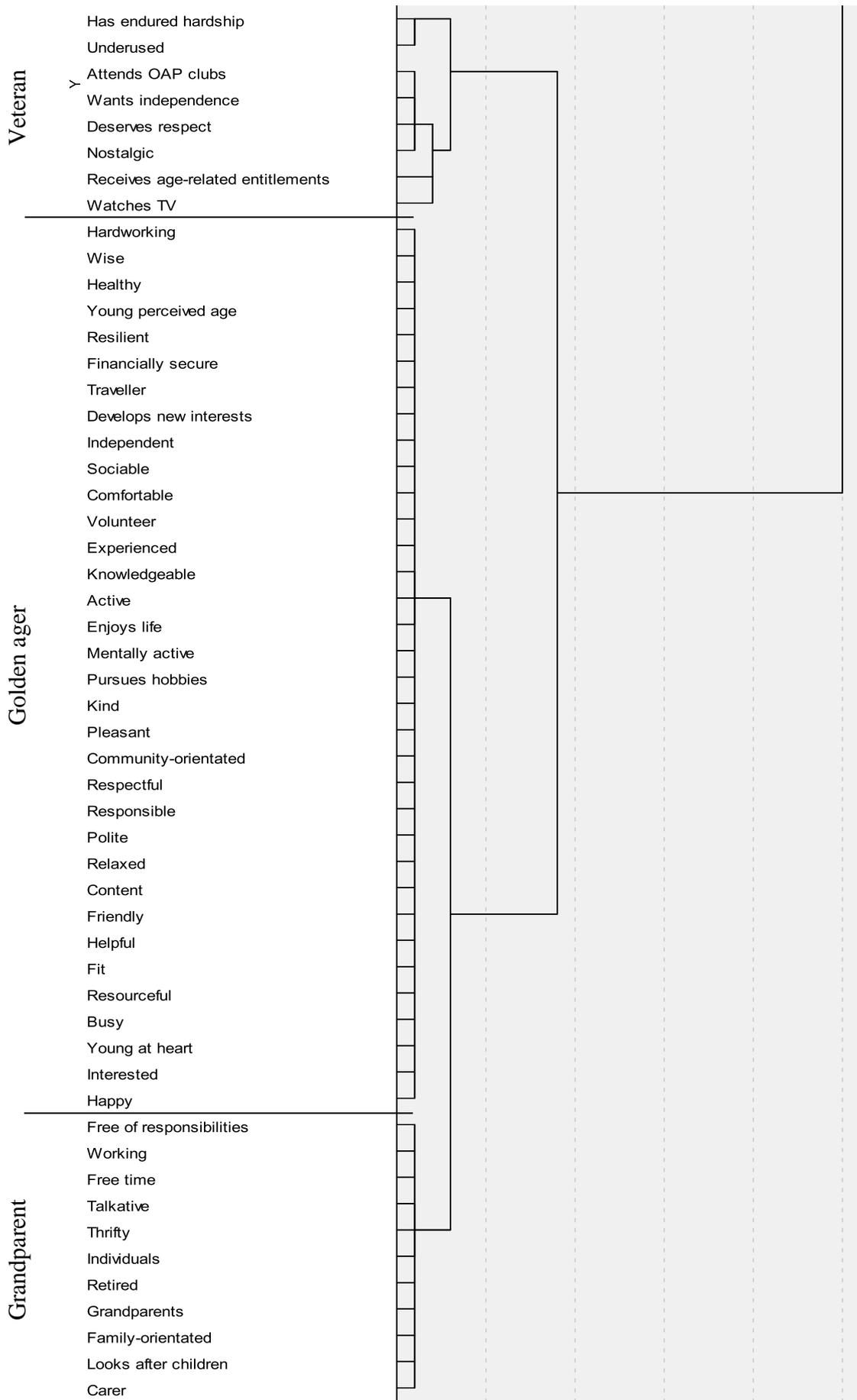
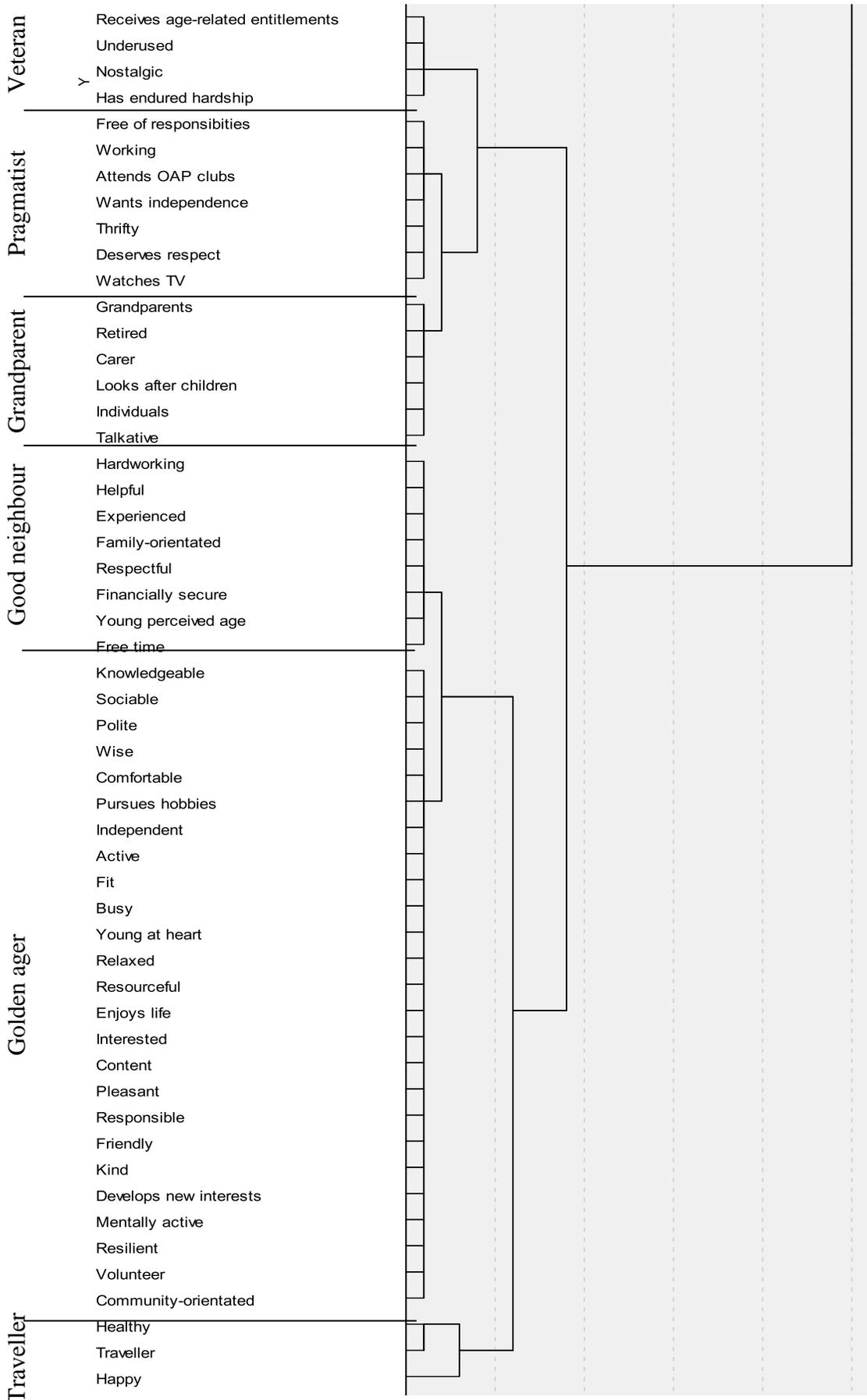


Figure 4.6: Tree diagram of old-old adults' positive trait clusters (stereotype subtype labels on left)



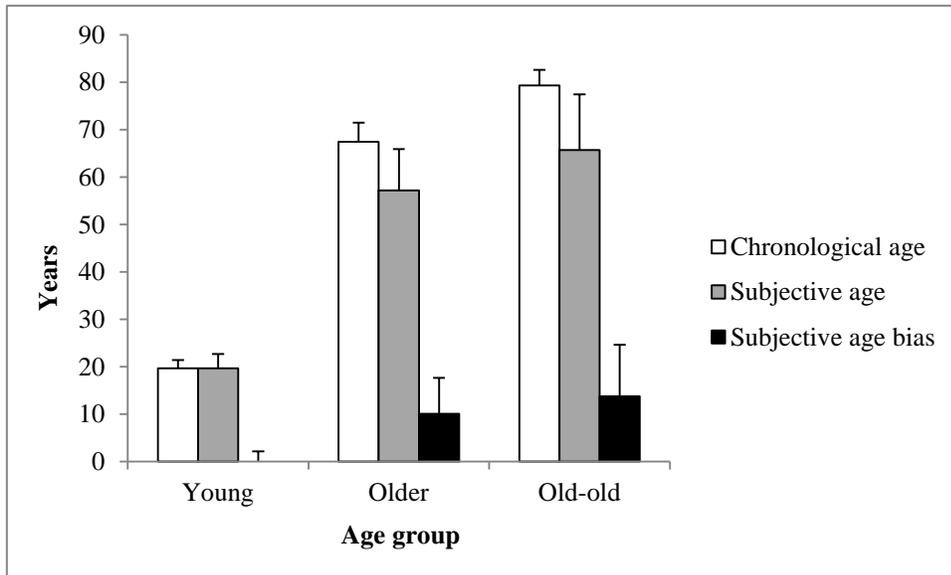
($U = 128.000$, $n_1 = 38$, $n_2 = 35$, $p < .001$). In contrast to Study 2, the difference between older and old-old adults was not significant ($U = 480.000$, $n_1 = 35$, $n_2 = 35$, $p > .05$). This was in the expected direction, however, with old-old adults reporting increased subjective age bias ($M = 13.31$, $SD = 11.26$) than older adults ($M = 10.19$, $SD = 7.58$; see Figure 4.7). This could be indicative of a lack of power in the current Study in comparison to Study 2 (power of 0.50 versus 0.91).

To further explore age-group identification, a series of bivariate correlations were conducted between SAB and individuals' composite identity score (Cameron, 2004), which, in line with expectations and previous findings (Study 2; Weiss & Lang, 2012) revealed a negative correlation between age-group identity and subjective age bias ($\rho = -.31$, $n = 106$, $p = .001$). Thus, participants with higher ingroup identity showed less dissociation from their age-group than those with low levels of identity. Bivariate correlations were also conducted to explore the relationship between chronological age and subjective age bias. In line with expectations that SAB would increase with increasing age, a significant and positive correlation between the two variables emerged ($\rho = .87$, $n = 109$, $p < .001$): The older the participant, the greater the difference between chronological and subjective ages (see Figure 4.7).

Importantly, whereas young adults' subjective ages fell within the young adult age category (i.e., 17-25 years; see Figure 4.7), older adults' subjective ages ($M = 56.81$, $SD = 8.73$) fell below the age-range for their age-range (i.e., 60-75 years), whereas old-old adults' ($M = 66.02$, $SD = 11.89$) fell within this range (see Figure 4.7). To further explore this pattern, one-samples t -tests were conducted on older and old-old participants' subjective ages and the midpoint and lower boundary of the older adult age-range (i.e., 67.5 years and 60 years). Whereas older adults demonstrated subjective ages significantly below both cut-offs ($t_{\text{mid}}(35) = 7.35$, $p < .001$; $t_{\text{lower}}(35) = 2.20$, $p = .015$), no significant difference emerged on the midpoint for old-old adults ($t(34) = 0.73$, $p > .47$), whereas their subjective ages were significantly above the lower boundary ($t(34) = 3.00$, $p < .003$).

In summary, the main findings from Study 3 indicated that auto/stereotype subtypes of older adults held by British participants could be divided into two high-level clusters, consisting

Figure 4.7: Chronological and subjective ages, and subjective age bias by participant age



of positive (e.g., *Golden Ager*) and negative subtypes (e.g., *Grumpy Old Man*). This pattern is in line with previous findings from American samples (e.g., Hummert, 1990; Schmidt & Boland, 1986). In contrast to expectations, old-old adults demonstrated more complex representations of later life (as indicated by the generation of more auto-stereotype subtypes, which were subsets of older and young adults' broader auto/stereotype groupings) than older adults. This finding was in line with Linville's (1982) ingroup complexity bias (ICB), however, when subjective ages were considered, as old-old adults reported subjective ages within the older adult category whereas older adults' subjective ages fell outside of their ingroup age-range.

Furthermore, in line with expectations and the results from Study 2, a significant and large correlation emerged between participant age and subjective age bias (SAB; Westerhof & Barrett, 2003), alongside a negative correlation between participants' level of ingroup identity and SAB. In contrast to Studies 1 and 2, the present study indicated that age-related ingroup identification varied as a function of participant age, with young adults reporting higher levels of ingroup affect than the older two age-groups. This aspect of age-group identity was not assessed in our previous studies, reinforcing the importance of using detailed scales to assess identity (cf. Cameron, 2004; Emons et al., 2007).

4.5: Discussion

Section 4.5.1.1: Do older adults hold more complex auto-stereotypes of their age-group than young adults, and did any differences emerge between the structure of these auto/stereotypes?

In contrast with expectations that older adults would show more complex auto-stereotypes of their own age-group than young adults' stereotypes of later life, no significant differences emerged over the number of created groups between these two cohorts on the free-sorting task. Indeed, out of the three age-groups involved in the current study, older adults created the *fewest* number of auto-stereotype subtypes, rather than the largest, with the mean number of created groups being extremely similar between young and older adults (see Section 4.5.1.2 for results relating to old-old adults). These findings are similar to the pattern of results from Studies 1 and 2, where the total number of generated traits associated with the older adult age-group was similar between young and older adult cohorts, although differences did emerge between the valence of these traits, as young adults generated more negative traits than their older counterparts (see Section 3.5.1).

Although these findings were explained as an artifact of measurement in Studies 1 and 2, this finding seems less tenable in light of the current findings, as none of the variables identified as potential confounds (e.g., verbal intelligence, subjective health ratings) exerted a significant effect in Study 3. Importantly, the current findings (that the number of generated subtypes were similar between young and older adults) are in opposition to Linville's ICB (1982). Two potential explanations for the current pattern of results seem plausible. Firstly, as emphasised in Section 4.2.1.2, one explanation could be due to our differentiation between older and old-old adults. Indeed, comparisons across age-groups between the two studies (Study 3, and Hummert et al., 1994) showed the most similar responses between old-old adults in the current study and Hummert and colleagues' elderly sample (difference of just 0.10 between groups; see Table 4.2). This finding is discussed in greater detail in Section 4.4.1.2.

In addition, as discussed in Section 3.5.1, the wording of the stereotype content measure meant that we were unable to determine whether older participants were generating auto- or meta-stereotype content, or the degree to which this content was endorsed. As the terms that

were generated in Study 2 constituted the materials for the current experiment, it seems feasible that a proportion of the 100 terms included in the current study were not perceived to be self-relevant (i.e., auto-stereotypical) to our older participants. Indeed, the results from the (admittedly small) ratings study supports this suggestion (see Section 4.3.1). If our older participants did not perceive the 100 terms to apply to the older adult age category, it is unsurprising that they did not display a greater complexity of representation than the younger age group.

Similarly, the wording of the sorting task itself may have exacerbated this situation. As previously emphasized, the study by Weiss and Lang (2012) indicated that older adults showed a greater dissociation from their age group when asked to consider chronological age as the basis of age-related identity, rather than identity based on generational membership. As the sorting task instructions asked participants to sort the traits into groups associated with ‘one individual older adult’ (cf. Schmidt & Boland, 1986), and stipulated the age-range for this category as being 60-75 years, these instructions would have emphasized chronological age to our participants, which may have resulted in an increased dissociation from their age group (cf. Weiss & Lang, 2012).

Indeed, older participants’ reported subjective ages support this suggestion ($M = 57.19$ years), as subjective ages were significantly below their chronological age. An additional explanation concerns subjective ages. As indicated in previous research (Westerhof & Barret, 2003, 2005; Weiss & Lang, 2009, 2012) and Studies 1 and 2, older adults often show dissociation from their own age-group through reporting subjective ages below their chronological age-group. Indeed, as indicated in Section 4.4.2, this pattern was also obtained in the current study. Importantly, older participants’ reported subjective ages fell outside of the age range for the older adult age category. This suggests that older participants in the current study may not have identified with their age-group, which could explain why their “ingroup” representations were not more complex than young adults’ stereotypes. Indeed, when a comparison was conducted between the number of generated groups as a function of subjective, rather than chronological age, a trend emerged for older adults to generate more groupings than their younger counterparts. This contrasts with the pattern obtained when analyses were based

on chronological age, when young adults generated more subgroupings than older adults. As neither of these trends was significant, however, a replicated of the study with larger samples is required before conclusions can be drawn with any confidence.

As the subject age results from the Studies 1 - 3 suggest that older adults dissociate from the 60-75 year old age category, it is therefore unsurprising that older participants did not show more complex representations of their “own” age-group, as older adults appear to distance themselves from this aspect of self-definition. They should therefore not be expected to show more complex representations of a group from which they actively dissociate. As young adults actually created slightly more grouping than their older counterparts, it is therefore unsurprising that our second hypothesis (that older adults’ auto-stereotype subtypes would consist of subsets of young adults’ broader categories) was also rejected. Although social desirability concerns may also have influenced young adults’ scores, the age-group dissociation effect is a plausible explanation for our lack of significant findings.

Section 4.5.1.2: Do old-old adults show more complex (auto)stereotypes of the older adult age-group than young and older adults, and did any differences emerge between the structure of these auto/stereotypes?

One important aspect of the SIA to identity is that social identities are defined through the groups that are important to individuals’ self-concepts (i.e., how people define themselves as members of particular groups; Reicher et al., 2010). In contrast to our expectations, in the current study *old-old* adults (rather than older adults) self-identified as ingroup members of the older adult age category. This was reflected in the reported subjective ages of old-old adults ($M = 65.72$), which fell within the older adult age-range, whereas older adults’ subjective ages fell below it. It was therefore old-old adults who showed the most complex representations of the older adult age-group, rather than older adults themselves⁵⁸.

⁵⁸ One caveat to these findings, however, is that when a comparison was conducted based on subjective rather than chronological age, only four old-old adult participants gave ages within the old-old adult category. This made a comparison between subjectively identified older and old-old adults untenable. It should also be noted that the mean number of created groups by these four participants ($M = 11.75$) was much higher than the younger age groups (although as expected with such a small group, the standard deviation was very high). An extension of this study, recruiting sufficient numbers of old-old adult with subjective ages within their own age category would therefore be extremely interesting, although it may prove problematic to recruit individuals with subjective ages that are this high.

Although initially surprising, due to old-old adults' lower reported subjective ages, this finding *is* in line with the ICB (Linville, 1982), as old-old adults' stereotypes of old age reflect *auto*-stereotypes, rather than outgroup members' stereotypes. Further support was also obtained for the hypothesis in terms of the structure of participants' stereotypes, as old-old adults' showed greater differentiation between auto-stereotype subtypes (e.g., *Traveller*, *Good Neighbour*, *Golden Ager*), which were subsumed within the broader subcategories created by young and older adults (e.g., *Golden Ager*). These findings are in line with previous research (Hummert et al., 1994), which obtained the same pattern of results.

It should be noted, however, that the greater complexity of auto-stereotypes of ageing displayed by old-old adults in the current study contrasts with our findings from Study 2, where little evidence was obtained to indicate that perceptions of ageing between older and old-old adults differed. As emphasized in Section 3.5, this may have been the result of the reliance on free-response items in Study 2, suggesting that further investigation of this issue is required, using a combination of free- and closed-response items. In addition, the work by Brewer and Lui (1984) indicated that although older participants displayed more complex representations of the older adult age-group than young adults, this was restricted to the specific subtype (the *Grandmother*) that participants personally identified with, rather than more complex representations of the superordinate category.

The more complex representations of the specific subtype by elderly participants was revealed through the older sample showing greater differentiation over the number of photographs and behavioural sentences associated with the *Grandmother* subtype in comparison to young adults (Brewer & Lui, 1984), whereas no differences emerged over the same variables in relation to the *Senior Citizen*. As participants reported the *Grandmother* subtype to be the most similar to themselves, Brewer and Lui (1984) therefore argue that the complexity effect may only apply to the specific subtype that older participants identify with.

Although participants in Study 3 were not asked to indicate which (if any) of their generated subtypes they personally identified with, some preliminary evidence does suggest that

the same pattern might apply to our sample. Whereas the average number of created subtypes from the negative auto/stereotypes showed little variation between cohorts (i.e., four for young and old-old adults, versus three for older adults), a wider range appeared in relation the number of positive subtypes that were generated across groups (three for older adults, four for young adults, and six for old-old adults). As the social identity approach (SIA) posits that we are motivated to hold positive representations of the groups to which we belong (for a review, see Reicher et al., 2010), it is therefore seems plausible that the greater differentiation of positive, as opposed to negative, subtypes by old-old adults may be reflective of greater identification with these categories. As self-categorization with a specific subtype was not assessed in the current study, however, this finding must be treated with some caution. Further work would therefore benefit from more detailed examination of this issue.

In combination, the findings from the current study (that old-old adults generated more subtypes in the free-sorting task than older adults, and these subtypes were subsets from older adults' broader categories) support our hypothesis, albeit in an unexpected direction, that differences in auto-stereotype content and structure would emerge between older and old-old adults, and reinforces the need to differentiate between these two age-groups in future empirical studies (Bytheway, 2005). The current findings also emphasise the importance of assessing SAB when investigating issues around age-related identity (Westerhof et al., 2003), as *subjective*, rather than chronological, ages are central to the older population's self-definitions (cf. Bowling et al., 2005).

The more complex representations of later life displayed by old-old as opposed to older adults also raises an interesting question in relation to the previous research by Hummert and colleagues (1994). Although elderly participants in their study (aged from 62-84 years) displayed more complex auto-stereotypes of ageing than middle-aged participants, considering the current results, it seems plausible that this difference may have been due to the inclusion of old-old adults in the elderly cohort. This issue is particularly interesting, as although the elderly sample in the study (Hummert et al., 1994) displayed a trend towards creating more groups than young participants, this difference was not significant ($p < .12$).

Although the authors argue that young adults' social desirability concerns may explain the lack of a significant finding (Hummert et al., 1994), separating their elderly sample into older and old-old adults *may* have increased the size of this difference, resulting in a significant effect. This would explain the discrepancy between the current findings (i.e., a significant effect was obtained between old-old and young adults) and the previous research (Hummert et al., 1994). Indeed, when older and old-old adults from the current study were combined into a single age category using the range applied in Hummert and colleague's study (62-84 years), the difference between this composite elderly category and young adults' responses was not significant. This finding reinforces the importance of differentiating between the two older age-groups: a distinction that has often been lacking in previous research (e.g., Levy, 1996; Weiss & Lang, 2009, 2012).

In summary, although our findings indicated that old-old, rather than older adults, displayed more complex representations of the older adult age category than young participants, due to high SAB scores of both of the older samples, these findings *are* in line with the ICB (Linville, 1982), and reinforce the importance of differentiating between older and old-old adults (Bytheway, 2005).

Section 4.5.2: Do differences exist between age-groups over level of age-group identification?

Possibly the most important finding to emerge from analysis of individuals' level of age-related ingroup identity concerned the subjective ages with which participants identified. The level of SAB demonstrated by our participants indicated that, in line with previous research (Weiss & Lang, 2012), young adults were the only cohort to self-identify with their age-group. In contrast, both older and old-old adults reported subjective ages significantly below their own age-groups (cf. Westerhof et al., 2003). Indeed, a significant and strong correlation (Cohen, 1988) was obtained between participants' chronological age and SAB, alongside a negative correlation between participants' age-group identity and SAB. This confirmed the suggestion (Weiss & Lang, 2012) that those who showed low levels of identity also dissociated from their respective age-groups. Previous work has indicated that older adults' felt (i.e., subjective ages) are more sensitive indicators of age-related identity than their chronological ages (Bowling et al., 2005), and the results from our complexity measures (see Section 4.5.1.2) supported the importance of

the subjective age.

In contrast to the results from Study 2, the current study did obtain differences between age-groups over levels of age-related ingroup identification, with young adults showing significantly higher ingroup affect than the older two age-groups (although no significant differences emerged between groups over levels of ingroup ties or the centrality of age-group membership). Importantly, the identity scale employed in Study 2 did not contain items reflective of ingroup affect (i.e., evaluative responses to the group), which explains the difference between studies. Furthermore, as previous studies have often employed one or two item scales to assess identity (e.g., '*I have a strong sense of belonging to my age-group*' ACE, 2008, p. 6), this finding could help to explain why patterns of age-group identity have been inconsistent in previous work (e.g., Abrams, Vaclair et al., 2011; Demakakos et al., 2007) as ingroup affect has not always been assessed (e.g., ACE, 2008).

This reinforces the importance of examining multiple aspects of ingroup identity (Cameron, 2004; Leach et al., 2008), and confirms the suggested limitation of Study 2 due to the use of a uni-dimensional scale. Further research examining group identity in relation to ageing should therefore ensure that longer scales are used (cf. Emons et al., 2007) and compare differences between age-groups on the different dimensions of identity. The current findings suggest, for example, that interventions aimed at improving age-related ingroup identification would benefit from an emphasis on centrality, as ratings from all three age-groups were lowest on this dimension.

As centrality relates to the subjective importance of membership in the given social category (Cameron, p. 241; Luhtanen & Crocker, 1992), however, the uniformly low ratings provided by participants on this dimension suggests that age-related identity is unimportant to participants' self-concepts (with the caveat that contextual factors influence the salience of a given category at any time; Reicher, 2004). It should be noted that although all cohorts gave low ratings on this dimension, older adults were the only group to display scores significantly below the midpoint of the scale. Reconceptualising the way that participants (and researchers) view age-related identity (e.g., promoting a generation-based identity, rather than focusing on

chronological age; Weiss & Lang, 2009) may therefore have more beneficial implications for older adults than merely trying to promote chronological age-based identity.

Studies have indicated, for example, that emphasizing the range of new roles that older adults acquire post-retirement (e.g., mentors, volunteers) can have positive implications for well-being and adjustment (Byles et al., 2013; Price, 2002). Thus, rather than focusing on age-related identity based on chronological age, promotion of other identities that (tend) to become salient in later life (e.g., grandparents) may have positive consequences for older adults (e.g., feeling more satisfied and fulfilled; Byles et al., 2013). Furthermore, as reviewed in Section 4.5.1.1, displaying dissociation from a chronological age-group may represent an adaptive strategy in later life (cf. Levy & Banaji, 2002; Westerhof & Barret, 2003), allowing older adults to distance themselves from the negative stereotypes associated with age-group membership. As argued by Braithwaite (2002), the most effective way of improving well-being in old age may therefore be interventions aimed at promoting societal perceptions of ageing.

In summary, in contrast with Studies 1 and 2, the current study obtained support for the hypothesis that differences would emerge between age-groups over levels of age-group identity. This appeared to be reflective of the inclusion of a longer identity measure in Study 3, and specifically the assessment of participants' level of ingroup affect. Future studies should therefore ensure that this dimension of identity is included in any further comparisons between age-groups.

Section 4.5.3: Conclusions, limitations, and further directions

In summary, the current study expanded on the findings from Studies 1 and 2, providing evidence that old-old adults showed more complex representations of later life than their younger counterparts. These findings contrasted with initial expectations, which hypothesized that older adults would show more complex auto-stereotypes of their own age-group than old-old adults' stereotypes. Considering the reported subjective ages of our sample, however, these findings are in line with the ICB (Linville, 1982).

This pattern of results also supports the assertion that sorting tasks may exert less

cognitive load than other methodologies (Coxon, 1999) such as free-response measures, as old-old participants tend to show lower levels of cognitive performance and reserve than their younger counterparts (e.g., R. F. Kaplan et al., 2009). If the creation of complex categorisations was cognitively challenging, we should therefore have expected old-old adults to show lower levels of complexity (indicated by the generation of few auto-stereotype subtypes, and lower levels of differentiation between subtypes) than their younger counterparts⁵⁹. As the opposite pattern was obtained, this provides some (albeit extremely limited) support for Coxon's (1999) argument that sorting procedures are relatively simple cognitive tasks. As the current work included no assessment of the perceived difficulty of the sorting task, however, this finding is extremely tentative, and requires further examination before any firm conclusions can be drawn.

Importantly, the different levels of complexity displayed by older and old-old adults in the current study clearly support one of the main arguments of Study 2, that the tendency within previous research to combine older and old-old adults into a single age-group (e.g., Hummert et al., 1994; Levy et al., 2000) is erroneous, as this may obscure differences between these cohorts (Bytheway, 2005; e.g., over complexity of auto-stereotypes of old age). Ideally, an additional study could apply the same methodology (i.e., trait-generation and free-sorting tasks) to traits associated with old-old adults, to examine whether different levels of complexity emerged between the different cohorts' auto/stereotypes of this age-group. Such a study would also allow us to redress the ambiguous wording of the stereotype content measure (see Section 3.5.1), to ensure that participants' auto-stereotypes, rather than meta-stereotypes, were being assessed. A comparison of old-old adults' own auto-stereotypes and stereotypes of older and old-old age would be particularly interesting, as this would shed additional light on the importance of chronological versus subjective ages on auto-stereotype complexity.

Three limitations can be applied to the current study, however, which should be addressed in future research. The first concerns the nature of our sample. As indicated in Section 4.3.4, no significant differences emerged between age-groups over level of education or

⁵⁹ Note that this explanation does not consider participants' engagement with the task, which may heavily influence the perceived difficulty, nor the impact that demographic factors may have exerted on the current sample. Research does indicate, for example, that higher levels of education are associated with increased cognitive reserve (Kaplan et al., 2009). As our old-old participants displayed unusually high levels of education, this may also have exerted a significant effect.

ratings of subjective health. Although failure to obtain a significant effect does not mean that the null hypothesis is false (just that we cannot reject it; Field, 2005), these findings contrast with previous research, which have consistently indicated that young adults enjoy higher levels of education and subjective health than their older counterparts (e.g., De La Fuente, 2012; Reile & Leinsalu, 2013). This suggests that our current older samples may have been atypical.

Unfortunately, these findings do limit the extent that our results can be generalized to the wider population. St Andrews is an affluent area, whose residents enjoy high socioeconomic statuses and educational achievement (GRO, 2001). Although numerous measures were employed to recruit older participants that were representative of the wider population (e.g., advertisements placed in less affluent areas of Fife; see Section 4.3.1), the high levels of education and subjective health displayed by our older participants are indicative of a recruitment bias. The high levels of education are particularly problematic, as recent studies have indicated that stereotypes and auto-stereotypes of later life exert different effects on older participants with high versus low educational attainment (Andreoletti & Lachman, 2004; Horton, Baker, Pearce, & Deakin, 2010). This raises serious issues in terms of the generalizability of the current findings. Further studies should ensure that participants with a broad range of demographic variables are recruited, possibly by approaching charities (e.g., Age Scotland, Independent Age) that work with disadvantaged older adults. Certainly, a replication of the current findings from individuals with lower levels of educational attainment would be interesting, and would expand our understanding of the content of age related stereotypes, auto-stereotypes, and meta-stereotypes.

The second limitation concerns our high exclusion rates for older adults, with 1 in 5 participants being excluded. This was twice the exclusion rate obtained for the other age-groups. Although medication use and depressive symptomatology influenced these rates, the main exclusion reason for older adults concerned the number of traits identified as miscellaneous (i.e., perceived as not belonging to the older adult category). Results from our pilot ratings study confirmed these findings, which indicated that over a third of the 100 traits were not rated as being characteristic of older adults (by a small sample of young and older adults; see Appendix X). Subsequent research should therefore ensure that only traits that are perceived to be

characteristic of older adults are included in the analysis. This could be achieved through the inclusion of an additional phase of the study, where participants rate the traits identified in the content generation phase as being characteristic of older adults. This would help to ensure that all participants perceive the included traits as being associated with the older adult age-group.

Overall, however, this finding does raise a significant issue in relation to the sorting procedure and our findings, as the low levels of auto-stereotype complexity displayed by older adults in the current study may have been reflective of older participants not associating the traits with their age-group. As emphasized in Section 3.5.1, rewording the stereotype content measure to remove the ambiguity over auto- versus meta-stereotype content should help to eliminate this confound. It should be noted, however, that the SAB data does support the suggestion that the lack of greater complexity in older adults' auto-stereotype content could be accounted for by their dissociation from their age-group, which may also have been influenced by the emphasis on chronological age (see Weiss & Lang, 2012) in the wording of the sorting task instructions. Further studies are therefore required to confirm the reliability of these findings.

The third limitation was that we did not assess whether older and old-old participants identified more or less strongly with specific subtypes of the older adult auto/stereotype, as suggested in the study by Brewer and Lui (1984). Further studies could investigate this issue, which is highly pertinent to theories from SIA (e.g., Tajfel & Turner, 1979). This could have important implications for older adults' well-being, as evidence does suggest that a positive ingroup identity can promote more well-being in older samples (Garstka et al., 2004). If older participants identify more strongly with a specific subtype (e.g., the *Golden Ager* or *Live Wire*), interventions aimed at promoting age-related ingroup identification could benefit from an increased focus on improving the salience of this specific subtype, rather than relying on more general representations of the superordinate elderly auto-stereotype (although see Section 4.5.1.1 for the argument that dissociation from the age-related ingroup may be adaptive in later life).

Despite the limitations of the current study, the results do support the pattern obtained in previous research (for a review, see Kite et al, 2005), indicating that individuals' stereotypes, auto-stereotypes, and meta-stereotypes of older adults are complex. In line with previous studies

using samples from the USA (e.g., Hummert, 1990; Schmidt & Boland, 1986), the current study indicated that age-related stereotypes could be broadly divided into positive and negative subtype clusters. Considering the differential effects that activating a positive versus negative age-related auto-stereotype have been shown to exert upon older adults (e.g., Hess et al., 2003; Levy et al., 2000), a full understanding of the content of these stereotypes – and, indeed, the situations in which each become activated – is of central importance in terms of improving older adults’ functional capacity and well-being.

In Section 1.1.3, for example, we reviewed research relating to the negative impact of stereotype threat effects on older adults’ memory performance (e.g., Hess et al., 2003; Rahhal et al., 2001). When task instructions emphasized the cognitive (rather than memory) component of a task, for example, older adults’ performance equaled that of young participants in the study (Desrichard & Kopetz, 2005): Simply reframing the task instructions to minimise the memory component improved older adults’ scores by almost 12%. Similarly, in the work by Weiss and Lang (2012), asking participants to respond to questions concerning negative auto-stereotypes of old age (e.g., ‘How large is the proportion of people in need of care among people older than 85 years?’ p. 162) resulted in significantly higher levels of dissociation from the age-group than when questions focused on positive aspects of ageing (Weiss and Lang, 2012).

Although Studies 1–3 of the current thesis explored both the content and structure of age-related stereotypes and auto-stereotypes, one limitation of the current studies has been our reliance on explicit measures of stereotype content, which may be influenced by social desirability concerns (i.e., young adults’ desire to appear unprejudiced towards older adults, and thus presenting more positive stereotypes of ageing than they actually hold). For this reason, a number of authors have recommended the use of implicit measurement techniques (e.g., Hummert et al., 2002; Levy, 1996; Nosek et al., 2002) when assessing participants’ stereotypes towards an outgroup, in order to avoid the confounding factor of social desirability issues.

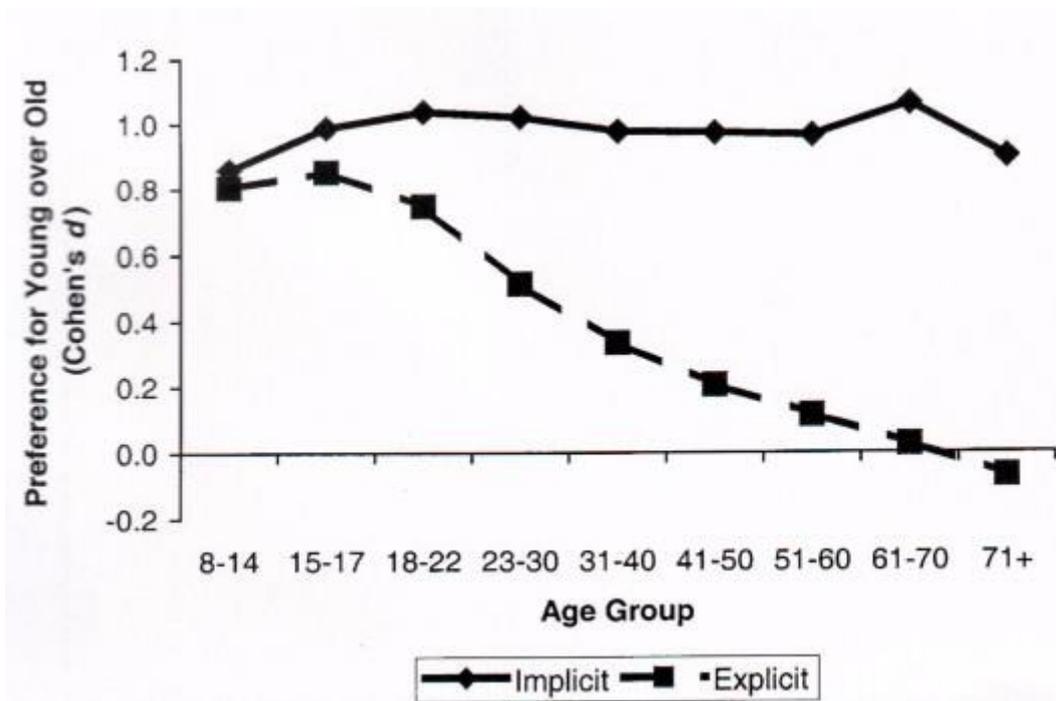
Implicit assessments of participants’ stereotypes have been successfully applied to a wide range of social groups, including women (Nosek et al., 2002), obese individuals (Agerstrom & Rooth, 2011), and older adults (e.g., Hummert et al., 2002). In the study by Nosek and

colleagues (2002) participants' implicit attitudes were assessed in over 600,000 measures using the implicit associations task (IAT; Greenwald, McGhee, & Schwartz, 1998; see Section 1.5). This task pairs social category labels (e.g., 'old') with positively and negatively valenced descriptors (e.g., 'good' or 'bad'), and uses differences in reaction times between the two combinations (e.g., old-bad, old-good) as an indicator of participants' implicit attitudes.

Participants' attitudes towards women, ethnic minorities, and older adults were assessed in this study (Nosek et al., 2002), with findings indicating that implicit attitudes towards ageing were extremely negative. Indeed, they were the strongest (and most negative) attitudes obtained in the study. Although a positive relationship was obtained between explicit attitudes towards old age and participants' chronological age (in line with our results from Studies 1 and 3; see Figure 4.8), a corresponding increase on the implicit attitudinal measure was not revealed. Thus, although older adults showed more positive explicit attitudes towards ageing than young adults, negative implicit attitudes were obtained across the lifespan (see Figure 4.8). This study clearly demonstrates the importance of assessing both explicit and implicit attitudes to ageing: a finding that has been replicated and extended in subsequent research (e.g., Hummert et al., 2002; Lassonde, Surla, Buchanan, & O'Brien, 2012).

As reviewed in Section 2.5, a number of studies have also demonstrated that the activation of auto-stereotypes of ageing has a significant impact on older adults' performance and self-ratings, depending on the valence of the stereotypes. Work by Levy and colleagues (2000), for example, indicated that subliminal activation of negative auto-stereotypes of ageing had a detrimental impact on older adults' cardiovascular responses, whereas activating positive auto-stereotypes served as a protective factor against stressful cognitive tasks. In the subsequent Chapters, we shall therefore review a subliminal priming paradigm that was designed in order to examine the consequences of positive/negative auto-stereotype activation on young and older adults' memory performance, identity, and psychological well-being.

Figure 4.8: *Implicit and explicit age attitudes by group (n = 68,144). Positive Cohen's ds reflect a preference for young over old.*



Note. Taken from "Harvesting implicit group attitudes and beliefs from a demonstration web site," by B.A. Nosek, M.R. Banaji & A.G. Greenwald, 2002, *Group Dynamics – Theory and Practice*, 6 (1), p.101. (c) 2002 by the American Psychological Association.

Chapter Five:

Study 4

5.1: Overview

Studies 1-3 of the current thesis indicated that participants of all ages held stereotypes and auto-stereotypes of old age that consisted of both positive and negative elements. Previous findings from studies in the USA have indicated that activation of auto-stereotypes of old age have differential effects on older adults (e.g., Levy et al., 2000; Hess et al., 2004), depending on the valence of these stereotypes (i.e., positive or negative). These studies have tended to be restricted to samples from the USA, however, which limits the extent that the results can be generalised to a wider population (Meisner, 2012, p. 16). The current study therefore employed a subliminal priming paradigm to investigate the impact of auto-stereotype activation on older adults' psychological well-being and memory performance.

5.2: Introduction

Section 5.2.1: How (and why) do auto/stereotypes of old age affect young and older adults? Are the effects underwritten by prime impact on mood?

As argued in Section 3.5.1.1, Studies 1 and 2 of the current thesis demonstrated that British stereotypes and auto-stereotypes of later life are complex. When asked to describe a 'typical older adult', participants from across the lifespan (aged 14-91 years) in Study 2 generated almost 300 separate, non-idiosyncratic descriptors of older adults, spanning 12 different domains (e.g., *desires and fears, physical disabilities*; see Section 3.5.1). The results from Study 3 extended these findings, demonstrating that young, older and old-old adults hold multiple subtypes of the superordinate elderly auto/stereotype, which, in line with previous research with samples from the USA (Hummert 1990; Hummert et al., 1994; Schmidt & Boland, 1986), could be classified into two high-level clusters, of positive and negative subtypes (see Section 4.4.1.2).

The demonstration that British auto/stereotype subtypes of ageing could be differentiated into positive and negative categories has important implications for the health and functional capacity of Britain's ageing population. As reviewed in Section 2.3, previous research with North American samples demonstrated that subliminal activation of a negative auto-stereotype of ageing had a detrimental impact on older participants' cardiovascular functioning (i.e., increased blood pressure levels and skin conductance following exposure to

the auto-stereotype primes; Levy et al., 2000), which remained elevated up to 30 minutes following the priming manipulation. In contrast, subliminal activation of positive auto-stereotypes had a beneficial effect: although participants' cardiovascular reactivity increased following completion of difficult cognitive tasks, exposure to a second block of positive, auto-stereotypical terms reduced the elevated levels of functioning back to baseline.

Indeed, a broad range of studies have demonstrated that many aspects of social cognition occur at an automatic, rather than conscious level (for a review, see Bargh & Williams, 2006), and may be difficult to consciously control (for full discussions of this issue, see Devine, 1989; Nosek, Hawkins, & Frazier, 2011). Young adults have been shown to use patronising speech and shorter sentences when interacting with older adults, for example, without conscious awareness of their actions (Giles & Howard, 2002). Furthermore, Levy and Banaji (2002) argue that negative auto-stereotypes of ageing are often activated below conscious awareness. Choosing a greeting card for a friend, for example, that portrays ageing as a time of mental and physical decline (Ellis & Morrison, 2005) may elicit negative age-related auto/stereotypes, or when watching TV shows where older characters are depicted in a negative manner (e.g., as comic relief; Donlon, Ashman, & Levy, 2005).

Investigations of the effects of implicit auto-stereotype activation on older adults' performance are therefore of paramount importance in the promotion of successful ageing (Horton et al., 2008). In addition, assessing implicit stereotyping processes offers a number of advantages over explicit techniques, such as removing social desirability concerns (e.g., participants' worries about being judged by the experimenter; Rosenberg, 1969), or demand characteristics on participants to perform in a certain manner (Greenwald & Banaji, 1995). Implicit measures allow us to bypass these effects, and to access cognitive representations that participants may be otherwise unaware of, and therefore unable to report (*Ibid*). As Studies 1-3 of the current thesis relied on explicit assessment of the content of age-related auto/stereotypes, the current study aimed to apply this information to an implicit context, to investigate the effects of auto-stereotype activation on older adults from a UK sample.

Indeed, in line with the cardiovascular findings from Levy and colleagues (2000), research has demonstrated that differentiated effects of subliminal auto-stereotype activation on older participants (as a function of prime valence) occurs across a range of performance

domains, including walking speed (Hausdorff, Levy, & Wei, 1999), balance (Levy & Leifheit-Limson, 2009), memory (Hess et al., 2004; Stein et al., 2002), and even willingness to engage in hypothetical, life-prolonging medical treatment (Levy, Ashman, & Dror, 1999-2000). Thus, negative aspects of the ageing process, such as reduced physical health (Stewart et al., 2012) or impaired cognitive performance (Craig, Byrd, & Swanson, 1987; Light, 1991), can be exacerbated in older participants by the activation of negative stereotypes of ageing (Levy, 2003; Meisner, 2012), even when individuals are unaware of these stereotypes. As a consequence participants' overall well-being is impaired.

The pattern of beneficial or detrimental effects on performance reviewed above (e.g., Hess et al., 2004) may not be caused by an auto-stereotype assimilation effect (i.e., an effect consistent with the activated auto-stereotypes), however, but simply assimilation to the valence of the terms themselves. Thus, when positive auto-stereotypes are activated participants may act in a more positive manner, and vice-versa for the negative auto-stereotypes. Another possibility is that the auto-stereotype activation elicits a positive or negative effect on participants' mood or well-being, which moderates (or mediates) the effects on performance. Three separate avenues of research suggest that these explanations do not account for the findings reviewed above.

First of all, a subliminal priming study by Levy and Leifheir-Limson (2009) manipulated the content of the auto-stereotypes, to match a specific performance domain (physical or cognitive functioning). Participants were primed with positive or negative and physical or cognitive auto-stereotype terms, and were asked to perform a memory or balance task. If prime valence alone accounted for the differentiated pattern of results displayed in previous studies (e.g., Levy et al., 2000), a main effect of valence should emerge, whereas an interaction should emerge if a combination of valence and content was required. In line with expectations, a significant interaction was obtained. Furthermore, the difference between participants' scores on the memory task was greater in the positive-negative *cognitive* auto-stereotype condition than the corresponding difference between conditions in the *physical* priming condition, with the opposite pattern for balance scores. These findings therefore suggest that performance was related to the specific auto-stereotype that was activated, rather than being due to a simple valence effect.

The significant interaction between auto-stereotype domain and performance (Levy & Leifheir-Limson, 2009) also suggests that the effects cannot be attributed to differences in moods elicited by the primes (which would also lead to the prediction of a main effect, rather than an interaction). Although no studies (to our knowledge)⁶⁰ have directly assessed the impact of auto-stereotype activation on older adults' mood, further evidence comes from studies that have included anxiety as a mediator or moderator of auto-stereotype impact on performance (e.g., Hess et al., 2004; Chasteen et al., 2005). Indeed, in Horton and colleagues' (2008) meta-analysis of auto-stereotype activation on older adults' performance⁶¹, 6 of the 17 identified studies assessed the impact of such activation on participants' anxiety levels. No significant effects emerged in any of the studies, suggesting that anxiety neither mediated nor moderated the effect (p. 459).

Psychological well-being is a complex area, however, consisting of many elements (e.g., positive and negative affect, and self-esteem Heatherton & Polivy, 1991; Watson, Clark, & Tellegen, 1988), rather than being restricted to anxiety. It is therefore possible that auto-stereotype activation influences other aspects of well-being, such as mood, which elicit the relevant effects on performance. Findings from priming young adults with stereotypes of old age provide preliminary evidence against this suggestion. Bargh and colleagues used a scrambled sentence task to prime either an elderly or age-neutral prime in young participants (Bargh, Chen, & Burrows, 1996). Participants were given 30 sets of five words (e.g., 'ran, fork, dog, the, home') and asked to make complete sentences from them (e.g., 'the dog ran home'). Age-relevant (e.g., 'knits') or neutral (e.g., 'thirsty') primes were embedded in each word set. An affective response scale was completed following the prime intervention, which revealed no difference in affective scores between participants in the neutral or elderly priming conditions. A limitation of this finding, however, was that the elderly-stereotype words contained items that were both positive (e.g., 'wise') and negative ('e.g., forgetful'), which may have counteracted each other, and contributed towards the null effect. Although preliminary data therefore suggests that the effects of subliminal auto/stereotype activation on performance are not mediated via mood, further work is required before firm conclusions can be drawn.

⁶⁰ To assess the extent of this pattern, a citation search was conducted on three key studies from this field (Hess et al., 2004; Levy, 1996; Stein et al., 2002), with the terms 'mood, affect, and well-being' entered as search criteria. This identified 73 potential studies investigating the relationship between age-related auto-stereotype activation and mood, yet none explored this relationship directly.

⁶¹ *Note.* This meta-analysis included both subliminal priming paradigms (e.g., Stein et al., 2002), and assessment of stereotype-threat effects (e.g., Rahhal et al., 2001).

Interestingly, two additional studies by Bargh and colleagues (Experiments 2a and 2b; 1996) examined the impact of elderly stereotype activation on young adults' walking speed. Although no significant effect of the priming was obtained on mood, a significant effect did emerge on walking speed. Those who were primed with the elderly stereotype walked significantly slower than those in the neutral condition, showing an assimilation effect to the elderly prime (but see Doyen, Klein, Pichon, & Cleeremans, 2012, for a criticism of this study). Additional studies have extended this finding, revealing subliminal age-stereotype priming effects on young adults' movement (grasping actions; Banfield, Pendry, Mewse, & Edwards, 2003), implicit memory performance (Dijksterhuis, Aarts, Bargh, & Van Knippenberg, 2000), and response times on lexical decision tasks (Dijksterhuis, Spears, & Lépinasse, 2001; Perdue & Gurtman, 1990). These studies suggest that priming an auto/stereotype of old age is not restricted to older adults' performance, but also exerts an impact on young adults.

Contrasting findings were obtained on studies investigating the impact of activating subliminal stereotypes of old age on young adults' memory performance (e.g., Hess et al., 2004; Levy, 1996; Stein et al., 2002) and willingness to engage in life-prolonging treatment (Levy et al., 1999-2000). In each case, whereas a significant effect of prime valence was obtained on older adults' performance, no effects emerged for young adults. So why do some studies reveal an effect of age-related stereotype activation on young adults' performance, whereas others do not? Consideration of task complexity and empirical context can explain the divergent pattern of results across studies. As emphasised by Hess and colleagues (2004), studies that demonstrated a significant impact of implicit age-related stereotype priming on young adults' performance consisted of relatively simple or automatic behaviours (e.g., walking speeds or response times; Bargh et al., 1996; Dijksterhuis et al., 2001). These behaviours were not mediated by conscious influences (e.g., goal-directed motivations to perform well on a memory task), and may therefore have been susceptible to automatic stereotype assimilation effects.

Similarly, although the study by Dijksterhuis and colleagues (2000) obtained a significant effect of age-related stereotype activation on young adults' memory performance, the recall task was unexpected: participants completed a 'word recognition task', and were later unexpectedly asked to recall the studied words. Thus, performance on this task should not have been influenced by goal-directed processes, as participants were unaware of the task. This contrasts with the memory studies by Levy (1996) and Stein and colleagues

(2002), where participants were aware that memory performance would be assessed (see below). Hess and colleagues (2004) suggest that young adults should only be influenced by subliminal stereotype activation when the behaviour is simple or automatic, and when competing goals (e.g., motivation to do well on a memory task) do not counter the assimilation effects of the prime. This explains why studies investigating implicit or automatic behaviour demonstrate an impact of age-related stereotype activation on young adults' performance (e.g., Bargh et al., 1996; Dijksterhuis et al., 2001), whereas more complicated or consciously directed behaviours do not reveal such effects (Levy et al., 1999-2000; Stein et al., 2002).

Section 5.2.2: Does activation of auto-stereotypes of ageing influence older adults' memory performance?

The first study to examine the impact of subliminal auto-stereotype activation on older adults' memory performance was conducted by Levy (1996). This study investigated the impact of positive (e.g., 'wise, astute') and negative auto/stereotypic terms (e.g., 'decline, senile') on young and older participants' memory performance on three tasks: The photograph recall task (PRT; modified from Levy & Langer, 1994), where participants were asked to study eight photos (matched to the participants' own age-group), and remember an activity associated with each individual; the dot location task (DLT; Lezak, 1983), where participants studied a series of seven dots on a grid for 10s, before being asked to replicate the design; and the auditory task, where participants listened to a list of 15 words (modified from Hertzog, Dixon, & Hultsch, 1990) before immediately recalling them.

Participants completed the first battery of memory tasks, followed by the priming intervention. This consisted of a series of 20 practice trials run at relatively slow speeds (i.e., large stimulus onset asynchronies; SOAs) which allowed conscious awareness of the letter-strings, and familiarised participants with the empirical design. Random combinations of letters and numbers were flashed on the computer screen either above or below a cross in the centre of the screen (the central fixation point; CFP), and participants were asked to indicate where the flash had occurred by pressing the corresponding arrow on the keyboard. Participants then progressed to the experimental trials, where positive (e.g., 'wise, alert') or negative (e.g., 'decline, senile') auto/stereotypic terms were flashed on the screen at short SOAs, too fast for conscious awareness. For older participants, the primes were initially presented at the fastest speed of 55ms. If participants were unable to see anything, the speeds

were reduced to 66ms, then (if necessary) to 115ms. Finally, participants were asked to complete a second version of the earlier memory tasks, alongside questionnaire measures.

In line with expectations, older participants in the positive condition showed significant improvements in performance over time (i.e., scores post intervention in comparison to pre-intervention) on the PRT. In contrast, participants in the negative condition showed a significant reduction in performance over time on the DLT. The remaining effects were not significant, but showed trends in the expected directions. Thus, Levy (1996) concluded that activation of self-stereotypes of ageing influenced older adults' memory performance in opposite directions, depending on the valence of the stereotype content. As a range of background factors were controlled for in this study (e.g., computer use, education level), Levy concluded that the impact of age-related auto-stereotypes were robust, as effects emerged regardless of participants' demographic characteristics.

There are, however, a number of limitations to Levy's (1996) study that restrict its generalizability. First of all, although older participants in Levy's positive condition showed improved performance on the PRT following the priming intervention, this improvement may not have been due to the manipulation itself. Practice effects (i.e., improved performance due to greater familiarity with the task, or more efficient strategy use on the second presentation) could also explain the beneficial effect on performance⁶². Indeed, participants in every combination of age-group and condition (e.g., young-positive, old-negative) displayed an improvement over time on this task, although these differences were only significant for older adults in the positive condition.

Thus, the significant (versus non-significant) improvement in performance for older adults in the positive (versus negative) condition may represent further evidence for detrimental effects of negative auto-stereotype activation, rather than beneficial effects of positive auto-stereotypes: that is, the negative primes may have reduced the benefits of practice effects, rather than positive auto-stereotypes improving scores. As Levy (1996) did not employ a neutral control group in her study (i.e., older participants exposed to age-neutral primes), it is impossible to determine which of these alternative explanations accounts for the

⁶² *Note.* Levy (1996) does not consider this alternative explanation for the findings.

observed pattern of results. Thus, as emphasised by Stein and colleagues (2002), the lack of a neutral control group is an important limitation to Levy's study⁶³.

A further methodological issue concerns the ascending limits paradigm that Levy employed (i.e., starting at small SOAs (fast speeds), then increasing the SOA if participants were unable to perceive anything). Although this allowed Levy to account for older participants' high levels of variability in visual processing speeds (Fozard & Gordon-Salant, 2001), a more ecologically valid method of accounting for inter-individual variability would arguably have been to employ a *descending* limits paradigm (P. Hibbard, March 2011, personal communication). When primes are initially presented slowly, errors are likely to occur due to participants' lack of familiarity with the design. In contrast, when primes are presented quickly, participants are likely to make errors due to *both* inexperience with the procedure, *and* perceptual issues due to fast presentation rates. Thus, a descending limits paradigm (DLP) should result in more accurate adjustments for variability in individual processing capacity than an ascending limits design.

These issues were both addressed in a more recent study by Stein and colleagues (2002), who replicated and extended Levy's earlier (1996) research. Stein and colleagues administered the DLT and PRT to participants, but increased the number of photographs from 8 to 12 in the latter task in order to eliminate potential ceiling effects in young adults' scores. They also incorporated a neutral baseline condition whereby the subliminally presented words were age-neutral (e.g., 'another, together').

After initially presenting participants with 20 slower practice trials (cf. Levy, 1996), participants completed a calibration procedure: Neutral words were flashed up on the screen in blocks of 10 trials, initially at large SOAs (210ms for older adults), and participants were asked to identify the words. If they correctly identified any of the 10 primes, the SOAs were sequentially decreased in 14ms intervals, until participants were unable to identify the presented terms. The speed at which participants failed the identification test was used in the subsequent experimental trials, and, during the last block of trials, participants were asked to

⁶³ Levy (1996) did employ a pre-post design (i.e., participants in each of her experimental groups acted as their own controls). This approach is preferable to a between-subjects comparison across conditions (Horton et al., 2008; Meisner, 2012), but does not help us to explain the contrasting effects in PRT performance.

identify any of the presented words in order to check for conscious awareness of the primes. Following Levy's procedure, memory performance was assessed both pre- and post-intervention.

The findings from Stein and colleagues' (2002) study provided partial support for Levy's (1996) earlier work. Unaware older participants (i.e., those not consciously aware of the primes) in the negative condition showed impaired performance across time on the PRT. The decrease in scores was significantly greater (and in the opposite direction) to scores from participants in the neutral condition, whose performance showed a non-significant increase across time (i.e., practice effects). In contrast, no significant effects were obtained for young adults in any of the conditions, or for older adults in the positive condition. Thus, in contrast to Levy's (1996) earlier study, Stein and colleagues found no support for the hypothesis that priming older adults with positive auto-stereotypes improves memory performance, although the detrimental impact of the negative primes was confirmed.

One limitation of Stein and colleagues' (2002) study, however, is that a large number of older participants (over 50% of their sample) were excluded from the analysis, due to conscious awareness of the primes. This resulted in relatively small sample sizes ($n = 28$ across three conditions), which means that the results may not be generalizable to the wider population (Field, 2005). The low power of the study may help to explain the discrepancy over effects of positive auto-stereotype activation between studies (Levy, 1996; Stein et al., 2002), however, considering the findings from a recent meta-analysis (Meisner, 2012).

Using a composite measure of performance across numerous domains (e.g., memory performance, cardiovascular functioning), Meisner demonstrated that the detrimental effect of negative auto-stereotype priming on older adults' performance was almost three times greater than the corresponding, beneficial effect of the positive auto-stereotypes. As large effects can be identified when using small samples, whereas small effects will only emerge when large samples are employed (Fleishman, 2012), the low power of Stein and colleagues' (2002) study may explain why no significant effect was obtained for the positive priming intervention. Furthermore, considering the prevalence of negative over positive auto-stereotypes of ageing in society (see Section 1.1.5), it would seem reasonable to conclude that negative auto-stereotypes may potentially exert a more powerful effect.

Additional support for the effect of subliminal age-stereotype priming on memory was obtained by Hess and colleagues (2004). Two studies were conducted, in which young and older adults were either sub- or supra-liminally exposed to positive or negative auto-stereotypes of ageing. In the first study, young and older participants were asked to complete a scrambled sentence task (cf. Bargh et al., 1996) to elicit auto/stereotype activation. To facilitate conscious processing in the aware condition, the age-relevant words were highlighted. Participants subsequently completed a free-recall task (a list of 30 words from six semantic categories, e.g., *fruit, animals*), and a series of questionnaire measures. The study did not employ a pre-post design, so participants' scores were compared across conditions, rather than within conditions across time.

Analysis of participants' scores in the subliminal condition supported the previous findings (Levy, 1996; Stein et al., 2002), as older participants exposed to negative auto-stereotypical terms showed impaired performance in comparison with those in the positive condition (Hess et al., 2004). In contrast, in the aware conditions, no significant effects emerged as a result of prime valence. A second study obtained a similar pattern of results, using a modification of the computer-based priming task from Stein and colleagues' (2002) study. This included the manipulation of speeds so that participants were aware or unaware of the priming intervention (Hess et al., 2004). Whereas no significant effects of prime valence on older adults' performance emerged in the aware condition, participants in the negative implicit condition again showed impaired performance in comparison to those in the positive condition. In combination, these two studies suggest that auto-stereotypes of ageing have different effects on older adults' performance, depending on whether they are activated on a conscious, or subconscious level⁶⁴.

These findings initially appear to be counter-intuitive. How can auto-stereotypes influence performance when primes are subliminally activated, yet exert no effect for those who are consciously aware of the stereotype content? Hess and colleagues (2004) argue that, when older participants are consciously aware of auto-stereotypes of ageing, they can dismiss them as not being self-relevant, and distance themselves from assimilation effects (e.g., impaired memory performance). If conscious processes are involved in the perception of

⁶⁴ The lack of a neutral control condition for the implicit intervention means that the direction of the difference for unaware participants (i.e., increased performance in positive condition, or decline in performance in the negative condition) cannot be determined.

auto-stereotypes, context-dependent factors (e.g., stereotype-threat concerns) can counter the subliminal effects of the primes.

In summary, three previous studies suggest that subliminal activation of negative auto-stereotypes of ageing exert a detrimental effect on older adults' memory performance, although the findings from the positive stereotypes remains less clear (Hess et al., 2004; Levy, 1996; Stein et al., 2002). Although Levy's (1996) study provided initial evidence to suggest that positive stereotypes have a beneficial impact on performance, the lack of a control condition means that the role of practice effects cannot be ruled out. Similarly, the small sample sizes from Stein and colleagues' study (2002), coupled with the small effect sizes obtained from positive primes across different performance domains (Meisner, 2012), mean that firm conclusions in relation to the effect of positive auto-stereotype activation cannot be drawn.

Section 5.2.3: The current research

Although a range of performance domains has been shown to be susceptible to effects of auto-stereotype activation (e.g., cardiovascular functioning and handwriting stability; for a review, see Horton et al., 2008), the current research focussed on memory performance, due to its importance to everyday functioning in later life. An individual's memory shapes a wide range of human experience (Craik & Tulving, 2000), from remembering where we parked the car, to where we live – even to who we are. Indeed, Foster (2002) has argued that, without memory, we would have no sense of personal identity. Furthermore, older adults often report memory loss to be *the* most distressing aspect of growing older (Craik, 2006). Considering these factors, the current research used a subliminal priming paradigm to assess the impact of auto-stereotypes of ageing on older adults' memory performance. A second aim of the study was to explore the impact of auto-stereotype activation on older adults' psychological well-being, as a potential mechanism through which the auto-stereotypes may exert their effects.

Furthermore, considering the association between well-being and ingroup identity (e.g., Garstka et al., 2004), an age-group identity scale (Leach et al., 2008) was included in the current study, to determine whether subliminal activation of positive versus negative auto-stereotypes of ageing would influence participants' ingroup identity. Work by Weiss and Lang (2012) has indicated that the conscious activation of negative ageing auto-stereotypes has a detrimental effect on older participants' subjective age bias (see Section

4.2.3). We hoped to extend this literature, by demonstrating a similar effect when auto-stereotypes are activated on a subliminal level. In addition to examining the impact of subliminal auto-stereotype activation on older adults' memory performance, the current study therefore also explored the impact of such activation on well-being and identity in later life.

To our knowledge, this is the first study to examine the impact of subliminal auto-stereotype activation on older adults' memory performance (and psychological well-being) outside of the USA (Horton et al., 2008; Meisner, 2012). Based on the findings from previous studies (e.g., Levy, 1996; Weiss & Lang, 2012), we hypothesised that subliminal activation of negative auto-stereotypes of ageing would have a detrimental impact on older adults' memory performance and identity, whereas positive stereotypes would have a beneficial effect. As only limited evidence is available regarding the impact of age-related priming interventions on well-being, we tentatively predicted that no significant effects would emerge on our well-being measures (state self-esteem, positive and negative affect, and anxiety). Similarly, we predicted that young adults' performance would not be sensitive to the priming manipulation, as conscious motivations and goals would drive performance.

5.3: Method

5.3.1: Participants.

A total of 93 participants across both age-groups were tested⁶⁵. For reasons described below, 17 of these participants were excluded from further analysis. The final sample therefore consisted of 34 older adults aged 60-74 years ($M = 67.18$ years $SD = 4.33$, 14 men, 20 women) and 42 young adults aged 17-25 years ($M = 20.43$, $SD = 1.80$, 16 men, 26 women) who were recruited through advertisements in newspapers and local churches. Additional older adults were recruited from activity groups for the over 60s (e.g., Probus groups and sports classes). Young and older participants received monetary compensation for their time.

Criterion for inclusion included having English as a first language, being British and having grown up in the UK, and taking no medication that could interfere with cognitive functioning. The Mini Mental State Examination (MMSE; Folstein, Folstein & McHugh,

⁶⁵ An additional two participants also completed the first phase of the study, but did not return for the second phase.

1989) was completed as a screening measure for cognitive functioning, and participants scoring below 24 on this measure were excluded due to displaying significant cognitive impairment; Spreen & Strauss, 1998. Depressive symptomatology and anxiety were assessed through the Hospital Anxiety and Depression Scale (HADs; Zigmond & Snaith, 1983). Higher scores on this measure represent severe levels of anxiety or depression, and participants scoring above 14 on the HADs were excluded from the analysis as such levels can result in distortions in cognitive functioning. This resulted in the exclusion of 11 participants (eight young adults, and three older adults)⁶⁶, including two due to experimental error (computer programme crashed during testing). Data were subsequently screened for uni- and multi-variate outliers⁶⁷, which resulted in the removal of an additional six participants (three young adults and three older adults).

To test for differences between included and excluded participants, a one-way MANOVA was conducted, with three demographic factors (gender, chronological age, and verbal intelligence⁶⁸) entered as the dependent variables. No significant effects emerged on these variables (all p values $> .25$). A Kruskal-Wallis test was also conducted on the two demographic variables that were not normally distributed (subjective age and education levels), with inclusion status entered as the between subjects variable. No significant differences emerged between included and excluded participants for subjective age or education (both p values $> .17$).

5.3.2: Materials.

Priming stimuli development. Following procedures outlined in previous studies (Banaji et al., 1993; Levy, 1996) an independent sample of 16 participants (eight young adults, $M = 20.38$, $SD = 1.93$, and eight older adults, $M = 68.03$, $SD = 4.90$) rated the 100 most frequently generated characteristics from Study 2 on one of two dimensions: how characteristic of older adults each descriptor was perceived to be, or how positive or negative they seemed (see Appendix X)⁶⁹. Scales ranged from 1 (*extremely uncharacteristic/negative*) to 7 (*extremely characteristic/positive*), with 4 constituting a neutral rating.

⁶⁶ The majority of these exclusions ($n = 6$) were due to non-British participants completing the study, despite advertising for British citizens who had grown up in the UK.

⁶⁷ Using Z-scores with a cut-off of 3.29 (Field, 2005) and Mahalanobis distances (Zijlstra et al., 2010).

⁶⁸ Verbal intelligence was assessed using the National Adult Reading Test (NART; Nelson & Willison, 1991) that had been employed in Study 3 (see Section 4.3.2).

⁶⁹ The small sample size of participants in the ratings task is a limitation of the current study. In the previous studies (Banaji et al., 1993; Levy, 1996), however, 10 participants were used to generate traits associated with

Two sets of twelve traits were subsequently selected for use in the priming paradigm (cf. Levy, 1996), to represent positive and negative auto/stereotypes of ageing. Inclusion criteria stipulated that: (a) positive items were rated 5 or above on positivity; (b) negative items were rated 3 or below on positivity; (c) all terms were rated as being characteristic of older adults, with no significant differences between the two sets of items ($t(16) = 1.98, p > .07$), and; (d) no significant differences emerged between the two prime sets for word frequency ($t(22) = 1.55, p > .16$) or length ($t(22) = .96, p > .35$). In addition, the 12 positive terms were rated as significantly more positive ($M = 6.01, SD = 0.57$) than the negative terms ($M = 2.42, SD = 0.64, t(16) = 13.48, p < .001$). The 12 selected positive primes were: *experienced, friendly, happy, hardworking, independent, interested, kind, knowledgeable, resilient, respectful, sociable, and wise*. The 12 negative primes were *forgetful, frail, ignored, ill-health, immobile, judgemental, lonely, moaning, slow, underused, vulnerable and worried*.

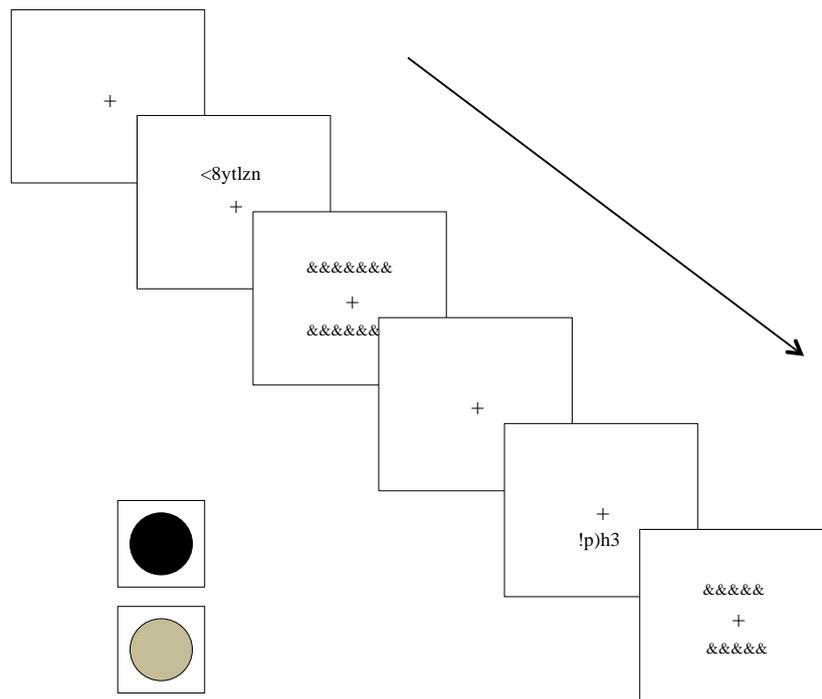
The computer priming methodology was developed on subtext, a programme written specifically for this experiment. Stimuli were black, presented on a white background on a 13" LED monitor. Text was displayed in a monospaced font with a maximum cell-size of 0.5 cm x 0.5 cm, with the viewing distance set at 55cm from the screen (cf. Devine, 1989; Macrae et al., 1994). In contrast to previous studies (Hess et al., 2004; Levy, 1996; Stein et al., 2002), which did not control the viewing distance, this ensured that stimuli were presented in the parafoveal visual field, reducing the likelihood of conscious awareness of the primes.

Participants were asked to identify whether a flash appeared above or below a central fixation point (CFP) on the computer monitor. Participants responded by pressing the corresponding arrow on the keyboard, and were asked to be as fast, yet as accurate as possible. Following Devine (1989), inter-stimulus intervals ranged from 2 to 7s, and were randomly determined by the programme, without the experimenter's awareness. To reduce the likelihood of conscious perception of the primes during the experimental trials, flashes consisted of random strings of alphanumerical characters, ranging in length from 3 to 13

the target groups (men/women and older adults, respectively), with an additional 5 or 6 providing the ratings. As our study involved 572 participants on the trait-generation task, this represents an improvement on the prior methodology, although a larger sample for the ratings task would have been preferred.

characters (cf., Levy, 1996). This was done to match the length of the primes during the experimental phase. This contrasted with previous work (Hess et al., 2004; Stein et al., 2002), which had used words during the practice and calibration phases of the studies, and may have contributed to the high exclusion rates (due to conscious awareness of the primes) of these studies. Flashes were immediately covered by a patterned mask of ampersands, matched in length to the number of characters from the preceding trial (see Figure 5.1).

Figure 5.1: *Sequential priming presentation display during practice and calibration trials.*



Calibration phase. In order to ensure that a double-blind methodology was employed (i.e., with neither participant nor experimenter being aware of priming condition), the programme randomly allocated participants to condition at the start of the calibration procedure⁷⁰. Following previous studies (Levy, 1996; Stein et al., 2002), participants initially completed a series of practice trials, at speeds slow enough for conscious awareness (six trials at 257ms, 200ms, 157ms and 100ms). Following these trials, a descending limits paradigm was adopted (cf. Hess et al., 2004; Stein et al., 2002), to account for individual differences in visual processing speeds in the older participants (Fozard et al., 2001). After the practice trials, flashes occurred at increasingly shorter stimulus onset asynchronies (SOAs), or faster speeds. Pilot testing ($n = 19$) revealed that the slowest speed participants

⁷⁰ The previous studies (Hess et al., 2004; Levy, 1996; Stein et al., 2002) did not employ a double-blind procedure, which represents a limitation of the earlier work (see Doyen et al., 2012).

could reliably judge where a flash occurred without conscious awareness of the primes was 140ms.

Following the practice trials, the first block of 10 trials was therefore presented with a 140ms-delay. If participants correctly identified where the flash occurred on 75% of the trials (i.e., significantly above chance), the SOA was subsequently reduced by 14ms (cf., Stein et al., 2002). This continued until participants failed to achieve the 75% threshold, at which point the calibration procedure ended, and the program selected the previous trial speed for use during the experimental phase (i.e., the last speed at which participants achieved 75% accuracy over flash location). Following pilot testing ($n = 20$), and to ensure that the calibration procedure was sensitive to individual differences, the number of trials in each block increased as the SOAs decreased. Thus, whereas at 140ms participants completed 10 trials, at 114ms participants completed 20 trials, and from 100ms participants completed blocks of 30 trials. The selected SOAs ranged from 14ms to 28ms for the young adults ($M = 20\text{ms}$, $SD = 6.93$), and 14ms to 128ms for the older adults ($M = 62.32\text{ms}$, $SD = 29.00$).

Experimental phase. During the experimental trials, primes were presented in five blocks of 20 words, at SOAs determined by the calibration procedure. Following Levy (1996), the blocks consisted of 12 stereotype primes, two category words (*old* or *senior*), and four neutral terms (*another*, *between*, *sometimes* and *dictionary*; cf. Bargh & Pietromonaco, 1982; Devine, 1989). Neutral terms were high frequency words (Brysbaert & New, 2009), selected to match the length of the primes. Each block began with one of the two category items. The remaining primes were presented in random order, determined by the program, with the second category word appearing before the final trial in each block. Word location was counterbalanced across trials, so that if a prime was presented above the CFP in one block, it was presented below the CFP in the subsequent block.

To increase the strength of the priming manipulation, two prime terms were repeated in each block of trials (Devine, 1989; Levy, 1996). These items had the highest characteristic ratings from the two prime sets (*knowledgeable* and *forgetful*), and the highest and lowest positivity ratings (*happy* and *ill-health*). Similarly, as previous findings have indicated that the effects of negative auto-stereotype activation are stronger than priming positive auto-stereotypes (Meisner, 2012), participants were exposed to the auto/stereotypes twice (cf. Levy et al., 2000). This procedure was employed to increase the strength of the positive

manipulation, to assess whether positive auto-stereotypes could be used as a memory-improvement intervention for older adults.

Manipulation checks. To test for subconscious (rather than conscious) awareness of the primes, two manipulation checks were administered. The first consisted of a debriefing interview, completed at the end of testing, using Chatrand & Bargh's (1996) funnelling procedure. Participants initially responded to general questions about the study (e.g., 'Overall, how did you find today's testing session?') culminating in questions relating to conscious awareness of the primes ('Could you make a guess as to what any of the words were?'). Any participant who could accurately report one or more of the presented prime terms (cf. Levy, 1996) was judged to be consciously aware of the manipulation. The second manipulation check concerned accuracy of judgements over prime location. When responding to the 'flashes' on the computer screen, participants had a 50/50 chance of correctly identifying the prime location. This provided an objective measurement of whether the priming manipulation had been successful. If participants failed to correctly identify prime location at levels above chance (i.e., 70%), we could not assume that participants were aware of the primes at a subconscious level (cf. Hess et al., 2004). Separate analyses are therefore provided for all participants, versus unaware participants for whom we could be sure that auto/stereotypes of ageing had been activated on a subliminal level.

Memory tasks. As the dot location task from previous studies (Levy, 1996; Stein et al., 2002) has been heavily criticised (Lezak, 1996)⁷¹, the current study selected and modified two alternative tasks from previous work in this field: the photo recall task (PRT: Levy, 1996; Stein et al., 2002) and Hess and colleagues' (2004) free recall measure. To extend previous findings, the picture recognition task from the extended Rivermead Behavioral Memory Test (RBMT-E: De Wall, Wilson & Baddeley, 1994) was also included in the battery. As recognition memory is not associated with age-related cognitive decline, inclusion of this measure allowed us to examine whether the impact of the priming intervention was limited to tasks that reveal age-related impairments.

⁷¹ This may help to explain the discrepancy in results between Levy's (1996) and Stein and colleagues' (2002) studies: Lezak (1996) recommended that the DLT should not be used to assess participants' memory, as differences in performance could be explained by strategy use.

Photo recall task. Two versions of the photograph task were created for each age-group for use before and after the priming intervention. Rather than associating each photograph with names or an activity, as done in the previous studies (Levy & Langer, 1994; Levy, 1996), each face was associated with a personality trait. Six of the characteristics were positive (e.g., *caring, polite*) and six were negative (e.g., *rude, impatient*). This modification allowed analysis of the specific terms that were recalled, to assess whether the stereotype priming facilitated the accessibility of traits related to the prime valence.

To ensure that the photographs did not reinforce a positive or negative age stereotype, a selection of neutral photos were taken from an online database (Ebner & Lindenberger, 2010). These photographs were rated by an independent sample of 20 participants (10 young adults, $M = 20.90$, $SD = 2.38$, and 10 older adults, $M = 64.70$, $SD = 3.86$) on perceived age, positivity, memorability and how typical the individual was perceived to be of their respective age-group (see Appendix 11). A composite positivity score was also calculated, from mean ratings of attractiveness, trustworthiness, likeability and positivity of each photo (Cronbach's $\alpha < .90$). Scales ranged from 1 (*not at all typical*) to 7 (*extremely typical*). Participants were also asked to indicate which of five emotions were being displayed in each photograph (*sadness, disgust, neutrality, anger, fear, and happiness*), and the intensity of this emotion, ranging from 1 (*not at all intense*) to 7 (*extremely intense*). Photos were selected to form two sets for each age-group, so that no differences emerged across any of the variables (e.g., positivity or memorability ratings) between young photo sets (one and three), or old photo sets (two and four; all p values $> .24$). The two sets of photographs of older adults were both rated as significantly older than the corresponding set of young photos (i.e., sets one and two, $t(22) = 36.85$, $p < .001$, and sets three and four, $t(22) = 43.10$, $p < .001$).

The *free recall task* was modified from Hess and colleagues' (2004) measure through the development of a second version of the task to be administered following the priming intervention. The original list consisted of 30 words that were drawn from six semantic categories (*fruit, animals, flowers, sports, insects, and occupations*), resulting in five items per category. Based on Howard's (1979) norms, each term was a moderate-high frequency exemplar of its respective category. A second list of 30 words was equally drawn from six alternative categories (*furniture, relatives, birds, vegetables, trees, and metals*). In order to match the two word lists in terms of frequency and length, three words from the first list (*pansy, basketball and wasp*) were replaced with alternative exemplars of the same category

(*orchid, swimming* and *gnat*). No significant differences emerged between the two lists on Howard's (1979) norms, frequency (Brysbaert & New, 2008), or length (all $ps > .16$)⁷².

The *picture recognition task* from the RBMT-E consisted of a set of 20 line drawings of objects, animals, and plants (e.g., pram, cow, tree), presented on a single sheet of card. Participants were given 15 seconds to study the pictures, and were asked to identify items they had previously seen from a set of 40 possible matches, after a delay of approximately 10 minutes. Participants responded to one version of the recognition task before the priming intervention, and a second version following it. Previous studies have demonstrated high levels of reliability with this measure ($\alpha = .87$; Yassuda et al., 2010).

Mood. Self-reported chronic anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983); a widely-used scale suitable for older adults, with high reliability ($\alpha = .83$; for a review, see Bjelland, Dahl, Haug, & Neckelmann, 2002). Participants were asked to respond to 14 items, indicating the frequency with which they experienced certain symptoms (e.g., 'I feel tense and wound up'). Scores ranged from 0 (*not at all*) to 4 (*all of the time*), with seven items reversed-scored. Higher scores represented more severe symptoms of depression and anxiety.

Three additional questionnaires were included to assess state affective responses, which emphasised that responses should be provided based on how participants were currently feeling (e.g., '*what you are thinking at this moment*'; Heatherton & Polivy, 1991, p. 897). The Trait-State Anxiety Inventory, Short Form (STAI-S; Spielberger et al., 1983) was used to assess state levels of anxiety. This 20-item scale assesses the presence (e.g., 'I am nervous) or absence (e.g., 'I am secure') of anxiety symptoms, on a scale from 1 (*Almost never*) to 4 (*Almost always*). Higher scores represent greater severity of anxiety symptoms, and high levels of reliability (average $\alpha > .89$) have been demonstrated in previous studies (for a review, see Barnes, Harp & Jung, 2002).

⁷²A significant difference emerged between the two word lists on imagineability ratings ($t(58) = 3.48, p < .001$), despite considerable efforts to balance the lists. Considering the complexity in balancing the word lists in terms of frequency and length, however, it was decided to retain the lists, but to fully counterbalance the order of presentation across participants to control for any confounds.

Self-esteem was measured using Heatherton and Polivy's (1991) state self-esteem scale (SSES), which assesses current evaluations of the self across three subscales: performance self-esteem (e.g., 'I feel confident that I understand things'); social self-esteem (reverse scored; e.g., 'I feel self-conscious'); and appearance self-esteem (e.g., reverse scored; 'I am dissatisfied with my weight'). Scores range from 1 (*Not at all*) to 5 (*Extremely*), with higher scores representing more positive levels of state self-esteem. High levels of reliability have been obtained for the overall scale mean ($\alpha = .92$), which has shown to be sensitive to empirical manipulations (Heatherton & Polivy, 1991).

Finally the Positive and Negative Affect Scale (PANAS; Watson et al., 1988) was included to assess current mood. This scale asks participants to indicate the extent to which they have experienced each of 10 positive (e.g., *interested, excited*) and negative moods (e.g., *irritable, nervous*), on a scale from 1 (*Very slightly*) to 5 (*Very much*). This provides two separate subscale scores for positive and negative affect, with higher scores demonstrating stronger emotions. Strong reliability has previously been obtained, with both student and non-student samples ($M_{\text{positive}} \alpha = .88$, $M_{\text{negative}} \alpha = .88$; Watson et al., 1988).

Age-related identity. A 14-item measure (Leach et al., 2008) assessed age-group identity across five subscales: Solidarity (e.g., 'I feel committed to other people my age'), Satisfaction (e.g., 'I am glad to be an older adult')⁷³, Centrality (e.g., 'I often think about the fact that I am an older adult'), Individual Self-Stereotyping (e.g., 'I have a lot in common with the average older adult') and In-group Homogeneity (e.g., 'I am similar to the average person my age'). Responses ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores representing higher in-group identification. Strong reliabilities were obtained for each of the subscales (ranging from $\alpha = .80$ to $.93$) across two studies ($M \alpha = .88$; Leach et al., 2008).

Stereotype threat. To assess the degree that participants experienced stereotype threat as a result of the study and/or priming intervention, a four-item measure was included (adapted from Marx & Stapel, 2006). These items asked participants to indicate the extent that they agreed with four statements (e.g., 'I worry that my ability to perform well on memory tasks is influenced by my age') on a scale from 1 (*strongly disagree*) to 7 (*strongly*

⁷³ This subscale is equivalent to the 'ingroup affect' subscale from Cameron (2004) used in Study 3.

agree), with higher scores representing greater levels of stereotype threat⁷⁴. The scale mean showed high levels of reliability during pilot testing ($\alpha = .90$).

Demographic variables. The demographic questions from Study 3 were incorporated into the current study, and assessed participants' chronological and subjective ages, years in education, gender, current occupational status, frequency of computer use, and use of any prescriptive medication (see Appendix IX). Participants' verbal intelligence levels were assessed using the NART (Nelson & Willison, 1991), following standard administration procedures (see Section 4.3.2). Additional questions asked participants to indicate their nationality and the country that they grew up in, in order to ensure that only British participants were included in the study. Finally, participants were asked to indicate whether they had ever been diagnosed with dyslexia, as this can interfere with visual priming effects (Raveh & Schiff, 2008)⁷⁵.

5.3.3: Procedure.

Participants were tested individually in a quiet room, with a PC workstation and additional desk space for the memory tasks and questionnaires. Data were collected across two testing sessions, run within 1 week of each other, at approximately the same time each day. The first session lasted approximately 1 hour, with participants completing background questionnaires, followed by the practice and calibration phases of the priming procedure. Participants were told that the computer task measured attention and motor skills, and were instructed to be as fast yet as accurate as possible. Participants were randomly assigned to one of the two priming conditions (positive or negative)⁷⁶ by the computer programme, ensuring that the experimenter was blind to participants' testing condition. At the end of the first session participants were interviewed by the researcher, and asked for their impressions of the first part of the study⁷⁷.

⁷⁴ *Note.* The original paper reported acceptable levels of reliability on this scale ($\alpha = .74$), but has since been retracted (Marx, 2013) due to the controversy over Stapel's work.

⁷⁵ As an additional indicator of dyslexia, the NART was also included in the current study, following the administration procedures from Study 3 (see Section 4.3.2).

⁷⁶ The programme was originally designed to allocate participants to one of three conditions (positive, negative, or neutral), but due to time constraints we were not able to collect data for the control condition.

⁷⁷ This interview had proved effective in identifying problems with the design (e.g., lights too bright) during pilot testing, so was continued in the experimental trials.

The second experimental session lasted between 2.5-3 hours, and began with completion of the state mood questionnaires, and memory prediction measures. The first battery of memory tasks was then completed, followed by the practice and experimental trials of the priming manipulation. Participants were reminded to be as fast yet as accurate as possible. Upon completion of the experimental trials participants were given a 10 minute break. The researcher conducted two Mindful Movement exercises (Williams et al., 2007) with participants during this time, to provide mental respite whilst simultaneously controlling their activities. After the break, participants completed the second round of the priming intervention. Half of the participants then proceeded to the second battery of memory tasks, followed by the questionnaire measures, with the remaining participants completing the questionnaires first, followed by the memory tasks. Manipulation checks were completed at the end of the study to test for conscious awareness of the primes. The researcher then debriefed participants, and asked them not to discuss the study with anyone who might volunteer to participate.

5.4: Preliminary analysis

Following guidelines by Tabachnick and Fidell (1996) concerning skewed data, variables that demonstrated a positive skew were subjected to a square root transformation, adding a constant of plus one. Where the transformations were successful and variances between groups were equal, *t*-tests were conducted to examine differences between groups (using Levene's Tests for equality of variance where appropriate). Where variances were unequal between all groups, Mann-Whitney *U*-tests were employed (cf. Field, 2005).

Initial reliability checks were conducted on subjective and chronological ages provided by participants. As expected, Mann Whitney tests indicated that older adults' chronological ages were significantly greater than young adults' ($U = 0.00$, $n_1 = 42$, $n_2 = 34$, $p < .001$), with the same pattern for subjective age ($U = 1.00$, $n_1 = 42$, $n_2 = 26$, $p < .001$; see Table 5.1). Additional analysis sought to identify whether any of our background and demographic measures varied across groups. To examine the impact of age and condition on the background variables, a 2 (age: young or older) x 2 (condition: positive or negative) by 5 (demographics: gender, education level, computer use, NART and stereotype threat scores) MANOVA was conducted. No significant differences emerged between prime valence groups on any of the variables (all p levels $> .41$). A main effect of age emerged for NART ($F(1, 69) = 23.85$, $p < .001$), stereotype threat scores ($F(1, 69) = 23.40$, $p < .001$), and

computer use ($F(1, 69) = 13.76, p < .001$). As shown in Table 5.1 and in line with expectations, older adults demonstrated higher verbal intelligence (i.e., fewer NART errors; $t(73) = 4.47, p < .001$; Crawford et al., 1988), higher levels of stereotype threat ($t(54.15) = 4.64, p < .001$), but lower levels of computer use ($t(38.63) = 3.50, p = .001$ ⁷⁸; Slegers, Van Boxtel, & Jolles, 2012) than their younger counterparts. These variables were therefore included as covariates in subsequent analysis.

Table 5.1: *Participant characteristics by inclusion group and participant age*

Participant variables	Young adults			Older adults		
	Included <i>n</i> = 36 <i>M</i> (<i>SD</i>)	Excluded <i>n</i> = 13 <i>M</i> (<i>SD</i>)	Aware <i>n</i> = 6 <i>M</i> (<i>SD</i>)	Included <i>n</i> = 20 <i>M</i> (<i>SD</i>)	Excluded <i>n</i> = 6 <i>M</i> (<i>SD</i>)	Aware <i>n</i> = 14 <i>M</i> (<i>SD</i>)
Chronological age	20.42 (1.81)	21.00 (2.09)	20.51 (1.87)	67.10 (4.51)	64.80 (5.02)	67.29 (4.23)
Subjective age	20.78 (3.77)	21.32 (3.90)	22.67 (4.27)	55.21 (8.50)	55.60 (5.86)	55.60 (5.86)
NART errors	18.03 (5.42)	17.92 (6.42)	15.50 (4.04)	12.68 (6.24)	12.50 (3.51)	12.50 (3.51)
Years in education	9.42 (1.84)	10.71 (3.29)	9.83 (2.04)	8.87 (2.92)	9.80 (2.49)	9.80 (2.49)
Computer use	6.58 (0.60)	6.25 (1.42)	7.00 (0.00)	5.36 (2.08)	5.60 (2.61)	5.60 (2.61)
Stereotype threat						
Raw	2.10 (0.82)	2.45 (1.11)	2.94 (1.02)	3.98 (1.34)	3.93 (1.32)	3.93 (1.32)
Transformed	2.47 (0.46)	2.65 (0.62)	2.93 (0.51)	3.41 (0.61)	3.39 (0.61)	3.39 (0.61)

Manipulation checks were also conducted for participants' conscious awareness of the primes. A total of 20 participants (six young adults, and 14 older adults) correctly identified one or more prime terms during the funnelling procedure (Bargh & Chartrand, 1996).

Confirming this pattern, paired-samples *t*-tests revealed a main effect of inclusion criterion

⁷⁸ Note: data from the computer use variable displayed a negative skew. Inverse transformations were unsuccessful, however, so non-parametric contrasts were performed to examine the differences between groups. Results were extremely similar to the *t*-test analysis, however ($U = 435.500, n1 = 42, n2 = 34, p = .001$), so to facilitate covariate analysis results from the parametric tests are reported.

on the number of primes correctly identified in the recognition task ($t(27.41) = 5.79, p < .001$), and the percentage of correct (from total) responses ($t(67) = 3.94, p < .001$). In both cases, participants who were consciously aware of the primes showed higher absolute ($M = 13.15, SD = 4.89$) and percentage hit rates ($M = 71.46, SD = 21.56$) than participants who were unaware of the primes ($M_{HR} = 6.18, SD = 3.52, M_{\%} = 50.01, SD = 20.06$).

Importantly, this analysis did demonstrate that unaware participants (i.e., those who displayed no conscious awareness of the primes) were at chance level (i.e., 50.01% accuracy on a dichotomous response). As previous work has indicated that explicit age-related auto-stereotype activation exerts different effects than implicit activation (Hess et al., 2004; Levy, 1996), conscious awareness of the primes constitutes an important exclusion criterion. As this exclusion resulted in extremely small samples sizes for older adults, however (six participants in the positive condition, and seven in the negative), we adopted the procedure outlined by Stein and colleagues (2002), in conducting two sets of analyses. The first included all participants, whereas the second included the unaware participants.

5.5: Results

Considering the complexity of the current analysis (examining the effects of the priming intervention) due to the inclusion of three covariates, the effects reported in the main text relate to the findings of most relevance to the current thesis (e.g., interactions between age-group and condition). Additional analyses are included in Appendix 12. Following the procedure outlined by Stein and colleagues (2002), results will first be presented when all participants were included in the analysis, followed by separate analysis of participants who did not report conscious awareness of the primes (i.e., ‘unaware’ participants; see Section 5.5.1.3).

All memory and well-being variables were examined using a mixed 2 (age-group: young or older) x 2 (condition: positive or negative) x 2 (time of task: pre- or post-intervention) MANCOVA. Time of task was entered as the within-subjects variable, condition and age-group were the between subjects variables, with NART scores, computer use and stereotype threat as covariates.

Section 5.5.1: All participants.

Section 5.5.1.1: Did the priming intervention influence participants' mood and well-being?

To examine the impact of the priming manipulation on well-being, a mixed MANCOVA was conducted across the three subscales from the state self-esteem scale (SSE), the positive and negative mood subscales of the PANAS, and the state anxiety scale (STAI-S). In line with expectations, analyses indicated that the critical age-group by condition interaction was not significant for any of the variables (all p values $> .30$).

A number of main effects and interactions did emerge, however, including a main effect of age for the social self-esteem subscale ($F(1, 66) = 13.14, p = .001$), the positive subscale of the PANAS ($F(1, 66) = 6.88, p = .011$), and the STAI-S ($F(1, 66) = 10.52, p < .01$). As shown in Table 5.2, after Bonferroni adjustments these findings were due to older adults reporting higher self-esteem and positive affect than young participants both pre- and post-intervention (all p values $< .005$; see Table 5.2). Older adults also showed lower levels of state anxiety than young adults following the intervention ($t(73) = 2.63, p < .01$), although the age by time interaction for anxiety was not significant ($F(1, 66) = 2.09, p > .15$).

Table 5.2: Psychological well-being measures by participant age and time

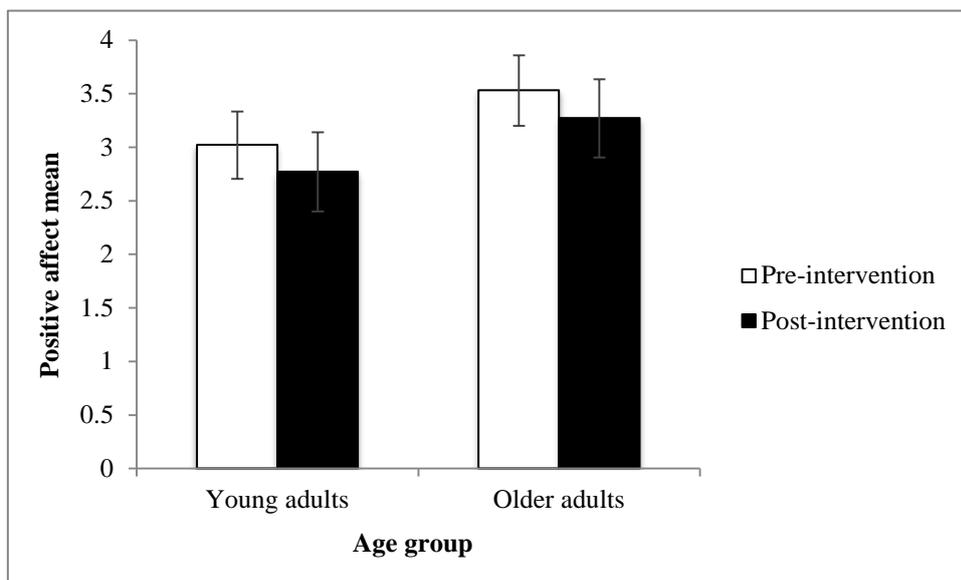
Well-being measure	Pre-intervention		Post-intervention	
	Young adults <i>M (SD)</i>	Older adults <i>M (SD)</i>	Young adults <i>M (SD)</i>	Older adults <i>M (SD)</i>
Social self-esteem	3.65a (0.89)	4.29b (0.67)	3.61c (0.96)	4.25d (0.59)
Positive affect	2.99a (0.62)	3.50b (0.66)	2.73e (0.72)	3.23f (0.70)
State anxiety	1.68a (0.39)	1.49d (0.39)	2.07g (0.46)	1.78h (0.42)

Note. Means with the following subscript combinations (within rows) are significantly different: ab, ae, cd, ag, dh: $p < .001$. bf, ef: $p < .005$. gh: $p < .01$.

Similarly, main effects of time emerged on ratings of positive affect ($F(1, 66) = 9.82, p < .01$) and anxiety ($F(1, 66) = 4.22, p < .05$). Post-hoc comparisons indicated that participants reported more positive affect before the intervention ($M = 3.22, SD = 0.68$) than after it ($M = 2.95, SD = 0.75; t(74) = 5.51, p < .001$; see Figure 5.2), with paired-samples t -

tests indicating that state anxiety levels were higher following the intervention than before it for both young ($t(42) = 9.49, p < .001$) and older adults ($t(32) = 6.20, p < .001$). Although a time by condition interaction was also obtained ($F(1, 66) = 4.08, p < .05$), independent samples t -tests did not reveal any differences over anxiety levels either pre- ($t(74) = 0.32, p > .75$) or post-intervention ($t(73) = 1.20, p > .24$). All remaining effects were not significant (all p values $> .05$), including the critical age by condition interaction ($F(1, 69) = 0.61, p > .44$).

Figure 5.2: Positive affect mean by participant age and time



As an effect of stereotype priming was only expected to emerge for older adults, separate analyses were conducted on older participants' data (cf. Stein et al., 2002). As indicated in Table 5.2, however, these indicated the same pattern of responses as when young adults' data was included in the analysis: whereas positive affect decreased across time ($t(34) = 2.83, p < .005$), anxiety levels increased ($t(33) = 6.02, p < .001$), with no significant effect on the critical age by condition interaction ($F(1, 69) = 1.08, p > .30$).

Section 5.5.1.2: Did the priming intervention influence participants' memory performance?

To examine the impact of the priming manipulation on memory performance, three mixed MANCOVAs were conducted for the photo recall task (PRT), free-recall task (FRT) and the recognition task (RT). In contrast to expectations, no significant effects were obtained on the critical age by condition interaction on the PRT ($F(1, 66) = .043, p > .84$), FRT ($F(1, 67) =$

.078, $p > .78$), or RT ($F(1, 65) = .038, p > .85$)⁷⁹. Our hypotheses were confirmed in relation to main effects of age, however, as although significant effects were obtained for performance on the PRT ($F(1, 66) = 10.52, p < .005$) and FRT ($F(1, 67) = 15.53, p < .001$), no effect of age was obtained for the recognition task ($F(1, 65) = 0.77, p > .39$; see Table 5.3 for means and standard deviations). Young adults outperformed older adults on the PRT and FRT after Bonferroni corrections (critical p value $< .006$), at both time points (all p values $< .001$; see Table 5.3).

Table 5.3: *Memory performance by participant age-group and time*

Memory task	Pre-intervention		Post-intervention	
	Young adults	Older adults	Young adults	Older adults
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Photo (PRT)	6.83a (2.58)	2.23b (2.04)	7.14c (2.53)	2.85d (1.86)
Free recall (FRT)	20.14a (4.48)	15.68b (5.54)	21.74c (3.66)	17.24d (4.31)
Recognition (RT)	12.80 (3.68)	10.59 (3.88)	12.10 (2.79)	9.97 (3.16)

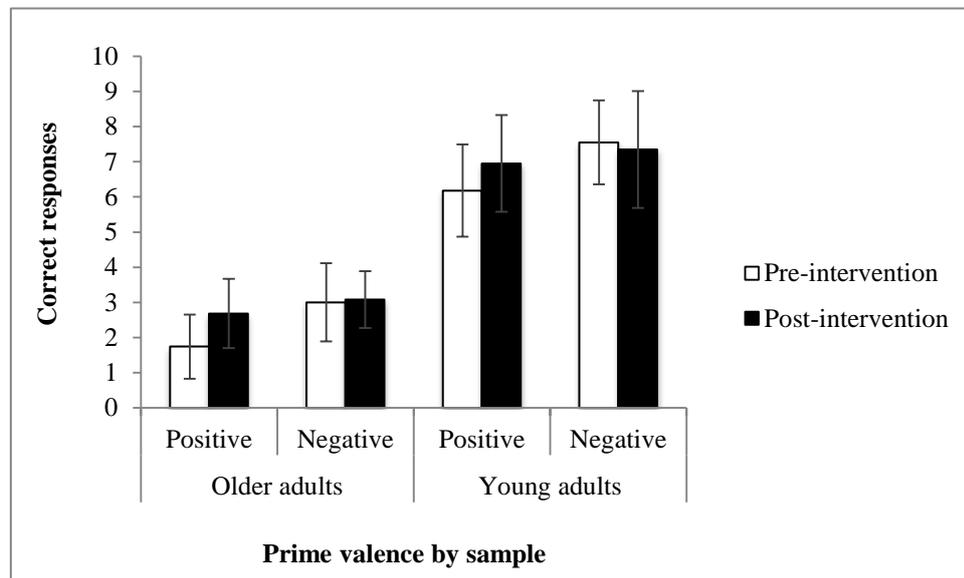
Note. Means with the following subscript combinations (within rows) are significantly different: ab, cd: $p < .001$.

Of more interest for the current thesis, a main effect of condition was also obtained on the PRT ($F(1, 66) = 4.65, p < .05$), with the interaction between time and condition approaching significance ($F(1, 66) = 3.75, p = .057$). Paired-samples t -tests indicated that this difference was due to participants in the positive condition displaying improved performance over time ($t(41) = 2.79, p < .005$), whereas no significant difference emerged for participants in the negative condition ($t(31) = 0.24, p > .41$). Prior to the intervention, a tendency also emerged for those in the positive condition to show higher scores than participants in the negative condition ($t(71) = 2.29, p < .01$), although following Bonferroni corrections ($p < .006$) this difference only approached significance. In contrast, the difference between conditions following the intervention was not significant ($t(74) = 1.02, p > .16$). As shown in Figure 5.3, however, standard deviations showed considerable overlap

⁷⁹ *Note.* The different degrees of freedom across tests represent missing data points in the relevant analyses.

between conditions and across time. All remaining main effects and interactions were not significant (all p values $> .06$), including all findings relating to the RT.

Figure 5.3: Correct responses on the PRT, by prime valence, time, and sample



As an effect of stereotype priming was only expected to emerge for older adults, separate analyses were conducted on older participants' data (cf. Stein et al., 2002). Similar patterns were obtained for older adults as per the analysis for the whole sample (e.g., a significant time by NART score interaction on PRT and FRT; see Appendix XII). One difference arose over the effect of condition on PRT performance, however, as the main effect of condition was no longer significant ($F(1, 25) = 3.24, p > .08$).

A significant time by condition interaction did emerge ($F(1, 25) = 4.28, p < .05$), however, with paired-samples t -tests indicating that this interaction was due to older participants in the positive condition displaying increased performance at Time 2 ($M = 2.70, SD = 1.92$) in comparison to Time 1 ($M = 1.75, SD = 1.77; t(19) = 2.97, p = .002$), whereas performance by participants in the negative condition showed a small (.08) and non-significant improvement ($t(11) = 0.18, p > .43$; see Figure 5.2)⁸⁰. Similarly to the data from the whole sample, a tendency emerged for participants in the positive condition to score higher than those in the negative condition at Time 1 ($t(29) = 1.73, p < .05$), whereas this

⁸⁰ Note. The error bars (representing the standard deviations) again show considerable overlap on Figure 5.3, suggesting that caution must be employed when interpreting the findings (see Section 5.6.1.1).

difference was not significant at Time 2 ($t(32) = 0.36, p > .36$). Thus, results from the whole sample and separate analyses for the older participants showed similar patterns overall⁸¹.

Section 5.5.1.3: Did the priming intervention influence participants' age-related identity?

To examine the impact of the priming manipulation on age-group identity, a 2 (age-group: young or older) x 2 (condition: positive or negative) x 6 (identity measure: solidarity, satisfaction, centrality, individual self-stereotyping, and ingroup homogeneity subscales, and subjective age bias) MANCOVA was conducted, with condition and age-group entered as the between subjects variables, and NART scores, computer use and stereotype threat as covariates. As with the previous analyses, the critical age by condition interaction was not significant for any of the subscales (all p values $> .21$). In contrast to expectations and previous findings (Weiss & Lang, 2012), a main effect of condition was not obtained for subjective age bias (SAB; $F(1, 59) = 1.20, p > .28$), or the identity subscales (all p values $> .24$; see Table 5.4).

Table 5.4: Mean age-group identity scores by subscale and participant age

Identity subscale	Young adults	Older adults
	<i>M (SD)</i>	<i>M (SD)</i>
Solidarity	4.41 (1.12)	3.90 (1.30)
Satisfaction	5.25a (1.07)	4.44b (1.17)
Centrality	4.22 (1.34)	3.89 (1.09)
Individual self-stereotyping	3.79 (1.24)	3.47 (1.35)
Ingroup homogeneity	3.88a (1.30)	2.66b (1.06)

Note. Means with different subscripts (within rows) are significantly different: ab: $p < .001$.

Main effects of age emerged on the solidarity ($F(1, 59) = 5.90, p < .05$) and ingroup homogeneity subscales ($F(1, 59) = 10.21, p < .005$), with the effect for the satisfaction subscale (equivalent to ingroup affect from Cameron, 2004) approaching significance ($F(1, 59) = 3.83, p = .055$). In each case, young adults reported higher levels of ingroup identity than older adults (see Table 5.4), although following Bonferroni corrections (critical p value $< .01$) this difference was not significant for the solidarity subscale ($t(74) = 1.19, p = .04$).

⁸¹ *Note.* Separate analyses for older adults for the well-being measures were also computed, but no differences were evident between the whole sample and older adult data. These analyses are therefore included in Appendix 12.

Interestingly, in line with Study 3, no significant differences emerged between age-groups on the centrality dimension ($F(1, 59) = 3.17, p > .08$). In line with results from Studies 1-3, a main effect of age emerged on SAB ($F(1, 59) = 42.82, p < .001$). A Mann-Whitney U -test indicated that this was due to older adults showing a larger SAB (i.e., greater dissociation from their age-group; *Median* = 9.00 years, *range* = 26 years), than young participants (*Median* = 0 years, *range* = 21 years; $U = 69.50, n_1 = 42, n_2 = 27, p < .001$).

Section 5.5.1.4: Summary

Overall, the results outlined above suggest that the priming manipulation did not exert a significant effect on older adults' well-being, although due to the low power of the study these findings must be treated with caution. A replication of the current findings with a larger sample size is required before any firm conclusions can be drawn. Although none of the critical age-group by condition interactions were significant, for example, this may have been due to the low power (0.49) of the current study in relation to interactions. In line with previous findings (e.g., Diehl, Hay, & Berg, 2011; Garstka et al., 2004), a number of significant differences emerged between age-groups, with older adults displaying higher social state esteem, positive affect, and lower levels of state anxiety than their younger counterparts.

The data relating to memory performance was more complex. Despite the random allocation of participants to condition by the computer programme an allocation bias emerged prior to the intervention, with participants in the negative condition (from both age-groups) showing a trend towards higher levels of performance on the PRT than their counterparts in the positive condition (see Figure 5.3)⁸². Although randomised control trial designs reduce the likelihood of allocation biases occurring by chance, such designs are only effective when sufficient numbers of participants are included in the analysis (for a review, see Odgaard-Jensen et al., 2011). The small sample sizes of Study 4 are therefore likely to underlie the allocation bias that emerged. Future studies should therefore ensure that larger samples are employed, in order to avoid this confound.

Importantly, the difference in older participants' scores on the PRT across conditions approached significance prior to the priming intervention, yet disappeared following it. This

⁸² NB the same pattern did not emerge for performance on either the FRT or the RT (all p values $> .17$).

was reflective of the increased performance that participants in the positive condition displayed across time, whereas those in the negative condition showed only a slight (and non-significant) improvement. What is less clear from the current pattern of results is whether the increase in performance displayed by older adults in the positive condition was indicative of a beneficial effect of the priming intervention, or whether this increase in performance was evidence of practice effects (see Section 5.2.2). Unfortunately, as no control condition was included in the current study (due to time constraints), we cannot determine which explanation for the current pattern of results is correct.

The analyses reported above, however, included participants who reported conscious awareness of the auto/stereotype primes during the intervention, and those who were unaware of the primes. As previous work has demonstrated a difference between conscious and unconscious auto-stereotype activation (Hess et al., 2004; Levy, 1996), the inclusion of both awareness groups may have confounded our results. Following the procedure outlined by Stein and colleagues (2002), participants who consciously identified one or more of the presented primes during the funnelling procedure (see Section 3.3.2; Bargh & Chartrand, 1996) were excluded from the analysis. This corresponds to procedures employed in additional studies (Hess et al., 2004; Levy, 1996), where participants who could correctly identify any of the prime terms were excluded from the analysis⁸³. This resulted in the exclusion of an additional 14 older adults ($M_{\text{age}} = 67.29$, $SD = 4.23$) and 6 young adults ($M_{\text{age}} = 20.50$, $SD = 1.87$).

Furthermore, during the experimental phase of the priming paradigm, a number of older participants reported that they could not see anything appearing on the screen. This raised an additional concern, as if participants were not aware of a ‘flash’ occurring, it was unlikely that the auto-stereotypes of ageing would have been activated, even on a subliminal level. Indeed, Levy (1996) stipulated that participants must be aware of the flash occurring, but not consciously aware of the terms, in order to be included in her analysis (p. 1094). An additional inclusion criterion was therefore applied to this phase of the analysis, stipulating that only participants who correctly identified prime location at levels significantly above

⁸³ The study by Hess and colleagues (2004) employed a similar procedure. As this study manipulated conscious awareness of the primes, however, participants from the unaware condition who reported awareness of the terms were reassigned to the aware condition.

chance (i.e., $> .70$) were included (cf. Hess et al., 2004). This resulted in the exclusion of an additional seven older adults from the sample ($M_{\text{age}} = 65.63, SD = 4.74$).

The final sample therefore consisted of 36 young adults ($M_{\text{age}} = 20.50, SD = 1.87$) and 13 older adults ($M_{\text{age}} = 20.50, SD = 1.87$), for whom the primes could reliably be assumed to have been activated on an implicit, rather than explicit, level. Although this resulted in a high overall exclusion rate (51.58% of the total sample), this was similar to the proportion of participants (45%) excluded in the study by Stein and colleagues (2002), although our proportion of excluded older adults was greater (see Section 5.6 for a further discussion of this issue).

Section 5.5.2: Unaware participants

All dependent variables were examined (unless stated differently) using a mixed 2 (age-group: young or older) x 2 (condition: positive or negative) x 2 (time of task: pre- or post-intervention) MANCOVA. Time of task was entered as the within-subjects variable, condition and age-group were the between subjects variables, with NART scores, computer use and stereotype threat as covariates.

Section 5.5.2.1: Did the priming intervention influence participants' mood and well-being?

The dependent variables of interest in relation to participants' well-being were the three subscales from the SSE, the positive and negative mood subscales of the PANAS, and the STAI-S. In contrast to expectations, and in line with the findings from all participants, the critical age-group by condition interaction was not significant for any of the well-being variables (all p values $> .17$). A main effect of stereotype threat emerged on the performance SSE subscale ($F(1, 41) = 5.56, p < .05$), with bivariate correlations indicating a significant effect of threat on performance self-esteem, both pre- ($r = -.49, p < .001$) and post-intervention ($r = -.36, p < .005$).

Additional effects of the priming manipulation on self-esteem were a main effect of age on the social subscale ($F(1, 41) = 4.61, p < .05$), with older adults reporting higher levels of social self-esteem pre- ($t(28.23) = 2.01, p < .02$) and post-intervention ($t(47) = 2.11, p = .02$; see Table 5.5)⁸⁴. A main effect of time emerged on the positive affect scale for the

⁸⁴ Critical p value $p < .03$.

PANAS ($F(1, 41) = 4.73, p < .05$) and the STAI-S ($F(1, 42) = 7.61, p < .01$). Paired samples t -tests indicated that these differences were due to all participants reporting reduced levels of positive affect following the intervention ($M = 2.90, SD = 0.78$) than before it ($M = 3.19, SD = 0.73; t(47) = 5.39, p < .001$)⁸⁵, and increased levels of anxiety post-intervention ($M = 1.63, SD = 0.40$) in comparison to pre-intervention ($M = 1.97, SD = 0.46, t(48) = 9.20, p < .001$). As with the analysis from the full sample (see Section 5.5.1.1), although an interaction emerged between time and condition ($F(1, 42) = 4.53, p < .05$), independent samples did not reveal differences either before or after the intervention (both p values $> .10$), or when older adults' data were analysed separately (both p values $> .08$).

Table 5.5: *Psychological well-being measures by participant age and time*

	Pre-intervention		Post-intervention	
	Young adults	Older adults	Young adults	Older adults
Well-being measure	$M (SD)$	$M (SD)$	$M (SD)$	$M (SD)$
Social self-esteem	3.73a (0.90)	4.29b (0.68)	3.69a (0.94)	4.29b (0.67)
State anxiety	1.67a (0.39)	1.52a (0.42)	2.03c (0.48)	1.78c (0.37)

Note. Means with different subscripts (within rows) within time points (pre- or post-intervention) are significantly different: ab: $p < .05$. ac: $p < .001$

In contrast to findings from the whole sample, a main effect of age did not emerge for unaware participants on the positive subscale of the PANAS ($F(1, 41) = 2.84, p > .10$) or on the STAI-S ($F(1, 42) = 3.00, p > .09$). In summary, a comparison of results between aware and unaware participants revealed similar patterns, although fewer significant effects emerged, presumably reflecting the reduced power of the unaware analysis.

Section 5.5.2.2: Did the priming intervention influence unaware participants' memory performance?

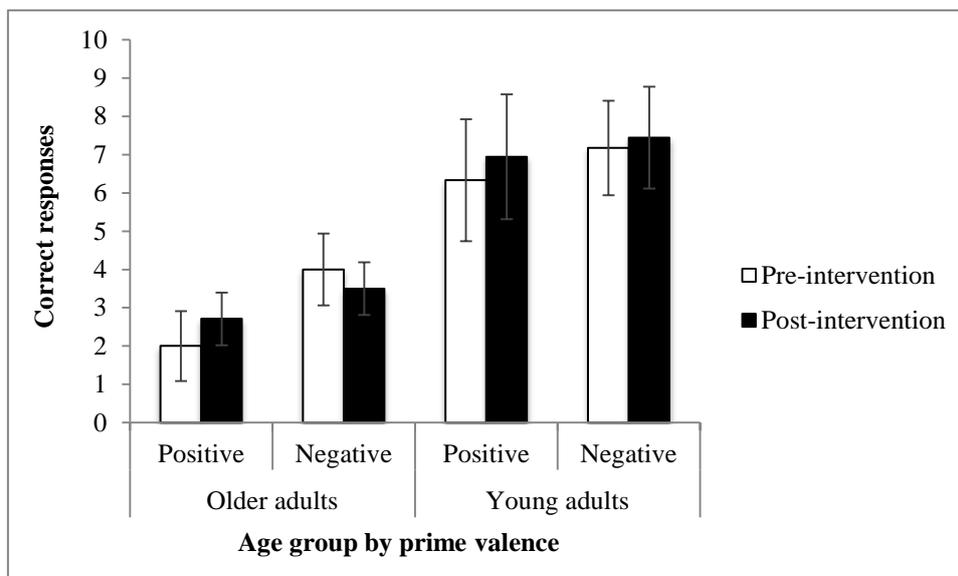
In contrast to expectations, the critical interaction of age-group by condition was not significant for any of the three memory tasks (all p values $> .41$). Although a number of significant main effects and interactions did emerge (e.g., significant interaction between time and NART errors on the PRT and FRT), these were not significant in terms of our

⁸⁵ A corresponding main effect of time on the negative affect scale was not obtained ($F(1, 41) = .01, p > .91$).

research hypotheses (see Appendix 12 for full analyses). A main effect of age emerged for the PRT ($F(1, 41) = 6.34, p < .005$), with young adults again out-performing older adults at both time points (both p values $< .001$). In contrast to the findings from the whole sample (see Section 5.5.1.2), however, neither a main effect of condition, nor an interaction between condition and time was obtained on the PRT for unaware participants (both p values $> .11$). Considering the low power (.40) of the current analysis and the significant effect obtained on the PRT when considering the whole sample, we also examined the data to identify whether the same trend was apparent for unaware participants as per the whole sample (i.e., improved performance in the positive, condition over time, but no corresponding improvement for participants in the negative condition).

As indicated in Figure 5.4, an interesting pattern emerged. Once again, participants in the positive condition showed an improvement over time (although as noted above, this was not significant). In contrast, older adults in the negative condition showed a (non-significant) decrease in performance from pre- ($M = 4.0, SD = 1.87$) to post-intervention ($M = 3.5, SD = 1.38$). In contrast, young adults in the negative condition showing a non-significant increase in performance ($t(17) = 0.55, p > .59$) from pre- ($M = 7.17, SD = 2.18$) to post-intervention ($M = 7.44, SD = 2.31$).

Figure 5.4: Correct responses on the PRT by participant age, prime valence, and time



One possible explanation for the lack of an effect of prime valence on the FRT concerned conscious strategy use, however, as during the second presentation of the task,

participants may have been aware that the list of to-be-remembered words consisted of six semantic categories. To examine whether participants employed different strategies pre- and post-intervention, analysis was conducted on the number of clustered responses⁸⁶ (i.e., responses being structured according to semantic category on the results sheet; cf. Hess et al., 2004) that participants gave at each time point. In line with expectations, older participants showed clustered responses on a greater number of categories following the intervention ($M = 3.54$, $SD = 1.39$) than before it ($M = 2.62$, $SD = 1.94$; $t(12) = 2.14$, $p < .05$).

Section 5.5.2.3: Did the priming intervention influence participants' age-related identity?

To examine the impact of the priming manipulation on age-group identity, a 2 (age-group: young or older) x 2 (condition: positive or negative) x 6 (identity measure: solidarity, satisfaction, centrality, individual self-stereotyping, ingroup homogeneity, and subjective age bias) MANCOVA was conducted, with condition and age-group entered as the between subjects variables, and NART scores, computer use and stereotype threat as covariates. As with the previous analyses, the critical age by condition interaction was not significant for any of the subscales (all p values $> .18$), nor was a main effect of condition obtained (all p values $> .19$).

Due to missing data from two older participants, our older sample size for the identity assessment was small ($n = 11$). Despite this, main effects of age were obtained on the ingroup homogeneity scale ($F(1, 40) = 9.00$, $p = .005$), and subjective age bias (SAB; $F(1, 40) = 37.15$, $p < .001$). Independent samples t -tests indicated that young adults demonstrated higher ratings of ingroup homogeneity ($M = 3.93$, $SD = 1.32$) than older adults ($M = 2.77$, $SD = 0.93$; $t(47) = 2.92$, $p = .005$), whereas a Mann Whitney U -test revealed that older adults' subjective age bias ($Median = 9.00$ years, $range = 26$) was significantly higher than young adults' ($Median = 0.00$, $range = 21$ years, $U = 22.500$, $n_1 = 36$, $n_2 = 12$, $p < .001$). Presumably reflective of the low power of this analysis in comparison to data from the full sample, no additional main effects of age emerged (all p values $> .06$).

⁸⁶ Three or more items needed to be listed sequentially in order to constitute a cluster. This was decided, as two adjacent items from the same cluster could have represented a chance order, whereas three implies an underlying category (cf. Hummert et al., 1994). This analysis was only conducted on older adults' data, as an effect of the intervention was only expected for older participants.

5.6: Discussion

Section 5.6.1.1: Did the priming intervention influence unaware participants' mood and well-being?

Although the current study obtained no evidence to suggest that the subliminal priming intervention influenced participants' psychological well-being, this finding must be treated with caution due to the low power of the study. As emphasised by Field (2005), a lack of significant effect does not indicate that the null hypothesis is correct, merely that we cannot reject it. Although the strength of our current p values (all $> .44$) suggests that no effect has occurred, the effect size may simply be too small for a study with low power to detect (Fleishman, 2012). Considering the small number of participants included in the current study, the lack of a significant relationship between the priming manipulation and participants' affect should be considered a preliminary finding, which requires replication. This result is in line with previous research, however, which demonstrated that auto-stereotype activation had no impact on older adults' state anxiety levels (e.g., Hess et al., 2004; Horton et al., 2008).

A significant interaction between age-group and condition did not emerge for the whole sample (or unaware participants) on measures of state self-esteem, anxiety, and positive or negative affect. This finding suggests that the previously identified effects of auto-stereotype activation on performance (across a wide range of domains, including cardiovascular functioning, balance, and memory; Levy et al., 2000; Levy & Leifheit-Limson, 2009; Stein et al., 2002) are not mediated by the corresponding impact on affect (see Section 5.6.1.2 for further discussion of this issue). Considering the low power of the current study, however, further research is required to confirm these findings before any firm conclusions can be drawn, preferably using larger samples and a range of subliminal priming methodologies.

Furthermore, building on previous findings demonstrating that older adults display better psychological health than young adults (e.g., Diehl et al., 2011; Garstka et al., 2004), older participants in the current study displayed higher social self-esteem, positive affect, and less anxiety than their younger counterparts, regardless of prime valence. This was despite the highly threatening context of the current study for older participants (i.e., an experiment investigating memory performance), as indicated by the higher levels of stereotype threat reported by older, in comparison to young, adults (see Section 5.4). The increased levels of

anxiety and reduced positive affect between both age-groups, irrespective of condition, are presumably indicative of fatigue effects, considering the length of the second session (approximately 2.5 hours). As no measures were included to assess fatigue effects *per se*, however, it is difficult to assess the validity of this suggestion. Further studies would therefore need to explore the reliability of this finding.

In summary, the current findings add to a growing body of evidence to suggest that the effects of auto-stereotype activation on older adults' performance are not influenced through their corresponding impact on mood (e.g., Bargh et al., 1996; Horton et al., 2008), although require further replication before firm conclusions can be drawn. This reinforces the argument that subliminal priming effects may be underwritten by a direct prime-behaviour assimilation effect (Bargh, 1997).

Section 5.6.1.2: Did the priming intervention influence participants' memory performance?

The current results provided partial support for previous findings (e.g., Levy, 1996), indicating that auto-stereotype activation exerts a significant effect on older adults' memory performance⁸⁷. The results from our full sample indicated that older participants in the positive auto-stereotype condition showed significant improvement in performance over time (pre- to post-intervention), whereas participants in the negative condition only showed a slight (and non-significant) improvement. Whereas older participants exposed to negative auto-stereotypes of ageing scored significantly higher than participants in the positive condition before the intervention, this difference was no longer significant after the priming manipulation. As no control condition was included in the current study, however, it is difficult to determine whether the current results represent a significant impact of the positive priming manipulation, or reflect practice effects.

Trends from our unaware participants extended these findings (although the differences were not significant, presumably due to the small sample size), as older adults in the negative condition showed a decrement in performance. In contrast, unaware young adults in both the positive and negative conditions both improved over time. This suggests

⁸⁷ NB As discussed in Chapter 3, there was evidence to suggest that the stereotypical terms generated in Study 2 actually represented older adults' meta-stereotypes of later life, rather than auto-stereotypes. Levy (1996) argues that older adults internalize the stereotypes that are prevalent in their society, however, which become self-stereotypes. For the purposes of the current study we accept Levy's argument in relation to this issue, although as emphasized in Section 3.5.1 future studies should employ methods allowing a differentiation between auto- and meta-stereotype content.

that the finding from the positive condition in the full sample may be indicative of practice effects, rather than an impact of the positive auto-stereotype intervention. Indeed, as we would expect participants from each condition and age-group to show practice effects across time (i.e., improved performance due to familiarity with the task), it seems feasible that the current pattern of effects reflects a detrimental impact of the negative auto-stereotype priming manipulation – possibly countering the practice effects that otherwise would have occurred. As no control condition was included in the current study, however, it is impossible to determine whether the positive or negative auto-stereotypes underlay these effects. Further work is therefore required to determine the direction, and explanation, for the differences obtained in the current study.

A further consideration is that, although the critical age-group by condition interaction was not significant, this does not mean that the auto-stereotypes did not exert an effect on performance (Field, 2005); merely that we failed to reject the null hypothesis. As relatively large sample sizes are required in order to detect interactions (Fleishman, 2012), and our study had extremely low power (0.21), this is a plausible explanation for why we failed to obtain the relevant interaction. Furthermore, as previous research has indicated that positive auto-stereotypes of ageing exert a significant but small effect on older adults' performance (Mesner, 2012), this could also have contributed to the lack of a significant interaction. Overall, in line with expectations and previous research (e.g., Stein et al., 2002), the current results appear to suggest that the negative auto-stereotype activation had a detrimental effect on older adults' memory performance, although with such a small sample size, and no control condition, firm conclusions cannot be drawn until further replications have been obtained.

One limitation of this finding, however, concerns the lack of corresponding effect on older participants' performance in the free recall task (FRT). If the priming manipulation was successful, why did an effect emerge on the PRT but not the FRT? This is particularly surprising as the FRT employed in the current study was based on the task from Hess and colleagues' (2004) study, which revealed significant effects of the priming manipulation. The FRT consisted of a list of 30 words, from six different semantic categories (e.g., *furniture*; see Section 5.3.2). Participants in Hess and colleagues' study completed one version of the FRT, following the priming intervention. Results indicated that older

participants primed with negative auto-stereotypes of ageing performed worse than participants in the negative condition.

In contrast, as the current study employed a pre-post design, two versions of the FRT were completed. Unfortunately, an unanticipated consequence of our modification (i.e., presenting two versions rather than one) was that during the second presentation of the task, participants were aware that the list of to-be-remembered words could be organised within different semantic categories. In line with this suggestion, findings did indicate that older adults showed a greater tendency to cluster their responses following the intervention than before it, which may have over-written any effects of the prime. Future work should therefore ensure, when pre-post designs are being implemented, that the selected memory tasks are not susceptible to differentiated patterns of strategy use.

Section 5.6.1.3: Did the priming intervention influence participants' age-related identity?

Results from the current study provided no evidence that subliminal auto-stereotype activation exerted a significant effect on older adults' displayed levels of identity. This contrast to previous findings using explicit activation of auto-stereotypes (through a questionnaire measure; Weiss & Lang, 2012), which showed that activation of a negative auto-stereotype resulted in greater levels of subjective age bias (SAB) in older participants than activation of positive auto-stereotypes. As reviewed above, however, the lack of a significant finding of subliminal priming on levels of reported identity may be accounted for by the lack of a direct perceptual-behaviour link between these variables (cf. Bargh, 1997). Further studies exploring the effects of conscious activation of age-related auto-stereotypes on identity would help to determine the extent of this effect (see Section 4.2.3).

One interesting finding, however, relates to differences in level of age-related ingroup identity between the two age-groups. Replicating and extending the findings from Study 3, no significant differences emerged between the two age-groups over identity ratings on the centrality subscale (i.e., reflecting how important membership in the age-group is to participants; Leach et al., 2008). This was despite using different scales across the two studies (Cameron, 2004; Leach et al., 2008), and the threatening context of the current study (i.e., an experiment investigating memory performance) for older adults. This finding suggests that age-related ingroup identity is not central to either young or older adults' self-concepts.

Furthermore, in line with the findings from the ingroup affect subscale from Study 3 (Cameron et al., 2004) older adults showed lower ratings than young adults on the satisfaction subscale in the current study (i.e., emotional reactions to ingroup membership; Leach et al., 2008), suggesting that age-related group membership has less positive emotions consequences for older than young adults. These findings reinforce the suggestion from Study 3, that inconsistencies from previous research (e.g., Abrams et al., 2011; Garstka et al., 2004) over the levels of ingroup identification that older adults display, may be accounted for by the specific scales that have been utilised when investigating age-related identity. Further work should therefore ensure that multi-faceted scales are employed when assessing this variable in the older population.

In combination with the findings from Studies 1-3, the current results suggest that age-related identity is not central to older adults' self-concepts, and has negative emotional connotations for this age-group. This is unsurprising, considering the prevalence of negative stereotypes within society about old age (e.g., Kite et al., 2005). As argued by Westerhof and Barrett (2005) and Weiss and Lang (2009, 2012), dissociating themselves from age-group membership may represent an adaptive response for older adults, allowing them to distance themselves from the negative stereotypes that abound. Considering the lack of significant findings between subliminal prime valence and age-related identity in the current study, however, a further examination of the conditions under which high or low levels of age-related identity are displayed would develop our knowledge of this area. Considering the beneficial consequences of positive age-related identity (Garstka et al., 2004), a greater understanding of the conditions under which positive age-group identity emerges should help to facilitate the design of interventions aimed at promoting a positive sense of identity within this age-group.

Section 5.6.4: Limitations, conclusions, and further directions

As outlined in the introduction, one limitation of previous studies investigating the impact of auto-stereotype activation on older adults' memory performance was the high exclusion rates that occurred (Hess et al., 2004; Stein et al., 2002), which ranged from approximately a third to just over half of the respective samples. Unfortunately, the same limitation applied to the current research. Our final study consisted of just 13 older participants (an exclusion rate of 61.76%), which means that the power of the study is limited, and calls into question the extent that the results can be generalized to a wider population. Although the findings from

the PRT appeared to be in line with our expectations (i.e., older adults' performance in the negative condition reduced following the priming intervention), the low power of the study means that this effect may have been a chance effect, produced by the inter-individual differences of the specific participants included in the analysis. Furthermore, as no control condition was included, it was difficult to ascertain whether the improvement in performance that occurred across tie was reflective of a significant impact of the positive priming intervention, or reflected practice effects (as suggested by the young adults' data). A larger replication of the study is therefore required, including a neutral control condition, to determine the extent of this effect.

Furthermore, once exclusions due to nationality and medication-use were removed from the analysis (as these factors are unrelated to limitations with the paradigm), a disproportionately high number ($n = 24$) of excluded participants in the current study were older adults (72.73%). As similar patterns were not obtained in the previous studies (Hess et al., 2004; Stein et al., 2002), this suggests that one of the modifications that we introduced to the paradigm had a greater impact on older adults' performance than young adults'. Although a number of possible explanations could account for this effect (e.g., extended length of the study placing too many demands on older adults' attentional resources), the most parsimonious explanation concerns a combination of participants' repeated exposure to the primes, and older adults' lack of computer use (in comparison to young adults' use; see Section 5.4).

During pilot testing of the current paradigm with older adults ($n = 11$), participants were initially asked to complete 10 trials at each SOA during the calibration procedure (cf. Hess et al., 2004; Stein et al., 2002). This resulted in nine exclusions, however, with participants divided between those who were consciously able to perceive the primes ($n = 3$), and those for whom the presentation speed was too fast, and were not able to perceive a flash at all ($n = 6$). Based on these results, it was assumed that the calibration procedure did not provide participants with enough trials for them to achieve optimal performance, which may have been influenced by the (relative) lack of experience with computers of the older sample. Thus, the descending limits paradigm did not result in SOAs based on participants' true processing speeds. In contrast, the majority of our young participants ($n = 8$) achieved the fastest possible SOA (14ms), and so were presumably reaching their optimal performance levels.

In addition, as participants in our study were exposed to two phases of the subliminal priming intervention (in an attempt to increase the strength of the positive primes; see Section 5.6.2), the experimental trials effectively represented two opportunities to reach their fastest processing speed. Thus, if participants had not reached their optimal performance levels in the calibration procedure, the second block of trials afforded greater opportunity to reach this level. This resulted in greater conscious awareness of the primes than had been displayed in previous studies with only one phase of prime exposure (i.e., Hess et al., 2004; Levy, 1996; Stein et al., 2002). To rectify this problem, we increased the number of trials at the slower speeds (where participants were achieving high accuracy) to 20, with a corresponding increase to 30 trials at the faster speeds (from 100ms). Unfortunately, although this modification did reduce our exclusion rate (from 81% to 62%), the rates remained at unacceptably high levels.

In addition, the later implicit priming studies (Hess et al., 2004; Stein et al., 2002) used words during the calibration procedure and showed high exclusion rates. In comparison, Levy (1996) used random letter strings during her practice trials, and showed much slower exclusion rates due to participants' conscious awareness of the terms. Based on these findings, the current study therefore deliberately used random letter strings during the practice and calibration trials, in order to reduce participants' expectations that words would be presented during the experimental trials. One potentially negative consequence of this decision, however, is that due to top-down influences on processing (for a review, see Gilbert & Li, 2013) at the faster presentation rates, words may have been easier to process and therefore identify. Although reducing participants' suspicion regarding the empirical design of the study is important, controlling for top-down processing effects should also be prioritised.

In future studies, one way to balance these competing requirements may be to employ a lexical-decision task (cf. Hess et al., 2004), which may simultaneously minimise the impact of these effects. Alternatively, a Bayesian programme could also be employed (Aster, Borchers, & Thurber, 2012). These combine alternating patterns of reducing and increasing presentation speeds multiple times, to ensure that participants achieve accurate and optimal performance speeds. A drawback of this approach, of course, would be a corresponding increase in the number of trials that participants are asked to complete. Considering the variability in visual processing speeds that older adults display (Fozard & Gordon-Salant,

2001), a simpler way of controlling for these problems in future studies might be the use of scrambled sentence tasks, or fictitious newspaper articles describing positive or negative aspects of ageing (cf. Hess et al., 2003).

In addition, it is worth considering that studies with low power are undesirable due to their inability to detect small effect sizes (Fleishman, 2012), yet Meisner's (2012) meta-indicated that negative auto-stereotypes of ageing exert a large effect on older adults' performance. Based on the current findings, a preliminary conclusion is that negative auto-stereotype activation exerted a detrimental effect on older adults' memory performance. Considering the low power of the study, and the lack of a control condition to demonstrate whether the positive stereotypes were exerting a beneficial effect on participants' performance, or the negative auto-stereotypes were exerting a detrimental effect, additional work is required to confirm this conclusion.

This is the first study to demonstrate an effect of a subliminal priming manipulation outside of the USA, however, and adds to our theoretical understanding of the mechanism underlying these effects, by indicating that affect did not mediate (or moderate) the impact of auto-stereotype activation on performance. As emphasised in Section 5.6.1.1, however, failing to find a significant effect does *not* mean that we can reject the null hypothesis. Further work is therefore required to confirm that the prime-behaviour link underlying the apparent priming effects was not influenced by participants' mood. The current study does provide initial evidence to suggest that detrimental effects of subliminal age-related auto-stereotype activation extend to populations outside of the USA, although further studies are required across additional countries (e.g., across Eastern cultures) to determine the extent of the pattern.

Chapter Six: General discussion

6.1: Main findings

Section 6.1.1: Content and structure of stereotypes and auto-stereotypes of later life.

Studies 1-3 of the current thesis explored the content and structure of young adults' stereotypes of old age, and older and old-old adults' auto- and meta-stereotypes. Studies 1 and 2 indicated that participants from across the lifespan hold complex auto/stereotypes of old age, consisting of traits relating to numerous domains (e.g., *desires and fears, emotions*), and containing both positive and negative elements. The findings from Study 3 confirmed that the structure of these auto/stereotypes formed two high level clusters, consisting of positive and negatively valenced stereotype subtypes. In contrast with expectations and previous studies (Hummert et al., 1994; Linville, 1982), older adults' subtype structure was not more complex than young adults' stereotypes. In contrast, old-old participants displayed the most complex representations of old age, as indicated through the creation of significantly more auto-stereotype subtypes than older adults. Furthermore, old-old adults showed greater differentiation between auto-stereotype subtypes (e.g., *Traveller, Good Neighbour*), which were subsumed within the broader subcategories created by young and older adults (e.g., *Golden Ager*). This pattern of findings was presumably related to old-old adults' reported subjective ages (see Section 6.1.3), which fell within the older adult age category.

Section 6.1.2: Positivity of older adults' auto-stereotype content.

In partial support of hypotheses from the social identity approach (SIA; e.g., Tajfel & Turner, 1979; Turner et al., 1987), findings indicated that older adults displayed less negative auto-stereotypes of their age-group, but *not* more positive representations, than the views held by young adults (see Section 3.5.2). These results build upon an existing body of research suggesting that more positive versus less negative representations constitute distinct (but related) aspects of auto-stereotype content (e.g., Crisp & Nicel, 2004; Susskind & Hodges, 2007), but must be considered in light of the low levels of age-related ingroup identity that older adults displayed, and their dissociation from chronological (as opposed to subjective) age-based identity (see Section 6.1.3). Furthermore, the results from our old-old participants were limited through the reliance on free-response measures (see Section 6.2), which restricted the reliability of our findings.

Section 6.1.3: Do differences emerge over participants' levels of age-group identification?

Findings from Studies 1-3 provided evidence to suggest that differences did emerge across age-groups over participants' levels of age-group identification. The most reliable (and consistent) findings in this respect related to subjective age bias (SAB). In each study, and inline with previous research (e.g., Weiss & Lang, 2012) young adults showed lower levels of SAB than older and old-old adults, indicating less dissociation from their age group. Old-old adults also displayed higher levels of SAB than older adults in Studies 2 and 3, although this difference only approached significance in the later study (presumably reflective of the lower levels of power in Study 3 than in Study 2). Importantly, a positive correlation emerged between chronological age and SAB in both studies.

In terms of our ingroup identification scales, Study 3 indicated that differences in levels of age-based identification between age-groups centred on ingroup affect (i.e., positive representations or affective reactions to the ingroup), as young adults showed significantly higher levels of ingroup affect than the older age-groups. Similarities also emerged between groups, as each cohort showed positive (i.e., above the midpoint of the scale) levels of ingroup ties, and low levels of centrality (i.e., importance of age-group membership to the self-concept). This suggested that chronological age was not important to participants' self-definitions, although only older adults gave centrality ratings that were significantly below the midpoint of the scale.

Section 6.1.4: Effects of subliminal auto-stereotype activation on older adults' memory performance.

Preliminary evidence from Study 4 suggested that activation of a negative auto-stereotype of old age exerted a detrimental impact on older adults' memory performance, although due to small sample sizes these findings need replicated with larger samples. Importantly, significant differences emerged between older participants in the positive and negative conditions *prior* to the priming intervention. Following the intervention these effects disappeared, as older individuals in the positive condition showed improved performance over time (likely due to practice effects, as young adults in both the positive and negative condition also showed an improvement across time), whereas older adults in the negative condition showed a non-significant decrease in performance. In contrast, no effect emerged of prime activation on young adults' performance, or on measures of psychological well-being and identity. These findings support the hypothesized prime-behaviour assimilation

effect proposed by Bargh (1997), although must be considered extremely preliminary in nature. Thus, results suggest that the detrimental effects of age-related auto-stereotype activation from previous studies in the USA (e.g., Meisner, 2012) can be generalized to the UK. It should be noted, however, that due to the low power of this study and issues involving the wording of the stereotype content measure from Study 2 (see Section 6.2), these findings should be viewed as pilot data and need replicated in a larger sample.

6.2: Discussion

Before the main findings from the current thesis are considered, two major limitations need to be addressed. These concern the nature of the samples across each study, and the wording of the stereotype content measure from Studies 1 and 2 (which had implications for the interpretation of results, and for Studies 3 and 4). As emphasized in Sections 2.6.1 and 4.5.3, indicators suggested that the older and old-old adults that were recruited during the current research may have been atypical of the wider population. In Study 4 we struggled to recruit participants with concerns about their memory performance, despite targeting this population in our recruitment drives. In addition, no significant differences emerged between age-groups over level of education in Studies 1, 3, or 4, or over ratings of subjective health in Study 3.

These findings contrast with previous research that have consistently indicated that young adults enjoy higher levels of education and subjective health than their older counterparts (e.g., De La Fuente, 2012; Reile & Leinsalu, 2013). Although failure to obtain a significant effect does not mean that the null hypothesis is false (just that we cannot reject it; Field, 2005), these findings do suggest that our current older samples may have been atypical, which raises issues concerning the generalizability of the current results.

Although numerous measures were employed in Studies 3 and 4 to recruit older participants that were representative of the wider population (e.g., advertisements placed in doctors' surgeries, hospitals, and less affluent areas of Fife; see Section 4.3.1), the high educational attainment and subjective health displayed by our older and old-old participants are indicative of a significant recruitment bias. This bias is reflective of the local geographical demographics: St Andrews is an affluent area, whose residents enjoy high socioeconomic statuses and educational achievement (GRO, 2001). Indeed, as indicated in

Appendix VII, St Andrews is atypical of Fife's population, enjoying higher levels of affluence and lower levels of multiple deprivations than the average for this region (*Ibid.*). Unfortunately, this means that the local population is representative of neither the wider Scottish population, nor the population of Fife.

It is important to note that Study 2 recruited participants from a broader geographical area within Fife than the other studies, and was the only study to demonstrate the expected difference between age-groups in educational achievement. This does suggest that recruiting participants from a wider area may be one important way to avoid this recruitment bias in future studies. Although considerable effort was expended in recruiting participants from as broad a geographical area as possible (e.g., leaving posters in local community centres and doctors' surgeries throughout Fife and Tayside), this method was not successful, suggesting that additional factors must be taken into account.

One important consideration in terms of recruiting participants from lower socioeconomic statuses concerns the issue of transport costs, as research from health psychology has indicated that such costs can reduce willingness to participate in studies amongst individuals from lower socioeconomic backgrounds (e.g., Miller, 2012; Spadea, Bellini, Kunst, Stirbu, & Costa, 2010). Although older adults do receive free public transport, thus facilitating travel opportunities, research suggests that demands on time may also be an important consideration when recruiting poorer individuals for studies (e.g., Spadea et al., 2010). Minimising participants' travel time and conducting the research from community centres throughout Fife might therefore increase both awareness and uptake of the study, and may be one way of reducing the recruitment bias in future studies.

As participants were also recruited from local Probus clubs and physical activity classes for the over 50s, this is likely to also have contributed to the evident bias. Approaching agencies who work with disadvantaged older adults (e.g., Age Scotland) may be another way of increasing the participant pool, in order to make the samples more representational of the wider public. It should be emphasized that the high levels of education that were displayed in our samples are particularly problematic, as recent studies have indicated that stereotypes and auto-stereotypes of later life exert different effects on older participants with high versus low educational attainment (Andreoletti & Lachman, 2004; Horton et al., 2010). In order to obtain a true representation of the content and

structure of stereotypes and auto-stereotypes of later life within the UK, additional studies need to ensure that participants are recruited from as wide a range of backgrounds and statuses as is possible.

A second limitation of our studies concerns the wording of our measures to assess stereotype content. As discussed in Section 3.5.1, differences can be drawn between participants' auto-stereotypes (i.e., perceptions that individuals hold about their own ingroups) and *meta*-stereotypes (i.e., stereotypes which individuals believe out-group members hold about their ingroups; Vorauer et al., 1998). When designing Studies 1 and 2, it was felt that the measure used in previous research (see Section 2.3.2) to assess stereotype content confounded meta- and auto-stereotypes, as participants were asked to write down *'anything that is typically associated with the elderly, regardless of whether it is favourable or unfavourable or whether you personally believe it to be true'* (Schmidt & Boland, 1986, p. 256).

Although steps were taken to address this issue (e.g., removing the final clause of the last sentence), it seems that these modifications were not successful. This was indicated by findings from the ratings study (see Section 3.3.4), which indicated that a third of the most frequently generated terms from Study 2 were not perceived to be characteristic of the older age-group, and the high proportion of older participants in Study 3 feeling that the (auto)-stereotypical⁸⁸ terms did not apply to their age-group and thus having to be excluded from the analysis⁸⁹. This creates significant issues in terms of interpretation of our results, both in Study 2 and the subsequent studies, as the (auto)-stereotypical terms may actually have represented *meta*-stereotypical descriptors that older adults believed others would associate with the 60-75 year old age category. As emphasized in Chapter 4, this ambiguity may underlie the lack of a significant effect that emerged over older adults' complexity of (auto)-stereotype representation in the sorting task.

With hindsight, additional modifications need to be made to the wording of the stereotype content measure in order to remove this ambiguity (see Section 3.5.1).

⁸⁸ 'Auto' in this context is placed in brackets as the terms were supposed to be auto-stereotypical representations of the older adult age-group, but the available evidence suggested that these may actually have been meta-stereotypical terms.

⁸⁹ Although it should also be noted that the subjective ages provided by older adults indicated that they dissociated from their age group, which may also have influenced their responses.

Furthermore, we would also strongly recommend that future studies include items to assess the degree that participants personally endorse the (auto)-stereotype descriptors, so that greater classification can be made between auto- and meta-stereotype content. These additional considerations could be included in future studies, aiming to examine the complexity of stereotype and auto-stereotype content of old-old adults (see Section 6.2.1).

Section 6.2.1: Content and structure of stereotypes and auto-stereotypes of later life.

The results from the current thesis confirmed finding from North American samples (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986), indicating that stereotypes and auto-stereotypes of later life are complex, but can broadly be divided into positive and negative elements. In contrast with hypotheses from Linville's (1982) ingroup complexity bias, older adults did not display more complex auto-stereotypes of later life than their younger counterparts, through either the trait generation tasks (Studies 1 and 2), or the free-sort procedure (Study 3). This unexpected result can be accounted for, however, by a combination of the methodological issues outlined above (see Section 6.2.1), and the subjective ages that older adults reported, which were significantly lower than their chronological ages and fell outside of the older adult age category (60-75 years).

Considering theories underlying the social identity approach (SIA; e.g., Turner et al., 1987), which posit that our social identities are determined by the groups that we define ourselves by (for a review, see Reicher et al., 2010), it is therefore unsurprising that older adults did not display more complex auto-stereotypes of their "ingroup" than young participants' stereotypes, as they did not self-categorize themselves as part of this group. It therefore appears that older adults distance themselves from this aspect of self-definition, and so should not be expected to show more complex representations of a group from which they do not identify.

In contrast, in Study 3 *old-old* adults self-identified as ingroup members of the older adult age category (through their reported subjective ages of $M = 65.7$ years), and generated more complex representations of the auto-stereotype subtypes than the younger participants (although it should be noted that so few individuals provided subjective ages within the old-old age category that a comparison across all age groups could not be conducted). These findings emphasise the importance of subjective rather than chronological age for age-related identity (cf. Bowling et al., 2005), and in assessing SAB when investigating issues around

age-related identity (Westerhof et al., 2003), as *subjective*, rather than chronological, ages were integral to older participants' self-definitions (cf. Bowling et al., 2005).

Furthermore, the different pattern of responses that were obtained between older and old-old adults reinforces earlier arguments (see Sections 1.1.7 and 3.3.2) that everyone aged 60 years and over should not be classified as a single cohort (Bytheway, 2005). In addition, this also questions the validity of the findings obtained by Hummert and colleagues (1994), who reported that “elderly” adults (aged 62-84 years) in their study showed significantly more complex auto-stereotypes of later life than middle-aged adults, with a trend for greater complexity of representations than young adults. Considering the pattern of findings from Study 3, it seems feasible that this difference may be due to the inclusion of old-old adults in Hummert and colleague's elderly sample⁹⁰. Furthermore, subjective ages were not assessed in this study, which may have influenced the findings, and transformations were not conducted on the data⁹¹. In particular, identity-related considerations may help to explain why levels of complexity between young and elderly participants were not significant. Future work exploring the content and structure of age-related auto/stereotypes should ensure that such factors are controlled for.

Two limitations can be applied to Studies 1-3, however, which were not addressed above, and influence the generalizability of these findings. First of all, when asked to describe a ‘typical older adult’ in Study 2, over a third of old-old participants failed to provide a response (see Section 3.3.4); a much larger proportion than young or older adults. As the same pattern was not obtained on closed-response measures, it seems feasible that this missing data could reflect physical or cognitive limitations associated with old age (cf. Hummert et al., 1994). This may have resulted in old-old adults' auto-stereotypes of later life not being adequately reflected in the traits that were selected for inclusion for Study 3. Future research may therefore benefit from the use of interview data to assess old-old adults' auto-stereotype content in the initial stages of data collection. Furthermore, additional studies would benefit from applying the same procedures to stereotypes and auto-stereotypes of both young adults (cf. Matheson et al., 2000) and old-old adults. A comparison of the

⁹⁰ We did contact Mary L. Hummert, to ask if it was possible to access a copy of her results, so that we could re-analyse the data whilst employing greater differentiation within the older sample. Unfortunately we did not get a reply.

⁹¹ NB when our data was analysed on the raw scores, we obtained significant differences between young and older adults' data.

clustering structure displayed by old-old adults when sorting traits associated with older versus old-old adults would expand our understanding of age-related identity in later life, especially if greater complexity emerged over the sorting of traits relating to older (rather than old-old) adults.

The second limitation concerns the exclusion rates of older adults from Study 3, as one in five participants were excluded from the analysis (see Section 4.4.5). As reviewed in Section 6.2, this limits the generalizability of the results. Further work using larger samples is therefore required, to demonstrate the extent of this limitation. As reviewed in Section 4.4.5, further studies should also ensure that an additional phase is included between the content generation and free-sorting phases of the study. This should consist of a ratings task, to ensure that all terms selected for inclusion in the sorting task are perceived (by participants of all ages) to be characteristic of older adults. It is worth noting that none of the previous studies from the USA employed this procedure, nor provided details of exclusions based on the number of miscellaneous classifications (Hummert, 1990; Hummert et al., 1994; Schmidt & Boland, 1986). Modifying the paradigm in this manner, alongside a revision of the stereotype content measure, would provide a stricter methodological design and help to ensure that the results are reliable and valid.

Section 6.2.2: Positivity of older adults' auto-stereotype content.

From a theoretical standpoint, the most important finding from the current study relates to the less negative versus more positive distinction that was obtained in older adults' representations of later life (see Chapter 3). Whereas older adults' auto/meta-stereotypes were less negative than young adults' representations on six out of eight items, they were more positive on three of eight measures. Thus, results were more consistent in relation to older adults' less negative representations of later life. Although a range of studies within the SIA have differentiated between ingroup positivity and outgroup negativity (see Brewer, 1999, 2007), few have applied this distinction to perceptions of the ingroup (see Section 3.2.2, e.g., Zosuls et al., 2011). Indeed, only three studies were identified that applied this distinction to auto/stereotypes of old age (Abrams, Russell et al., 2011; Crisp & Nicel, 2004; Reynolds et al., 2000). Furthermore, only the work by Abrams and colleagues included older adult participants (the remaining studies were conducted on young samples).

The study by Abrams and colleagues (2011) also demonstrated less negative but not more positive auto-stereotypes of old age, as per the findings from Study 2. An important consideration when interpreting these results concerns the moderating role of social identity. The study by Susskind and Hodges (2007), for example, indicated that participants who demonstrated high levels of ingroup identity displayed both more positive *and* less negative auto-stereotypes of their own group⁹². In contrast, older participants from the later studies (Abrams, Russell et al., 2011; Study 2) both displayed low levels of identity. Considering the findings from Susskind and Hodges, it seems feasible that the less negative/more positive combination may therefore be reflective of group members with low levels of identity. Further work is required to test the validity (and reliability) of this claim, considering the small number of studies that have differentiated between these two distinct aspects of ingroup auto-stereotypes for older adults.

One limitation of this finding, however, is that the current pattern of results were obtained from just six measures of auto-stereotype content, four of which were free-response items, which appeared to limit old-old adults' ability to respond to the questions (see Section 6.2.2). Further research should therefore aim to replicate this finding using a wider range of response items and techniques, in order to determine how widespread the effect is. In addition, in order to determine whether levels of age-related ingroup identity do underlie the less negative versus more positive divide, empirical studies could manipulate participants' level of ingroup identity (cf. Weiss & Lang, 2012), and assess corresponding changes in participants' ingroup representations. The current findings represent a fascinating area of study, and may have a range of practical benefits for older adults.

Section 6.2.3: Do differences emerge over participants' levels of age-group identification?

Possibly the most important finding to emerge from analysis of individuals' level of age-related ingroup identity concerned the subjective ages with which participants identified. Old-old adults in Studies 2 and 3 provided subjective ages that fell within the age-range for older adults ($M = 62.02$ and 63.03 years, respectively), whereas older adults' subjective ages

⁹² *Note.* One caveat to this suggestion is that the study by Susskind and Hodges (2007) employed an intergroup design, where participants were asked to rate in- and out-group members. A robust social identity effect emerged in this study, as participants with high levels of identity showed greater levels of IPB than those with low levels. Indeed, the low identifiers did not differentiate in a more positive/less negative manner between the in- and out-group. Although, based on the current finding, we may therefore have expected to find low identifiers displaying less negative representations of their own group (which did not occur), the inter-group context of this study may underlie the different pattern of effects.

fell below their own age category. As discussed in Section 4.5.2, in contrast to expectations this meant that old-old, rather than older adults, represented the age-related ingroup in the sorting study, at least when subjective rather than chronological ages were considered. Indeed, the level of SAB demonstrated by our participants indicated that, in line with previous research (Weiss & Lang, 2012), young adults were the only cohort to self-identify with their age-group.

These findings were in line with previous research indicating that older adults identify with ages younger than their own (e.g., Westerhof et al., 2005), yet raise a few issues in terms of self-categorisation and age-based identity. As emphasized in Section 3.5.4, the wording of our identity scales in Studies 1 and 2 asked participants to indicate the extent that they identified with ‘their age-group’, or other people ‘their age’. Neither scale stipulated the age-range for these groups, which effectively meant that participants could self-select the age-group with which they were identifying (i.e., whether based on chronological or subjective age). Importantly, this means that different participants (both within and/or between age-groups) could have interpreted the scales in very different ways, so responses are unlikely to have been consistent across participants. What is more surprising about these findings is that, despite (essentially) being allowed to choose which age-based categorization to employ, participants from all three age groups still showed low levels of age-related identity.

These findings were extended in Study 3, where the use of Cameron’s (2004) longer identity scale allowed us to assess the centrality (i.e., importance) of age-based identity for participants’ self-concepts. Participants from each of the three age groups demonstrated low levels of centrality (although only older adults’ scores were significantly below the midpoint of the scale). Importantly, the identity scale employed in Study 3 stipulated precise-age ranges for each of the three age groups (e.g., 75-90 years for old-old adults), which should have resulted in consideration of a chronology-based age identity. Considering that older and old-old adults’ subjective ages were once again outside their respective age categories, however, this indicates that participants may not have perceived this categorization to be self-applicable. Thus, the results from Studies 1-3 suggest that age-based identity did not constitute an important part of individuals’ self-concepts.

Participants’ rejection of an age-based identity raises an additional consideration, concerning acceptance of the transition into later life. As emphasised in Section 3.2.2, old

age is associated with many significant life transitions and changes, such as retirement (Reitzes & Mutran, 2006), ill-health (Stewart et al., 2012), and/or bereavement (Townsend, et al., 2006), which older adults must adapt to. A minority of older individuals who participated in the current studies appeared to be struggling with this transition, and reported feeling down or dejected at the prospect of ‘becoming old’ (e.g., ‘I just don’t see the point anymore. Guess I’m just a ‘grumpy old man’ now’).

Previous research suggests that individuals who hold pervasively negative attitudes towards the ageing process (Levy, 2009), or have previously been highly invested in their work-related identity (Reitzes & Mutran, 2006), are particularly likely to display negative affect as a consequence of reaching the older age categories and/or retiring (Price, 2002). Braithwaite (2002) argues that the promotion of more positive societal representations of later life may be the most effective way to improve older adults’ well-being, and suggests a number of ways in which this might be achieved (e.g., observing elderly individuals in different social roles; Kite, 1996). It is also worth considering that the studies by Brewer and colleagues (1984) suggested that older adults identified with specific subtypes of the elderly auto-stereotype (the *grandmother* subtype). Identifying the relevant subtype with which participants identify, and subsequently promoting identity based on this *specific* characterization may have a positive impact on older participants’ well-being and self-concepts. Future studies could explore this area of research through empirical manipulation and exploration of subtype-based identities.

A more important consideration in terms of identity in later life, however, concerns retirement. A minority of the older individuals who participated in Studies 3 and 4 seemed particularly disturbed by the prospect of (or having just) retired. Previous work suggests that loss of work-related identity is central to individuals’ distress in this regard (Barnes & Parry, 2004). Considering that older participants tend to show low identification with their age group (Demakakos et al., 2007; Persson & Cassidy, 2006), an important avenue for research might be an examination of the types of roles and categories with which older adults *do* identify, and which are important for their self-concepts. The promotion of new roles that older adults acquire post-retirement (e.g., as grandparents or volunteers) and the associated identities that emerge have been shown to have positive consequences for older adults (e.g., feeling more satisfied and fulfilled; Byles et al., 2013). Rather than promoting age-based

identity in later life, research focusing on methods to promote these alternative identities could therefore have significant and beneficial effects on older adults' well-being.

Section 6.2.4: Effects of subliminal auto-stereotype activation on older adults' memory performance.

As reviewed in Section 6.1.4, the results from our subliminal priming paradigm suggest that negative auto-stereotype activation had a detrimental effect on older adults' memory performance. To our knowledge, this is the first study outside of the USA to demonstrate an impact of subliminal priming on older adults' performance (Meisner, 2012). As emphasised in Chapter 5, however, a major limitation of this study concerned its low power (which may have influenced our failure to obtain an interaction between age-group and condition; Fleishman, 2012), due to the high numbers of exclusions. Furthermore, the lack of a control condition means that we cannot determine whether the differences in performance that emerged in our positive condition were a result of practice effects or the priming manipulation. Additional studies should therefore ensure that a neutral control is included.

As reviewed in Section 5.6.1.2, although previous studies (Hess et al., 2004; Stein et al., 2002) also demonstrated high exclusion rates (of between a third and half of their samples), over two thirds of the empirically-related exclusions (e.g., those who were consciously aware of the prime during the intervention) in Study 4 were older adults. The same pattern was not obtained in the earlier studies (Hess et al., 2004; Stein et al., 2002). This suggests that one of our modifications to the subliminal priming procedure (e.g., exposing participants to the primes twice) differentially affected older adults in comparison to our young participants. This pattern also suggests that the calibration procedure and descending limits paradigm that were applied in the current study were not sensitive enough to the variability in visual processing speeds that older adults displayed (Fozard et al., 2001). Considering the methodological limitations and the low power of the study, further work is therefore required to confirm the detrimental impact of the negative primes, which must only be considered a preliminary finding.

Despite this limitation, the observed pattern of effects is in line with previous findings demonstrating that subliminal negative auto-stereotype activation exerts a stronger effect on older adults than positive auto-stereotypes (Meisner, 2012). Furthermore, our findings extended the previous research in this area, by suggesting that the effects of subliminal

priming on older adults' memory performance were not mediated through a corresponding impact on affect and well-being. As our evidence in support of this assertion was a lack of a significant effect of the manipulation on well-being, however, this finding must be treated with extreme caution (as we cannot conclude that there is no effect, merely that we failed to reject the null hypothesis), so further work is required before conclusions can be drawn. This suggestion is in line with Bargh's (1997) hypothesized prime-behaviour assimilation effect, however, as the only aspect of older adults' performance or self-ratings that was sensitive to the priming manipulation was memory: a behaviour strongly associated with negative auto-stereotypes of old age. Due to the low power of the study, however, further research is required to confirm this effect.

Considering the range of studies that have demonstrated beneficial or detrimental consequences of subliminally activating a positive or negative auto-stereotype of later life (e.g., Hausdorff et al., 1999; Hess et al., 2004; Levy & Leffheit-Limson, 2009), further investigation into these processes is essential if we hope to improve the successful ageing of Britain's ageing population. As more individuals are living into later life than ever before (Giannakouris, 2008), identifying procedures that can help to maintain functioning in old age for as long as possible must be considered a priority for future research.

Section 6.3: Conclusions and future directions

The current thesis represents a significant step forward in our understanding of the content, structure, and consequences of age-related stereotypes and auto-stereotypes in the UK. Confirming findings from studies conducted in the USA, Studies 1-3 revealed that auto/stereotypes of later life consisted of multiple subtypes (e.g., the *Grumpy Old Man* and *Grandparent*), which could broadly be divided into positive and negative clusters. Extending the findings from previous research (e.g., Brewer & Lui, 1984; Hummert et al., 1994), Study 3 indicated that old-old adults held more complex representations of old age than their younger counterparts, presumably reflecting their self-categorization (via subjective age) as members of this group (Turner et al., 1987). Due to problems associated with both the wording of the stereotype content measure in Study 2, and the sorting task in Study 3 (which emphasized chronological age-based membership), however, replications and extensions of these results are required in order to confirm this finding. Our results do reinforce the importance of differentiating between older and old-old adults (cf. Bytheway, 2005), however, and examining age-related identity when exploring stereotypes and auto-

stereotypes of later life. The current findings also support earlier assertions (e.g., Bowling, 2005) that subjective age is more important than chronological age (at least, in certain contexts) as a basis for older and old-old adults' age-based identity.

Similarly, results from Study 4 provided preliminary evidence to suggest that subliminal activation of negative auto-stereotypes of later life exerted a detrimental (but non-significant) impact on older adults' memory performance. Although participants' performance in the positive condition did improve over time, as no control condition was included it was not possible to determine whether this improvement emerged as a result of the priming intervention, or was due to practice effects - an alternative that seems more likely considering the analysis of the young adults' data. This was despite exposing participants to the positive primes on two occasions, in an attempt to strengthen the impact of the positive priming intervention. As a number of methodological limitations applied to our current priming study, however, further work must ensure to address these issues before firm conclusions can be drawn.

The current chapter has suggested a number of ways in which further research could build upon the findings obtained in the current thesis. In particular, a focus on the relationship between age-related identity levels and the more positive versus less negative distinction could develop our theoretical understanding of self-perceptions of ageing. An empirical study designed to manipulate participants' level of age-based ingroup identity (cf. Weiss & Lang, 2012), and assess corresponding changes in participants' ingroup representations would allow us to determine whether different levels of age-related ingroup identity underlie the less negative versus more positive divide. As the current findings suggested that chronological age-based identity is not central to older adults' self-concepts, however, a more important avenue for research might be an examination of the types of roles and categories with which older adults *do* identify, and which are important for their self-concepts (e.g., see Section 6.2.3).

In conclusion, although the current thesis has raised, if anything, more questions than it has answered (particularly over the differences between auto- and meta-stereotypes), the results from Studies 1-3 clearly demonstrate that individuals' representations of later life consist of both positive and negative aspects. This finding is important, as current demographic trends project that the number of older adults in society will exponentially

increase over the next 30 years (Dean, 2003; Giannakouris, 2008). As research indicates that countries with a higher proportion of older adults in society showed more positive stereotypes and attitudes towards later life (Abrams, Russell et al., 2011), it seems feasible that we may currently be on the brink of a positive attitudinal shift towards older adults (cf. Kite et al., 1988, 2005). The current thesis has suggested a number of avenues for further research investigating participants' stereotypes, auto-stereotypes, and meta-stereotypes of later life, the use of which will hopefully enable us to promote the psychological well-being of the older population within the UK (cf. Braithwaite, 2002).

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Appendix I

Table 1: *Positive stereotype subtypes created by young adults in previous studies using samples from the USA*

Positive stereotype subtypes	Study	
	Schmidt & Boland (1986)	Hummert et al., (1994)
John Wayne Conservative	Patriotic	Patriotic
	Republican	Political
	Doesn't like handouts	Emotional
	Frustrated about mandatory retirement	Conservative
	Wealthy	Mellow
	Tough	Retired
	Distinguished looking	Old-fashioned
	-	Nostalgic
	-	Reminiscent
	-	Religious
Liberal Matriarch/Patriarch	Lives life through their children	-
	Democrat	-
	Mellow	-
Perfect Grandparent	Wise	Wise
	Happy	Happy
	Generous	Generous
	Family-orientated	Family-oriented
	Useful	Intelligent
	Understanding	Knowledgeable
	Capable	Trustworthy
	Alert	Loving
	Healthy	Supportive
	Active	Understanding

	Enjoys life	Fun-Loving
	Comes to terms with their life	Grateful
	Likes to be around young	-
	Courageous	-
	Good support to others	-
	Volunteer	-
Sage	Intelligent	-
	Interesting	-
	Knows a great deal	-
	Loving	-
	Concerned about the future	-
	Tells stories about the past	-
Golden Ager	-	Active
	-	Adventurous
	-	Healthy
	-	Lively
	-	Sociable
	-	Courageous
	-	Health Conscious
	-	Sexual
	-	Future Oriented
	-	Self-Accepting
	-	Volunteer
	-	Skilled
	-	Successful
	-	Well-Informed
	-	Well-Travelled
	-	Wealthy
	-	Interesting
	-	Witty
	-	Alert
	-	Capable
	-	Independent

-	Determined
-	Productive
-	Proud
-	Liberal

Table 2: *Negative stereotype subtypes created by young adults in previous studies using samples from the USA*

Negative stereotype subtypes	Study	
	Schmidt & Boland (1986)	Hummert et al., (1994)
Despondent	Neglected	Neglected
	Lonely	Lonely
	Sad	Sad
	Miserable	Depressed
	Hypochondriac	Fragile
	Bored	Tired
	Arouse pity	Frustrated
	Waiting to die	-
	Sedentary	-
Mildly impaired	Sexually inactive	-
	Slow moving	-
	Forgetful	-
	Physically handicapped	-
	Shaky hands	-
Vulnerable	Victims of crime	Victimised
	Afraid of crime	Afraid
	Poor	Hypochondriac
	Poor driver	Worried
	Live on fixed income	Wary
	Quiet	Bored
	-	Sedentary
	-	Emotionless

	-	Miserly
Severely impaired	Dependent on family	-
	Sick	-
	Needs nursing care	-
	Fragile	-
	Poor posture	-
	Senile	-
	Rambling of speech	-
	Slow thinking	-
	Incapable of handling job	-
Shrew/Curmudgeon	Ill-tempered	Ill-tempered
	Bitter	Bitter
	Complaining	Complaining
	Prejudiced	Prejudiced
	Humorless	Humourless
	Jealous of young	Jealous
	Unable to communicate	Greedy
	Demanding	Selfish
	Annoying	Snobbish
	Selfish	Stubborn
	-	Nosy
	-	Frugal
	-	Inflexible
Recluse	Suspicious of strangers	Quiet
	Easily upset	Timid
	Live in past	Dependent
	Set in ways	Forgetful
	Find difficult to change	Naïve
	-	Rambling
Nosey neighbor	Frugal	-
	Busy-body	-
	Short	-
	Fat	-

	Unattractive	-
	Naïve	-
	Greedy	-
	Miserly	-
	Snobbish	-
<hr/>		
Bag lady/vagrant	Dirty	-
	Useless	-
	Emotional	-
	Burden to society	-
<hr/>		
Severely Impaired	-	Hopeless
	-	Incompetent
	-	Senile
	-	Incoherent
	-	Feeble
	-	Sick
	-	Slow-moving
	-	Slow-thinking
	-	Sexless
	-	Inarticulate
	-	Poor
<hr/>		

Appendix II

Table 1.3: *Summary Table of UK ageing studies*

Author and year	Year	Location	Dependent measures	Findings
Ace Concern England	2008	Kent	<ol style="list-style-type: none"> 1. Age categorisation of young and old: when does youth end, and old age begin? 2. Age group identification. 3. Age-related stereotypes (young, middle-aged and older adults). 4. Experiences of discrimination (based on age, gender, religion, race, disability and sexuality). 	<ol style="list-style-type: none"> 1. Young adults reported significantly lower ages for the perceived end of youth, and perceived start of old age, than older adults (means not provided). 2. Over 60% of young adults identified with their age group, whereas just over 50% of older adults showed positive ingroup identification. 3. Older adults were rated as showing the highest level of friendliness (warmth) but lowest level of competence from the three age groups under study. 4. Participants reported experiences of age discrimination more frequently than all other forms. Over 51% of participants regarded age discrimination as serious.
Abrams, Crisp, Marques, Fagg, Bedford & Provias	2008	Kent	<ol style="list-style-type: none"> 1. Cognitive performance 2. Anxiety 3. Ingroup Identification 	<ol style="list-style-type: none"> 1. Performance was significantly impaired under conditions of high threat, $p < .001$ as opposed to the control condition. <ol style="list-style-type: none"> 1a. A significant Threat x Contact interaction was obtained; threat impaired performance only for those with low positive contact, $p < .001$ 2. Anxiety was significantly increased under conditions of high threat $p < .001$, in comparison with the control condition. <ol style="list-style-type: none"> 2a. A significant Threat x Contact interaction was obtained; threat caused a large increase in anxiety for those with low positive contact, $p < .001$. 2b. Anxiety partially mediated the effect of Threat on performance, and fully mediated the interaction. 3. Identification was significantly reduced for those with high positive contact, $p < .01$.
Greenlees, Webb Hall & Manley	2007	Chicester	Does information about an older target's exercise habits influence participants' ratings of their personality traits and physical appearance?	<ol style="list-style-type: none"> 1. Targets described as 'an exerciser' were rated more positively on both dependent variables than 'non-exercisers' and controls, $p < .05$. <ol style="list-style-type: none"> 1a. Older participants rated targets more favourably on the physical appearance scales than the two younger age groups, $p < .05$.
Moulin,	2007	Leeds and	N/a: Review paper: Considers stereotypes and	Conclusion: 1. Older adults are less accurate eye-witnesses, due to age-related

Thompson, Wright & Conway		Sussex	personality traits of older adults, and discusses credibility of older people as eyewitnesses.	cognitive decline. 2. Older adults perceived to have higher integrity
Williams, Ylanne & Wadleigh	2007	Cardiff	1. What images of older people do the advertisements employ? 2. Are the images predominantly positive or negative? 3. How is negativity managed? 4. What messages about older adults are conveyed?	1. Traditional stereotyped images in initial phases progress to counter-stereotypical images in later phases. 2. Predominantly positive: initially fit with Hummert's (1990) positive stereotypes, then progress to counter the negative ones. 3. Negative images are mediated through use of positive text. 4. Can choose to remain healthy and active in old age through health-related behaviours i.e. diet
Abrams, Eller & Bryant	2006	Kent	1. Maths performance under conditions of stereotype threat, and actual intergenerational contact with grandchildren 2. Anxiety level under conditions of stereotype threat, and actual intergenerational contact with grandchildren 3. Maths performance under conditions of stereotype threat, and imagined intergenerational contact 4. Anxiety levels under conditions of stereotype threat, and imagined intergenerational contact	1. Performance was significantly impaired under conditions of stereotype threat, $p < .014$ in comparison to control. 1a. A significant Threat x Contact interaction was also obtained, $p < .001$, with those with high levels of contact showing improved performance. 2. Significant threat x contact interaction, $p < .01$, with impaired performance under conditions of threat for those with low levels of contact. 3. Performance significantly improved in threat + imagined contact condition than threat + control imagery condition, $p = .050$. 4. Reduced levels of anxiety obtained under threat + imagined contact condition than threat + control imagery condition, $p < .05$
Townsend, Godfrey & Denby	2006	Leeds	Interviews and focus groups with 84 older adults investigating: 1. Quality of life 2. Perceptions and images of own ageing. 3. Representations of others' ageing.	1. 57% of the sample had good physical mobility and were socially active; 25% were restricted to the neighbourhood and 18% were house-bound. Loss of health was perceived as a major contributor to low quality of life. 2. Participants had understood and internalised both negative and positive stereotypes of ageing, e.g. expressing a strong desire for independence, yet an awareness of the potential for loss. Managed own experiences of ageing through comparisons and representations of other older adults. All groups showed considerable fear of dementia, and extreme pity for those who had developed it. 3. Other older adults fell into 3 categories: 'heroines' who personified interdependence; 'villains' who had given up and no longer engaged in reciprocity; and 'victims', who usually had major health or cognitive problems. Conclude that

				older adults reject negative images of ageing for themselves, yet paradoxically regularly apply them to others.
Brooke & Taylor	2005	UK & Australia: Cambridge & Hawthorn	Ran 4 case studies of British and Australian companies to assess barriers to employment and perceptions of older workers, using qualitative analysis of HR data, semi-structured employee interviews, and focus groups.	Conclusions: 1. Perceptions of performance as a function of age has divided the workforce, causing tension between different age groups. 2. Proposes that the age-based division was often subtle or unintended. 3. The Australian companies were more age-aware than their British counterparts.
Lee, Volans, & Gregory	2003	Oxleas	Series of questions asking about working with older people e.g.: 1. "Does working with older people provide the opportunity to use psychological skills?" 2. "What are the most emotionally challenging aspects of working with this age group?"	1. 60% of participants reported that it does, although 73% of the sample believed that their psychotherapeutic approach would need to be modified to work with this age group 2. Examples include: Situation of clients/multiple losses: 28% Personal impact: 12% Attitudes of others to older adults: 8%
Weeks	2002	Edinburgh	N/a: Review paper: Discusses sexual stereotypes of older adults and their effects on psychological well-being.	Conclusions: 1. Sexual activity in older adulthood is a major contributor to quality of life. 2. More accepting attitudes to mature sex need to be adopted.
Copeland, Beekman, Dewey et al.	1999	UK and Europe	Prevalence rates of depression across European centres	1. Rates of depression varied across countries. 2. In contrast to stereotypes, increased rates of depression did not correlate with increasing age.
Glendenning	1997	Keele	N/a: Review chapter: myths surrounding ageing, including an historical overview.	Conclusion: Society is ageing, yet many older people are trapped by their own negative stereotypes of ageing.

Appendix III: Study 1 Questionnaire

Participant Information

We are researchers at St Andrews University and are interested in how people vary in their experiences of getting older. In this questionnaire we ask you about your experience of both the positive and negative aspects of ageing, and your attitudes toward different age groups. This should take approximately 5-10 minutes to complete. All the information you provide will be anonymous. It will be stored confidentially, accessed only by us and representatives from Fife Council, and will be destroyed when the study has been completed. By completing and returning the questionnaire, you are agreeing to take part in our research. Please feel free to skip any questions which you do not wish to answer, & you may withdraw from the study at any time without having to offer an explanation.

Questionnaire

- 1) How would you personally describe a typical young person (aged 18-25 years)? Please write down all of the things you typically think, hear or read about younger adults. Include anything that is associated with young people, regardless of whether it is favourable or unfavourable:

- 2) How would you personally describe a typical older person (aged 60-75 years)? In the space below please write down all the things you typically think, hear or read about older adults. Include anything that is associated with older people, regardless of whether it is favourable or unfavourable:

- 3) What do you think are the best things about getting older? *Please tick all that apply:*

<input type="checkbox"/> More free time	<input type="checkbox"/> Slower pace of life	<input type="checkbox"/> Increased experience and knowledge
<input type="checkbox"/> More opportunities	<input type="checkbox"/> Fewer responsibilities	<input type="checkbox"/> More independence
<input type="checkbox"/> Financial security	<input type="checkbox"/> Other (please state): _____	

- 4) What do you think are the worst things about getting older? *Please tick all that apply:*

<input type="checkbox"/> Fewer opportunities	<input type="checkbox"/> Less independence	<input type="checkbox"/> Reduced control over life
<input type="checkbox"/> Memory loss	<input type="checkbox"/> Poor physical health	<input type="checkbox"/> Loss of friends and family
<input type="checkbox"/> Reduced mobility	<input type="checkbox"/> Other (please state): _____	

- 5) Which illnesses or conditions do you think mainly affect young people (aged 18-25 years)?

6) Which illnesses or conditions do you think mainly affect older people (aged 60-75 years)?

7) Are you currently worried about your memory? *Please circle the number which best represents your view:*

No, not at all
1 **2** **3** **4** **5** **6** Yes, extremely
7

8) Do you think that memory gets worse as you age? *Please circle the number which best represents your view:*

No, not at all
1 **2** **3** **4** **5** **6** Yes, much worse
7

9) Please give as many examples as possible of ways in which people are treated unfairly due to their age:

10) How often have you personally experienced unfair treatment as a result of your age?

Never
1 **2** **3** **4** **5** **6** All the time
7

11) How often (on average) do you believe older adults (aged 60-75 years) experience unfair treatment?

Never
1 **2** **3** **4** **5** **6** All the time
7

12) How often (on average) do you believe young adults (aged 18-25 years) experience unfair treatment?

Never
1 **2** **3** **4** **5** **6** All the time
7

13) I believe that being a member of my age group is a positive experience:

Not at all
1 **2** **3** **4** **5** **6** Very much
7

14) I have a clear sense of my age group identity and what it means to me:

Not at all
1 **2** **3** **4** **5** **6** Very much
7

15) Would you describe yourself as "old"?

No, definitely not
1 **2** **3** **4** **5** **6** Yes, absolutely
7

16) How old are you? _____

17) How old do you (approximately) feel? _____

18) At what age do you think an individual becomes "old"? _____

19) How many years have you spent in full-time education, from age 11 years? _____

Thank you for taking part in this study. Your help is very much appreciated. This information will help us to understand the different ways in which people experience getting older and how that affects their attitudes to particular age groups. If you would like further information about our research, please do not hesitate to contact us (details below). We are aware that completing the questionnaire may highlight negative as well as positive aspects of getting older. If this causes you distress in any way, you may wish to contact your local GP or the NHS 24 Helpline at 08454 242424.

If you have any questions you would like answered, or would be interested in participating in future studies regarding ageing, please contact Joanne Persson at St Andrews University, on jkp3@st-and.ac.uk or 01334 46 1989.

Appendix IV

Cross-cultural differences in stereotypes and auto-stereotypes of ageing

Section 4.1.1: Do cross-cultural differences occur in auto/stereotypes of ageing?

As we reviewed in Chapter 1, although a range of studies have explored the content and structure of age-related stereotypes (e.g., Cuddy et al., 2005; Hummert, 1990; D.F. Schmidt & Boland, 1986), the majority of this research has been conducted within North America (e.g., Cuddy & Fiske, 2002; Hummert et al., 1994; Kite et al., 2005; see Table 1.3). A number of authors have emphasised the need for more cross-cultural explorations of attitudes towards, and beliefs about ageing (e.g., Kite et al., 2005; Lockenhoff et al., 2009), as evidence suggests that differences may exist between cultures (e.g., Bergman, Bodner, & Cohen-Fridel, 2013; Levy & Langer, 1994).

Where cross-cultural comparisons concerning perceptions of ageing have been conducted, there has been a tendency to compare stereotypes and auto-stereotypes of ageing across Western versus Eastern cultures (for a review, see Giles et al., 2003). The motivation for this comparison is based on research demonstrating that many East Asian populations (e.g., China, Japan and Korea) venerate the elderly, and require family members to respect older generations (Sung, 2001, 2004; Yue & Ng, 1999). This contrasts with the more negative stereotypes about older adults prevalent in Western countries (e.g., USA and New Zealand), such as older adults being warm but incompetent (see Section 1.5; Cuddy et al., 2005), and has led to the hypothesis that Eastern auto/stereotypes of ageing may be more positive than Western perceptions.

A study by Levy and Langer (1994) examined this hypothesis, by assessing auto/stereotypes of ageing in young and older participants from China and America. American participants were also divided into two sub-cultures, of Deaf and hearing participants, as prior research had suggested that Deaf individuals may hold more positive auto/stereotypes of ageing than their hearing counterparts (e.g., Becker, 1983). Participants across the three cultures were matched for years of education, socioeconomic status, and age, as these factors have previously been shown to influence perceptions of ageing (e.g., Hummert et al., 1994; Palmore, 1990).

Young and older participants were asked to generate the first 5 words that came to mind when thinking about older people, and independent raters coded each response as being positive, negative, or neutral, and active, inactive, or neutral. Traits were also coded as representing either external (e.g., physical appearance) or internal qualities of older adults (e.g., personality traits), as it was hypothesised that participants with more negative auto/stereotypes of ageing would rely on more stereotypical physical appearance items, rather than individualising, internal qualities. It was therefore hypothesised that Chinese and Deaf participants (with more positive auto/stereotypes of ageing) would generate more positive, active, and internal traits than hearing participants. Palmore's (1977) Facts on Aging Quiz (FAQ) was also completed: a 25-item, true/false measure, which assesses auto/stereotypes of ageing, and has been used extensively (for reviews, see Palmore, 2005, 1980).

In line with hypotheses, traits generated by Chinese participants had the most positive and active ratings, followed by Deaf participants with hearing adults giving the most negative ratings (Levy and Langer, 1994). Similarly, Chinese and Deaf participants generated more internal traits than the hearing Americans, and results from the FAQ showed decreasing positivity from Chinese, to Deaf, to hearing participants. In partial support of social identity theory's in-group bias hypothesis (Turner et al., 1987), which stipulates that we are motivated (due to ego-protection concerns) to hold more positive representations of our in-groups than of groups to which we do not belong, a significant interaction was obtained between age and culture for the external ageing measure. Traits generated by young hearing Americans received external ratings four times higher than traits generated by older hearing adults. Although this finding supports the in-group bias hypothesis, results from the positivity and activity ratings did not, as no main effects of participant age were obtained. This suggests that older adults may not always display more positive auto-stereotypes of their age group than the stereotypes held by other age groups, or that such perceptions may be limited to certain areas (e.g., internal versus external representations).

Two later studies (Levy, 1999; Yoon, Hasher, Feinberg, Rahhal, & Winocur, 2000) replicated and extended these findings, through inclusion of new countries and cultures. Work by Levy (1999) conducted separate analyses on young and older adults' responses, using the 5-word generation task (Levy & Langer, 1994). Participants' years in education and socioeconomic status were again controlled for. More positive and active ratings were again obtained from young and older Chinese participants than American participants. Yoon

and colleagues (2000) also found a similar pattern of results using Canadian participants: Chinese Canadians displayed more positive auto/stereotypes of ageing than Anglophone Canadians, although no significant differences emerged over activity ratings⁹³. These findings suggest that the ingroup positivity bias may only apply to certain aspects of age-related auto-stereotypes.

Although these three studies (Levy, 1999; Levy & Langer, 1994; Yoon et al., 2000) suggest that Eastern auto/stereotypes of ageing are more positive than perceptions in the West, a further replication (Boduroglu, Yoon, Luo, & Park, 2006) obtained no significant differences between nationalities. Based on Levy and Langer's (1994) earlier methodology, Boduroglu and colleagues (2006) asked young and older Chinese and American participants to generate five words associated with older and young adults. Traits were again coded as positive, negative or neutral. In contrast to Levy and Langer's (1994) findings, however, no significant differences emerged over the positivity of ratings of older adults between the two cultures (Boduroglu et al., 2006).

It should be noted, however, that methodological differences may account for these discrepant results. Whereas earlier studies (Levy, 1999; Levy & Langer, 1994; Yoon, 2000) required participants to describe older adults, Buduroglu and colleagues (2006) asked all participants to describe both young *and* older adults. This is problematic in that meta-analyses conducted by Kite and colleagues (Kite et al., 1988, 2005) indicated that more negative perceptions of older adults emerge when participants are simultaneously asked to rate young and older adults, as such comparisons elicit a focus on negative aspects of the ageing process (e.g., ill-health). The contradictory findings between studies by Buduroglu and colleagues (2006) and Levy and Langer (1994) therefore may be due to the use of different methodologies.

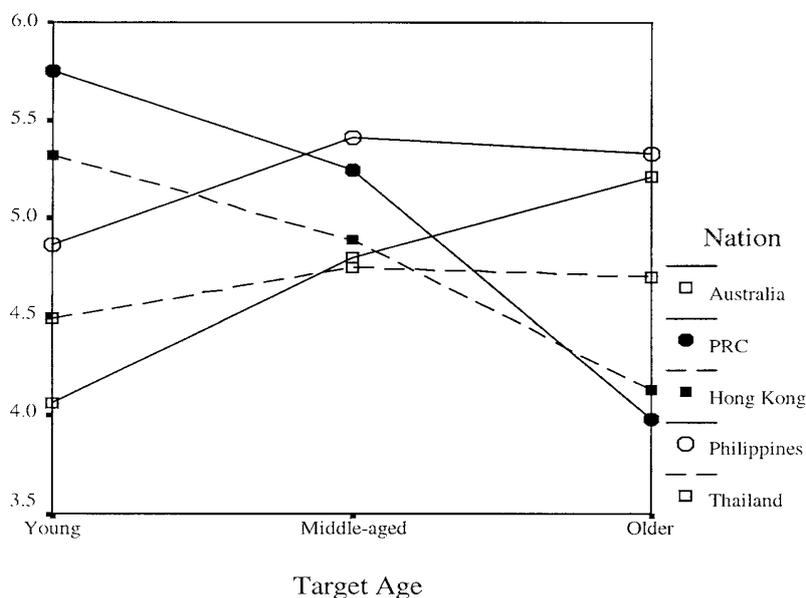
From the studies reviewed so far (Levy, 1999; Levy & Langer, 1994; Yoon et al., 2000), it therefore appears that Eastern auto/stereotypes of ageing are more positive than Western perceptions. Contrasting evidence has been obtained in further research (Giles et al., 2000; Harwood et al., 2001; Harwood et al., 1996). Work by Harwood and colleagues

⁹³ The main aim of these studies (Levy & Langer, 1994; Yoon et al., 2000) was the investigation of participants' memory performance as a function of their auto/stereotypes of ageing. We focus on the results relating to participants' perceptions, however, as these findings are the most relevant for the current argument.

(2001), for example, examined older adults' auto-stereotypes across five sites around the Pacific Rim, including countries from Western (e.g., Australia) and Eastern (e.g., China, Thailand) cultural traditions. Participants were asked to indicate the extent that they associated nine traits (e.g., 'attractive', 'wise') with young, middle-aged, and older adults.

Significant differences emerged across countries over which traits were associated with older adults (Harwood et al., 2001). In contrast to earlier findings (e.g., Levy & Langer, 1994, Yoon et al., 2001), participants from Western cultures gave more positive ratings than participants from Eastern societies (Harwood et al., 2001). This difference was the most pronounced between participants from Australia, and Hong Kong and China. Whereas Australians perceived wisdom to increase across the lifespan, for example, participants from Hong Kong and China rated wisdom as decreasing, with a sharp decrease between middle- and old-age (see Figure 4.1). A similar pattern was obtained on ratings of older adults' generosity, and participants from Hong Kong gave more negative ratings of older adults' flexibility and physical strength than Australians.

Figure 4.1 Mean levels of perceived wisdom across the life-span by nation



Note. From "Older adults' trait ratings of three age-groups around the Pacific rim", by J. Harwood and colleagues (2001), *Journal of Cross-Cultural Gerontology*, 16, p.165. Copyright 2001 by Kluwer Academic Publishers.

Findings from Harwood and colleagues' study (2001) suggest that, at least on some dimensions (e.g., ratings of wisdom and generosity), older adults from Western cultures hold more positive auto-stereotypes of ageing than do Eastern cultures. Work by Giles and colleagues (2000) demonstrated a similar pattern, through an examination of young adults' stereotypes of old age across four Western countries (USA, Canada, New Zealand, and Australia), and seven Eastern countries (e.g., China and Singapore). Participants completed a 19-item scale, assessing young, middle-aged and older adults' 'vitality': perceived features that define a group (e.g., ratings of social status; Giles et al., 2000, p.308). Mean ratings of older adults' vitality were significantly more favourable in Western than Eastern countries.

In summary, whereas some research has indicated that perceptions of ageing in Eastern cultures are more positive than they are in the West (e.g., Levy, 1999; Levy & Langer, 1994), further research has demonstrated the opposite pattern (Giles et al., 2000; Harwood et al., 2001). A major issue in the interpretation of these findings, however, concerns the use of different methodologies and/or materials in these studies. Work by Levy (1999) and Yoon and colleagues (2000), for example, used the same methodologies, and obtained similar results (i.e., more positive perceptions in Eastern than in Western cultures). Although the study by Boduroglu and colleagues (2000) obtained contrasting findings, their use of a different methodology (i.e., asking participants to describe young and older adults) may have contributed to this difference, making direct comparisons difficult. The lack of consistency in views between these studies suggests that further research is required, ideally using methodologies employed in previous research.

Although no consistent views have been obtained concerning the overall valence between East and Western views, however, it is evident that cross-cultural differences do exist (but see Boduroglu et al., 2006). This suggests that our theoretical understanding of the content of age-related stereotypes and auto-stereotypes needs to include a consideration of the cultural factors (and, indeed societal context such as education levels and GDP; Abrams, Russell et al., 2011) when assessing participants' views. This consideration is an integral part of the social identity approach to intergroup processes, which emphasises the role of contextual factors on participants' categorisations and stereotypes (for a review, see Reicher, 2004).

Furthermore, as highlighted by Lockenhoff and colleagues (2009), restricting cross-cultural comparisons to comparing auto/stereotypes in Eastern versus Western countries is highly problematic, as this denies variability between countries within these blocks (e.g., USA and UK), and also between different populations within the same culture (e.g., young and older adults). These issues will be addressed in the next section.

Section 4.2: Do differences occur in auto/stereotypes of ageing within cultures?

As reviewed in the previous section, work by Levy (1999) using the 5-word generation task indicated that participants from China held more positive and active auto/stereotypes of ageing than American participants. This study also included young and older Japanese participants, however, who also demonstrated more negative and inactive stereotypes and auto-stereotypes perceptions of than the Chinese. As China and Japan have often been grouped together as countries displaying Eastern views (e.g., Giles et al., 2000; Harwood et al., 2001; Sung, 2001), this provides initial evidence that perceptions of ageing can differ between countries *within* the Eastern cultural block.

Further support for this hypothesis comes from the study by Harwood and colleagues (2000). This study assessed perceptions of ageing across nine dimensions (e.g., ‘generosity’), and revealed considerable variability between countries (within the Eastern cultural block) over perceptions of ageing. Chinese participants, for example, gave more negative ratings of older adults’ skills and characteristics than participants from Thailand on five of the items (e.g., ‘attractiveness, wisdom’), with less negative ratings on just one dimension (‘strength’). Similarly, although all cultures perceived a decline in activity levels between middle- and old-age, participants from Hong Kong and Thailand rated this decline as being smaller than all other nations.

A more recent study by Lockenhoff and colleagues (2009) demonstrated similar patterns. Young adults’ stereotypes of ageing were assessed from participants across 26 countries. Participants were asked to complete the Perceptions of Aging Measure (POA; Lockenhoff et al., 2009); a questionnaire examining stereotypical views of old age. Participants indicated on a scale ranging from -2 (‘decreases a lot’) to 2 (‘increases a lot’) whether eight characteristics (e.g., ‘wisdom’, ‘life satisfaction’) increased or decreased in later life. An additional measure asked participants to indicate how positively/negatively their wider society viewed older adults. In line with findings from Giles and colleagues’

(2000) study, significant differences emerged between stereotypes of ageing within Eastern and Western cultures.

Whereas participants from India rated older adults' family authority as high but wisdom as low, for example, participants from South Korea gave low ratings for family authority, but high ratings for wisdom (Löckenhoff et al., 2009). Similar differences also emerged between Western countries as, for example, Americans gave high ratings of older adults' general knowledge, whereas participants from Poland gave low ratings. Indeed, differences emerged between at least two countries within East and Western cultures for seven of the eight (87.5%) examined characteristics. The only exception to this rule was for ratings of older adults' attractiveness, where views were consistent (and negative) across all countries.

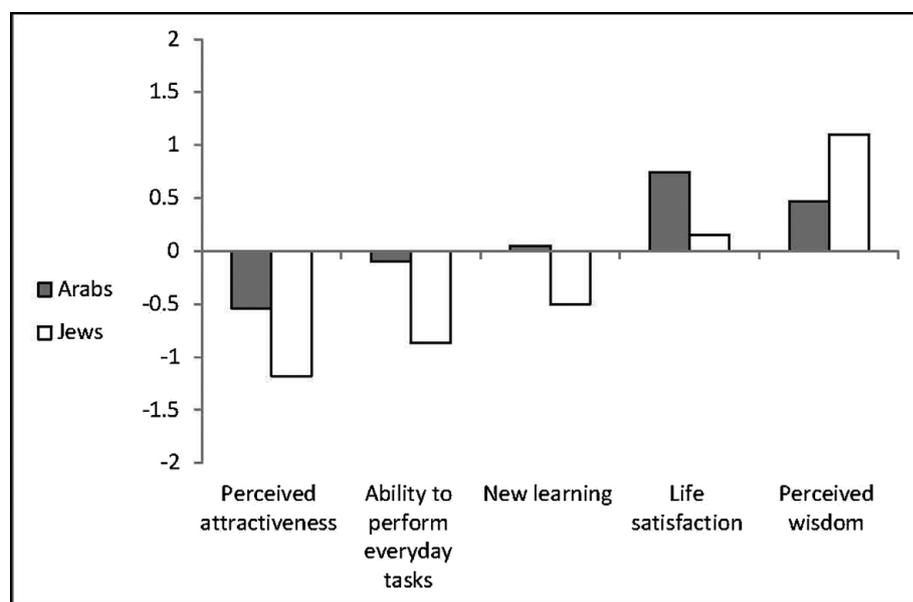
These findings raise an interesting issue. Although significant differences emerged between countries within the Western or Eastern cultures, these differences depended on the specific domain under investigation. Although participants from South Korea and India gave different ratings on older adults' authority, for example, their ratings on general knowledge were very similar (Löckenhoff et al., 2009). Similarly, in the study by Harwood and colleagues (2001), whereas participants from the Philippines gave high ratings of older adults' wisdom, they perceived a greater decline in older adult's strength than the remaining sample. When considering the mixed-valence responses of participants from the same country, it is worth considering that the earlier research with American participants (Hummert et al., 1994; D.F. Schmidt & Boland, 1986) demonstrated that perceptions of older adults were multi-dimensional. These mixed-valence responses (Giles et al., 2000; Lockenhoff et al., 2009) could therefore reflect the multi-dimensional nature of ageing auto/stereotypes. This reinforces the need to examine the precise content, and breadth of responses, of such perceptions.

In summary, a range of studies (e.g., Giles et al., 2001; Harwood, 2000; Levy, 1999) indicate that significant differences exist over perceptions of ageing between countries from similar cultural backgrounds. This reinforces Lockenhoff and colleagues' (2009) argument that comparisons must be made of auto/stereotypes of ageing between countries *within* East/Western cultural blocks, as well as between countries with different cultural backgrounds.

Section 4.3: Do differences occur in auto/stereotypes of ageing from different populations within the same country?

In work by Berman and colleagues (2013), young Arab and Jewish participants from Israel were asked to complete the POA (Perceptions of Aging Measure; Löckenhoff et al., 2009), and questionnaires assessing ageist attitudes. Responses indicated that Arab participants held more positive stereotypes of ageing than their Jewish counterparts (see Figure 4.2), again revealing inter-cultural variability in stereotypes of ageing across samples. Interestingly however, a significant interaction between gender and culture also emerged: Whereas Arab women reported significantly more negative stereotypes of ageing than Arab men, the opposite pattern was obtained for Jewish participants. Thus, significant differences emerged over the content of young adults' stereotypes of old age between different populations (i.e., men and women) from the same culture, as well as between participants from different cultures.

Figure 4.2: *Corrected means for general cultural differences between Arabs and Jews regarding perceptions on ageing.*



Furthermore, in Levy and Langer's (1994) study, participants from mainstream American culture (i.e., hearing participants) held more negative and less active stereotypes of older adults than participants from a sub-culture (the Deaf). Similarly, young hearing adults reported more external (i.e., negative and stereotypical) views than their older counterparts

(see Section 4.1). Thus differences were evident between different sub-cultures within the same country, and also between different populations (age groups) from the same culture.

Similarly, work by Hummert and colleagues (1994) exploring the content of age-related auto/stereotypes within America (see Section 1.5) also obtained significant differences in perceptions of ageing as a function of participant age. Earlier work by Schmidt and Boland (1986), had asked young American participants to generate all of the characteristics that they associated with older adults. This produced a list of 99 descriptors (e.g., 'scared of becoming sick') of a superordinate elderly stereotype, which Hummert and colleagues (1994) recoded into a list of 77 one- or two-word descriptors (e.g., 'scared'). Hummert and colleagues (1994) subsequently asked participants from three age groups (young, middle-aged and older) to generate terms that they associated with old age, and compared their trait-list to the one from Schmidt and Boland's (1986) study.

Twenty new traits were generated in the later research (Hummert et al., 1994), which were predominantly positive (two independent coders rated 15 of the 20 traits as positive). Older adults generated the 20 positive traits more frequently than young participants, whereas young adults generated the 77 traits from Schmidt and Boland's (1986) study more frequently than older adults (Hummert et al., 1994)⁹⁴. Thus, older and young participants from the same country demonstrated different auto/stereotypes of old age. In line with social identity theory's in-group bias hypothesis (that individuals hold more positive views of their in-groups than of out-groups; Turner et al., 1987), older adults demonstrated more positive perceptions of ageing than their younger counterparts.

Furthermore, as reviewed in Chapter 1 (Section 1.6), following the trait generation phase of Schmidt and Boland's (1986) study, an independent sample of young adults sorted the 99 generated traits into groups. This procedure identified 12 subtypes of the generic, elderly stereotype. A replication of Schmidt and Boland's (1986) study subsequently asked a new group of young American participants (from a different State) to sort the same 99 traits into groups (Hummert, 1990). Despite using the same list of characteristics, only eight (66.7%) of the original clusters were replicated (Hummert, 1990). Thus different samples

⁹⁴ As 59 of the 99 traits originally generated in Schmidt and Boland's (1986) study were classified as negative, it seems likely that the 77 that were included in Hummert and colleagues' comparison (1994) had a more negative valence than the 20 new traits. Hummert and colleagues do not provide a full list of the selected 77 traits, however, so this assumption cannot be authenticated.

from the same population (i.e., young adults) from the same country (USA) displayed different stereotypes of old age. If such variability can exist within one country, it is therefore unsurprising that differences have emerged between different countries within the same cultural context (e.g., Levy, 1999; Lockenhoff et al., 2009), and reinforces Schmidt and Boland's (1986) argument that explorations of stereotype content should focus on the specific population under study.

In summary, the studies reviewed in this section have indicated that variability in auto/stereotypes of old age exists between countries from similar cultural backgrounds (e.g., Harwood et al., 2001; Löckenhoff et al., 2009), between sub-cultures within the same country (Levy & Langer, 1994), and between different populations within the same country and culture (e.g., Bergman et al., 2013; Hummert et al., 1994). The tendency within previous cross-cultural research to focus on differences between Eastern and Western perceptions of ageing therefore overlooks considerable variability *within* cultures (Löckenhoff et al., 2009). Future research therefore needs to include a wider variety of countries when investigating auto/stereotypes of ageing (Kite et al., 2005; Meisner, 2012).

Such an examination should help to develop our theoretical understanding of stereotypes and auto-stereotypes of old age. Work utilising samples from the USA, for example, indicates that older adults hold more complex and positive representations of later life than the stereotypes held by young adults (e.g., Brewer et al., 1984; Hummert et al., 1994). These findings are in line with the social identity approach's ingroup positivity bias (e.g., Tajfel & Turner, 1979), and Linville's ingroup complexity bias (1982). Further exploration of the content of young and older adults' stereotypes and auto-stereotypes would help to determine whether this theoretical model can also be applied to additional countries, or whether this pattern of findings (and motivations for holding such perceptions) are limited to samples from the US.

Work by Cuddy and colleagues (2009), for example, has recently argued that individuals from collectivist cultures do not hold ingroup auto-stereotypes that are uniformly positive (i.e., high-warmth, high-competence) in the way that individualistic cultures do. Similarly, as the evidence reviewed above demonstrates that differences exist between countries over the content of age-related auto/stereotypes, assuming that patterns obtained with US samples will apply to other countries and cultures is erroneous. This is especially

true considering the impact that societal contextual factors have been shown to have on perceptions of ageing (see Section 1.6; Abrams, Russell et al., 2011). Exploring the content of age-related auto/stereotypes in cultures and countries outside of the USA should therefore help us to gain a deeper understanding of both the stereotypes themselves, and the motivations underlying differences in perceptions.

Appendix V

One hundred and forty-one terms generated by participants ($n = 65$) in Study 1, following assessment (by two independent raters) and removal of semantic equivalent terms (e.g., cheerful, happy). Inter-rater reliability of 93.6%.

Accepting	Flexible	Mature	Sensible
Active	Forgetful	Mobile	Settled
Alcoholic	Frail	Morbid	Slow
Anxious	Free	Morose	Sociable
Arrogant	Friendly	Motivated	Strong-willed
Assertive	Frustrated	Narrow-minded	Stubborn
Aware	Fulfilled	Nasty	Supportive
Awkward	Fun	Negative	Talkative
Balanced	Generous	Neglectful	Technophobe
Bitter	Gentle	Noble	Temperamental
Bored	Giving	Obstinate	Thoughtful
Boring	Good	Old	Tired
Busy	Grandparents	Optimistic	Tolerant
Calm	Grumpy	Overlooked	Traditional
Carefree	Happy	Overweight	Uncoordinated
Caring	Health conscious	Passive	Undervalued
Complaining	Helpful	Patient	Unfashionable
Confident	Honest	Philosophical	Unfit
Considerate	Hypochondriac	Pitiful	Varied
Content	Ill-health	Polite	Vulnerable
Creative	Immature	Poor	Weak
Critical	Immobile	Positive	Wise
Cynical	Impatient	Prejudiced	Witty
Dedicated	Impolite	Quiet	Wrinkly
Demanding	Independent	Relaxed	Youthful
Dependent	Individualistic	Religious	
Depressed	Infantile	Reserved	
Deteriorating	Inflexible	Respectful	
Determined	Informative	Responsible	
Directionless	Intelligent	Restricted	
Disconnected	Interesting	Retired	
Disengaged	Intolerant	Retrospective	
Dissatisfied	Introverted	Rude	
Dying	Isolated	Secure	
Easy-going	Knowledgeable	Sedate	
Experienced	Lazy	Self assured	
Family focused	Learned	Selfish	
Fearful	Lethargic	Senile	
Fit	Lonely	Senior	

Appendix VI: Study 2 Questionnaire

We are researchers at St Andrews University and are interested in how people vary in their experience of getting older. In this questionnaire, we ask you about your experience of both the positive and negative aspects of ageing, and your attitudes towards different age groups. This should take approximately 10 -15 minutes to complete.

All the information you provide will be anonymous. It will be stored confidentially, accessed only by us and representatives from Fife Council, and will be destroyed when the study has been completed. By completing and returning the questionnaire, you are agreeing to take part in our research. Please feel free to skip any questions which you do not wish to answer, and you may withdraw from the study at any time without having to offer an explanation.

If any of your answers do not fit into the text boxes, please continue on a separate sheet of paper - clearly marking the question number to which your answer refers.

Q 1 How would you describe a typical young person (aged 18-25 years)?

Please write down all of the things you typically think, hear or read about younger adults. Include anything that is associated with young people, regardless of whether it is favourable or unfavourable.

Q 2 How would you describe a typical older person (aged 60-75 years)?

Please write down all of the things you typically think, hear or read about older adults. Include anything that is associated with older people, regardless of whether it is favourable or unfavourable.



Q3 What pleases you (personally) the most about growing older?

Q4 What do you think are the best things about getting older?

(Please mark all that apply)

- | | |
|--|---|
| <input type="checkbox"/> More free time | <input type="checkbox"/> Increased experience & knowledge |
| <input type="checkbox"/> Slower pace of life | <input type="checkbox"/> More independence |
| <input type="checkbox"/> Financial security | <input type="checkbox"/> Fewer responsibilities |
| <input type="checkbox"/> More travel opportunities | <input type="checkbox"/> Other (please tell us below) |

--

Q5 What worries you (personally) the most about growing older?

Q6 What do you think are the worst things about getting older?

(Please mark all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Fixed income | <input type="checkbox"/> Poor physical health |
| <input type="checkbox"/> Reduced mobility | <input type="checkbox"/> Memory loss |
| <input type="checkbox"/> Reduced control over life | <input type="checkbox"/> Loss of friends & family |
| <input type="checkbox"/> Fewer opportunities | <input type="checkbox"/> Other (please tell us below) |

--

Q7 Which of the following conditions do you think mainly affect young people (18-25 years)? (Please mark all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Alcoholism | <input type="checkbox"/> Drug dependence |
| <input type="checkbox"/> Heart disease | <input type="checkbox"/> Sexually transmitted infections |
| <input type="checkbox"/> Obesity | <input type="checkbox"/> Dementia |
| <input type="checkbox"/> Arthritis | <input type="checkbox"/> Other (please tell us below) |

--



Q 12 On a scale of 1 to 5, with 1 being "not true" and 5 being "very true", how do you feel about the following statements?

	Not true				Very true
	1	2	3	4	5
I feel strong ties with other people my age	<input type="checkbox"/>				
I identify with my age group	<input type="checkbox"/>				
In many respects, I am like most other people my age	<input type="checkbox"/>				
In many respects, people in my age group are similar to each other	<input type="checkbox"/>				

Q 13 On a scale of 1 to 7, with 1 being "strongly disagree" and 7 being "strongly agree", please mark your reaction to the following statement:

"I would describe myself as old"

<input type="checkbox"/>						
1	2	3	4	5	6	7
Strongly disagree						Strongly agree

Q 14 How old are you?

Q 15 How old (approximately) do you feel?

Q 16 At what age do you think someone becomes "old"?

Q 17 How many years did you spend in full-time education from (& including) age 11 years?

Q 18 Are you? Female Male

Q 19 What is your occupational status?
 Employed Unemployed Retired

Thank you for taking part in this study, your help is very much appreciated.

This information will help us to understand the different ways in which people experience getting older and how that affects their attitudes to particular age groups. We are aware that completing this questionnaire may highlight negative as well as positive aspects of getting older. If this causes you distress in any way, you may wish to contact your local GP or the NHS24 Helpline at 08454 242424.

If you would like further information about our research, or would be interested in participating in future studies, please contact **Joanne Persson** at St Andrews University on **jkp3@st-andrews.ac.uk** or **01334 461989**



Appendix VII

Fife People's Panel Membership Profile, 2008

Age				
Age	Total Population 2004	% of Population	Panel Membership	% of Panel
16 - 24	40943	7.1%	81	2.0%
25 - 34	41374	7.2%	190	4.7%
35 - 44	54923	9.5%	369	9.1%
45 - 54	47948	8.3%	440	10.8%
55 - 64	44219	7.7%	476	11.7%
65 - 74	31723	5.5%	312	7.7%
75+	26927	4.7%	163	4.0%
	288057		2031	

Employment, Health & Wellbeing				
	Female	Male	Total	% of Panel
	No.	No.	No.	
Employee - Full-time	393	365	758	37.2%
Employee - Part-time	195	35	230	11.3%
Full-time student	35	10	45	2.2%
Government supported training	1	3	4	0.2%
Looking after family/home	73	9	82	4.0%
Permanently sick/disabled	64	63	127	6.2%
Self-employed	55	90	145	7.1%
Unemployed & available	24	37	61	3.0%
Wholly retired	265	267	532	26.1%
Other	37	15	52	2.6%
	1142	894	2036	100.0%

Fife's age composition (General Register Office for Scotland, 2001)

Table CAS001: Age by sex

		ALL PEOPLE	Household	Household
			Residents	Residents
			Males	Females
Scotland		5062011	2393348	2582657
Fife		349429	164994	177993
Fife	0 to 4	19214	9839	9366
Fife	5 to 9	21494	10926	10561
Fife	15 to 19	22238	10753	10110
Fife	15	4679	2405	2230
Fife	16	4542	2341	2145
Fife	17	4313	2213	2028
Fife	18	4213	1865	1847
Fife	19	4491	1929	1860
Fife	20 to 24	20834	9435	9842
Fife	20	4800	2095	2170
Fife	21	4738	2158	2100
Fife	22	4148	1877	1989
Fife	23	3607	1630	1815
Fife	24	3541	1675	1768
Fife	25 to 29	19964	9579	10113
Fife	30 to 34	25616	12301	13177
Fife	35 to 39	26995	12880	14001
Fife	40 to 44	25692	12666	12935
Fife	45 to 49	23142	11300	11757
Fife	50 to 54	25381	12374	12925
Fife	55 to 59	20907	10196	10634
Fife	60 to 64	17965	8575	9325
Fife	65 to 69	16305	7561	8640
Fife	70 to 74	14353	6210	7944
Fife	75 to 79	12084	4680	7036
Fife	80 to 84	7603	2543	4544
Fife	85 to 89	4394	1092	2653
Fife	90 and over	2001	324	1038

Note. Adapted from "Age by Sex and Whether Living in Household or Communal Establishment, Scotland" by General Register Office for Scotland (2001), retrieved from <http://www.gro-scotland.gov.uk/files1/the-census/cas001-034.pdf>. Copyright 2003 by the General Register Office for Scotland.

Fife's employment statistics (Scotland's Census Results Online, 2013)

Employment, Health & Wellbeing	Fife	Scotland
All persons aged 16-74	254,713	3,731,079
Economically active: % Employees - Part time	11.61	11.12
Economically active: % Employees - Full time	41.35	40.25
Economically active: % Self-employed	5.69	6.60
Economically active: % Unemployed (and % other)	7.66	7.86
Economically active: % Full-time student	2.61	3.03
Economically inactive: % Retired	14.56	13.89
Economically inactive: % Student	4.46	4.28
Economically inactive: % Looking after home/family	5.42	5.51
Economically inactive: % Permanently sick/disabled	6.65	7.44

Note. Adapted from “Comparative Employment Profile: Fife Council Area Scotland” by General Register Office for Scotland (2001). Retrieved from

<http://www.scrol.gov.uk/scrol/browser/profile.jsp?profile=Employment&mainArea=Fife&mainLevel=CouncilArea>. Copyright 2013 by the General Register Office for Scotland.

Appendix VIII

Two hundred and sixty-three terms generated by participants ($n = 608$) in Study 2, following assessment (by two independent raters) and removal of semantic equivalent terms (e.g., cheerful, happy) and idiosyncratic responses. Inter-rater reliability of 92.96%.

Recoded traits	<i>n</i>
Moaning	67
Experienced	61
Ill-health	61
Grumpy	50
Poor	44
Money-worries	43
Receive age-related entitlements	43
Active	39
Lonely	39
Rude	39
Wise	39
Retired	37
Physically active (MB)	35
Pursue hobbies	33
Pensioners	32
Slow	32
Dependent	25
Selfish	25
Financially secure	24
Frightened	24
Forgetful	22
Child-carers	21
Isolated	21
Knowledgeable	21
Set in ways	21
Sociable	21
Expectant	20
Friendly.	20
Happy	19
Working	19
Community-orientated	18
Free time	18
Immobile	18
Enjoy life	17
Hardworking	17
Travellers	17
Family-orientated	16
Healthy	16
Fit	15
Grandparents	15

Recoded traits	<i>n</i>
Health-worries	15
Independent	15
Need help	15
Old	15
Polite	15
Relaxed	15
Take holidays	15
Volunteers	15
Caring	14
Demanding	14
Frail	14
Have endured hardship	14
Helpful	14
Critical of young people	13
Feel unsafe	13
Frightened of young people	13
Health-dependent	13
Inadequate pensions restrict lifestyle	13
intolerant	13
Judgemental	13
Meagre existence	13
Passive	12
Content	11
Develop new interests	11
Dissatisfied	11
Enjoy retirement	11
Inactive	11
Kind.	11
Opinionated	11
Pleasant	11
Vulnerable.	11
Want respect	11
Afraid of dark nights	10
Disparaging of the young	10
Disrespected	10
Free of responsibilities	10

Ignored	10
Industrious	10
Intolerant of young people	10
Mentally active	10
Responsible	10
Wrinkled	10
Young at heart	10
Bad drivers	9
Busy	9
Carers	9
Expect preferential treatment	9
Hearing loss	9
Nostalgic	9
Nuisance	9
Physically slow	9
Respectful	9
treated unfairly	9
Want independence	9
Bad	8
Charitable	8
Feel younger than they are	8
Generous	8
Heterogeneous	8
Housebound	8
Impatient	8
Lazy	8
Pessimistic	8
Physical limitations	8
Resilient	8
Talkative	8
Thrifty	8
Ungrateful	8
Worried	8
Arrogant	7
Attend OAP clubs	7
Calm	7
Comfortable	7
Cynical	7
Deserve respect	7
Good	7
Individuals	7
Informative	7
Interested	7
Lack empathy	7
Narrow-minded	7

Resourceful	7
Struggling	7
Stubborn	7
Tired	7
Treated unfairly by government	7
Underused	7
Use age as an excuse	7
Want to be helpful	7
Watches TV	7
Alcoholic	6
Burden on society	6
Confident	6
Disabled	6
Disposable income	6
Drain on NHS	6
Inconsiderate	6
Inflexible	6
Live in past	6
Neglected	6
Positive	6
Restricted	6
Self-pity	6
Slower lifestyle	6
Tolerant	6
Undervalued	6
Young perceived age	6
Accepting	5
Adventurous	5
Affluent	5
Boring	5
Considerate	5
Critical	5
Fragile	5
Give advice	5
Incontinent	5
Increasing lifespan	5
Know it all	5
Lack confidence with technology	5
Make do	5
Mentally slow	5
Overweight	5
Peaceful	5
Poor care	5
Pushy	5
Quiet	5
Reliable	5

Religious	5
Senile	5
Supportive	5
Traditional values	5
Unhappy	5
Unique	5
Useful	5
Apathetic	4
Appreciative	4
Competent	4
Deserving	4
Determined	4
Difficult	4
Disrespectful	4
Dodderly	4
Enjoy time with grandchildren	4
Expect everything for nothing	4
Financially exploited	4
Fun	4
Give up	4
Grateful	4
Idle (VK)	4
Insecure	4
Institutionalised	4
Intelligent	4
Long working life	4
Mature	4
Need care	4
Pension provision enhances lifestyle	4
Proud	4
Resist change	4
Respected	4
Safety conscious	4
Secure	4
Settled	4
Short-sighted	4
Slow drivers	4
Smelly	4
Socially aware	4
Stay indoors	4
Value friendships	4
Victims of crime	4
Want opportunities	4
Well dressed	4
Wonderful	4

Youthful	4
Arthritis	3
Balanced	3
Careful	3
Cautious	3
Depressed	3
Deserve more	3
Desire youth	3
Enjoy countryside	3
Enjoy hobbies	3
Fear loss of independence	3
Fear of crime	3
Fixed income	3
Frustrated	3
Gentle	3
Good citizens	3
Health conscious	3
Ignorant	3
Invisible	3
Keep to themselves	3
Left out	3
Leisurely	3
Limited interests	3
Live in present	3
Lucky	3
Mean	3
Needed	3
Numerous	3
OK	3
Old-fashioned	3
Optimistic	3
Outspoken	3
Past lifestyle influences current functioning	3
Politically active	3
Private	3
Racist	3
Resentful	3
Routinised	3
Savers	3
Self sufficient	3
Self-less	3
Sensitive	3
Sidelined	3
Stereotyped	3
Subsidise their children	3

Technophobes	3
Unable to adjust	3
Unfit	3
Valuable	3
Varied	3
Want to be needed	3
Worried about (their) future	3

Appendix IX:

Study 3 Questionnaire

Instructions to be read by researcher: I want you to read slowly down this list of words, starting here (points). After each word please wait until I say next before reading the next word. I must warn you that there are many words that you probably won't recognise, in fact most people don't know them, so just have a guess at them if you are unsure, ok? Go ahead:

Ache	Subtle	Superfluous	Gouge	Beatify
Debt	Nausea	Radix	Placebo	Banal
Psalm	Equivocal	Assignate	Façade	Sidereal
Depot	Naïve	Gist	Aver	Puerperal
Chord	Thyme	Hiatus	Leviathan	Topiary
Bouquet	Courteous	Simile	Chagrin	Demesne
Deny	Gaoled	Aeon	Détente	Labile
Capon	Procreate	Cellist	Gauche	Phlegm
Heir	Quadruped	Zealot	Drachm	Syncope
Aisle	Catacomb	Absetmious	Idyll	Prelate

In general, people aged between 18-25 are considered to belong to the young adult age group, whereas people aged between 60-75 are considered to belong to the older age group. For the following measures, please circle the number which best corresponds to your reaction to the following statements:

- | | | | | | | | | |
|--|--------------------|----------|----------|----------|----------|----------|--|-----------------|
| 1). I have a lot in common with other people my age: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 2). Generally, I feel good when I think about myself as a member of my age group: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 3). I don't feel a sense of being "connected" with other people my age: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 4). Overall, being in my age group has very little to do with how I feel about myself: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 5). I don't feel good about being a member of my age group: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 6). The fact that I am a member of my age group rarely enters my mind: | Not at all | | | | | | | Very much |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 7). I find it difficult to form a bond with other people my age: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 8). In general, being a member of my age group is an important part of my self-image: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 9). I often regret that I am a member of my age group: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 10). I often think about the fact that I am a member of my age group: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 11). I feel strong ties to other people in my age group: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 12). In general, I'm glad to be the age that I am: | Strongly disagree | | | | | | | Strongly agree |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 13). Would you describe yourself as "old"? | No, definitely not | | | | | | | Yes, absolutely |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |
| 14). In general, how would you describe your health? | Very poor | | | | | | | Excellent |
| | 1 | 2 | 3 | 4 | 5 | 6 | | 7 |

- 1). What do you think are the best things about getting older? *Please tick all that apply:*
- More free time Slower pace of life Increased experience and knowledge
- Financial security Fewer responsibilities More travel opportunities
- More independence Other (**please state**): _____

- 2). What do you think are the worst things about getting older? *Please tick all that apply:*
- Fixed income Reduced control over life Memory loss
- Reduced mobility Poor physical health Loss of friends and family
- Fewer opportunities Other (**please state**): _____

Please enter your answers for the following questions in the spaces provided below:

- 3). How old are you? _____
- 4). How old do you (approximately) feel? _____
- 5). At what age do you think an individual becomes "old"? _____
- 6). How many years have you spent in full time education, from (& including) age 11 years? _____
- 7). What is your current occupational status? Involved in voluntary work Retired
- Employed: Full-time Part-time
- Student Unemployed
- 8). Are you male or female? Female Male
- 9). How do you spend your leisure time? E.g. swimming, reading etc:

Appendix X

Table 1: *Positivity ratings (n = 32) of 100 traits from Study 3*

Positive terms (<i>n</i> = 46)	<i>M</i> rating	<i>SD</i>	Positive terms	<i>M</i> rating	<i>SD</i>
Enjoys Life	6.75	0.45	Helpful	5.63	0.81
Happy	6.73	0.59	Knowledgeable	5.63	0.96
Friendly	6.31	0.60	Pleasant	5.63	0.62
Hardworking	6.06	0.77	Volunteers	5.63	0.96
Fit	6.06	0.68	Community Orientated	5.63	0.89
Kind	6.06	0.85	Comfortable	5.56	0.81
Interested	6.00	0.82	Content	5.56	0.96
Independent	6.00	0.82	Young At Heart	5.50	1.03
Active	5.94	0.85	Traveller	5.38	0.96
Wise	5.94	1.06	Deserves Respect	5.31	1.14
Resilient	5.94	0.93	Thrifty	5.31	0.95
Financially Secure	5.94	1.12	Grandparents	5.31	1.08
Healthy	5.94	1.34	Working	5.31	0.87
Experienced	5.88	0.96	Wants Independence	5.31	1.25
Responsible	5.88	0.81	Free Time	5.25	1.00
Pursues Hobbies	5.81	0.91	Polite	5.19	1.28
Respectful	5.81	0.91	Busy	5.00	1.03
Develops New Interests	5.81	0.83	Young Perceived Age	4.94	1.44
Family Orientated	5.81	0.98	Individuals	4.93	1.28
Sociable	5.81	0.91	Talkative	4.88	0.72
Resourceful	5.75	0.77	Has Endured Hardship	4.63	1.31
Mentally Active	5.75	1.00	Looks After Children	4.63	1.09
Relaxed	5.75	0.93	Free Of Responsibilities	4.56	1.09

Negative terms (<i>n</i> = 45)	<i>M</i> rating	<i>SD</i>	Negative terms (<i>n</i> = 45)	<i>M</i> rating	<i>SD</i>
Attends OAP clubs	3.38	1.50	Lazy	2.31	0.87
Opinionated	3.31	1.20	Vulnerable	2.31	0.95
Health Dependent	3.19	1.17	Poor	2.25	1.06
Physical Limitations	3.13	1.02	Ignored	2.25	1.44
Cynical	3.06	1.57	Bad Driver	2.19	0.66
Demanding	3.06	1.06	Dissatisfied	2.19	0.66
Hearing Loss	3.06	1.29	Money Worries	2.13	1.09
Slow	3.00	0.82	Lonely	2.13	1.02
Worried	2.94	1.06	Frightened	2.13	1.02
Forgetful	2.94	0.77	Feels Unsafe	2.06	0.85
Passive	2.81	1.22	Nuisance	2.06	0.85
Underused	2.75	0.93	Moaning	2.00	1.03
Expects Preferential			Uses Age As An Excuse	2.00	0.82
Treatment	2.63	0.81	Drain On NHS	2.00	0.97
Arrogant	2.44	1.21	Selfish	2.00	0.82
Frail	2.44	1.09	Ungrateful	2.00	0.82
Inadequate Pensions			Intolerant	2.00	1.03
Restrict Lifestyle	2.44	0.96	Disrespected	2.00	0.82
Impatient	2.44	0.89	Treated Unfairly	1.93	0.70
Inactive	2.38	1.26	Ill-Health	1.88	0.96
Immobile	2.38	1.02	Disparaging Of The		
Judgmental	2.38	0.72	Young	1.81	0.66
Pessimistic	2.38	1.26	Rude	1.75	0.58
Grumpy	2.31	0.87	Narrow-Minded	1.69	0.70

Neutral terms (<i>n</i> = 9)	<i>M</i> rating	<i>SD</i>	Neutral terms (<i>n</i> = 9)	<i>M</i> rating	<i>SD</i>
Receives Age Related			Watches TV	4.19	1.28
Entitlements	4.44	1.55	Nostalgic	4.13	1.09
Retired	4.40	0.91	Old	3.88	1.45
Wants Respect	4.38	1.02	Dependent	3.56	1.46
Carer	4.31	1.45	Set In Ways	3.56	1.41

Table 2: Positivity ratings ($n = 32$) of 100 traits from Study 3

Characteristic traits ($n = 62$)			(n = 62)		
	<i>M</i> rating	<i>SD</i>			
			Judgmental	5.06	0.77
Uses Age As An Excuse	4.50	1.15	Kind	5.06	1.00
Bad Driver	4.88	1.31	Knowledgeable	5.75	0.93
Community Orientated	4.81	0.75	Lonely	4.56	0.96
Content	4.81	0.98	Looks After Children	5.31	0.95
Cynical	4.56	0.89	Mentally Active	4.88	1.09
Deserves Respect	5.38	1.41	Money Worries	4.50	1.10
Disparaging Of The			Nostalgic	5.50	0.73
Young	4.69	1.14	Old	4.94	1.84
Enjoys Life	5.13	1.36	Opinionated	5.13	1.09
Experienced	5.69	0.87	Physical Limitations	5.56	1.09
Family Orientated	5.69	1.14	Pleasant	5.31	0.87
Forgetful	5.31	1.14	Polite	4.88	1.09
Frail	4.88	1.20	Pursues Hobbies	5.13	1.26
FreeTime	6.00	0.89	Receives Age-Related		
Friendly	4.88	0.96	Entitlements	5.75	1.13
Grandparents	6.19	0.83	Relaxed	5.00	0.82
Happy	4.63	0.72	Resilient	5.13	1.02
Hardworking	4.75	1.06	Resourceful	5.13	1.09
Has Endured Hardship	5.44	1.03	Respectful	4.88	1.15
Health Dependent	5.00	0.82	Responsible	5.31	1.01
Hearing Loss	5.75	0.68	Retired	6.06	1.00
Helpful	4.94	0.77	Set in Ways	5.69	1.20
Ill-Health	4.75	0.93	Slow	4.94	1.00
Immobile	4.63	1.02	Sociable	4.94	1.12
Inadequate Pensions			Talkative	4.88	1.20
Restrict Lifestyle	5.06	1.44	Thrifty	5.33	0.90
Independent	4.81	1.38	Underused	5.13	0.81
Individuals	4.56	1.09	Volunteers	5.38	0.89
Interested	5.06	0.77	Vulnerable	5.19	1.28
Characteristic traits	<i>M</i> rating	<i>SD</i>	Wants Independence	5.31	1.01

Wants Respect	5.31	1.08
Watches TV	5.19	0.83
Wise	5.19	1.05
Worried	4.56	0.73
Young At Heart	4.88	1.09

Non-characteristic traits (<i>n</i> = 38)	<i>M</i>		Non-characteristic traits (<i>n</i> = 38)	<i>M</i>	
	rating	<i>SD</i>		rating	<i>SD</i>
Active	3.94	1.44	Grumpy	4.19	0.83
Arrogant	3.19	1.17	Healthy	3.63	1.36
Attends OAP clubs	4.25	1.44	Ignored	4.44	1.26
Busy	4.31	1.85	Impatient	4.25	1.06
Carer	3.94	1.18	Inactive	4.25	1.39
Comfortable	4.25	0.86	Intolerant	3.75	1.18
Demanding	3.63	1.31	Lazy	3.06	1.00
Dependent	4.13	1.09	Moaning	4.44	1.21
Develops New Interests	3.75	1.57	Narrow-Minded	4.06	1.06
Disrespected	4.31	1.40	Nuisance	3.06	1.06
Dissatisfied	4.25	1.06	Passive	4.06	0.85
Drain On NHS	3.81	1.22	Pessimistic	4.13	1.31
Expects Preferential Treatment	3.88	1.75	Poor	4.00	0.82
Feels Unsafe	4.38	0.96	Rude	3.25	1.00
Financially Secure	4.19	1.11	Selfish	3.19	1.05
Fit	3.56	1.59	Traveller	4.31	1.99
Free Of Responsibilities	3.88	1.41	Treated Unfairly	4.19	1.28
Frightened	4.25	1.00	Ungrateful	3.00	1.03
			Working	3.56	1.31
			Young Perceived Age	4.29	1.38

Appendix XI: Cluster consistency

Table XI.I: *Cross-Cultural Consistency of Trait Clusters; Equivalence from the UK and the USA.*

Positive Clusters		Study 2 Semantic Equivalent
Subtype	Traits	
John Wayne Conservative	distinguished looking	-
	doesn't like handouts	independent
	frustrated about mandatory retirement	-
	patriotic	-
	republican	-
	tough	resilient
Liberal Matriarch/Patriarch	Democrat	-
	lives life through children	-
	mellow	relaxed
Perfect Grandparent	active	✓
	alert	mentally active
	capable	resourceful
	comes to terms with their life	content
	courageous	-
	enjoys life	✓
	family orientated	✓
	generous	-
	good support to others	community-orientated, carer
	happy	✓
	healthy	✓
	likes to be around young	-
	understanding	kind
	useful	-
	volunteer	✓

	wise	✓
Sage	concerned about the future	-
	intelligent	-
	interesting	-
	knows a great deal	knowledgeable
	loving	-
	tells stories about the past	nostalgic

Negative Clusters

Subtype	Traits	Study 2 Semantic Equivalent
Despondent	arouse pity	-
	bored	-
	hypochondriac	-
	lonely	✓
	miserable	-
	neglected	ignored
	sad	-
	sedentary	inactive
	waiting to die	-
Mildly Impaired	forgetful	✓
	physically handicapped	physical limitations
	sexually inactive	-
	shaky hands	-
	slow moving	immobile

Vulnerable	
afraid of crime	frightened
live on fixed income	inadequate pension restricts lifestyle
poor	✓
poor driver	bad driver
quiet	-
victims of crime	-
Severely Impaired	
dependent on family	dependent
fragile	frail
grateful for any aid	-
incapable of handling job	-
needs nursing care	-
poor posture	physical limitations
rambling of speech	-
senile	-
sick	ill-health
slow thinking	slow
Shrew/Curmudgeon	
annoying	nuisance
Bitter	-
complaining	moaning
demanding	✓
humourless	-
ill-tempered	grumpy
jealous of young	disparaging of the young
prejudiced	judgemental, intolerant, narrow-minded
Selfish	✓
unable to communicate	-
Recluse	
busy-body	-

easily upset	-
fat	-
find difficult to change	set in ways
frugal	thrifty
greedy	-
lives in past	nostalgic
miserly	-
naïve	-
old-fashioned	-
set in ways	✓
short	-
snobbish	arrogant
suspicious of strangers	-
unattractive	-
<hr/>	
Nosey Neighbour	
frugal	thrifty
busy-body	-
short	-
fat	-
unattractive	-
naïve	-
greedy	-
miserly	-
snobbish	arrogant
<hr/>	
Bag Lady/Vagrant	
burden to society	drain on NHS, nuisance
dirty	-
emotionless	-
useless	-

Note. Subtypes and their corresponding traits are reproduced from Schmidt & Boland (1986). Where multiple traits from the current study shared (elements of) semantic equivalence, they were noted together, separated by commas. ✓ = exact match.

Table XI.2: *Cross-Cultural Consistency of Trait Clusters; Equivalence from the UK and the USA.*

Subtype	Traits	Positive subtypes	Our Semantic Equivalent
Golden Ager	active		✓
	adventurous		-
	alert		mentally active
	capable		resourceful
	courageous		-
	curious		-
	determined		-
	fun-loving		enjoys life
	future-orientated		-
	happy		✓
	health-conscious		-
	healthy		✓
	independent		✓
	intelligent		-
	interesting		-
	knowledgeable		✓
	liberal		-
	lively		-
	political		-
	productive		-
	proud		-
	self-accepting		content
	sexual		-
	skilled		-
	sociable		✓
	successful		-
	volunteer		✓

wealthy	financially secure, comfortable
well-informed	
well-travelled	traveller
wise	✓
witty	
<hr/>	
Perfect Grandparent	
courageous	-
family orientated	✓
fun-loving	enjoys life
generous	-
grateful	-
happy	✓
healthy	✓
intelligent	-
interesting	-
kind	
knowledgeable	✓
loving	-
self-accepting	content
supportive	helpful
trustworthy	-
understanding	Kind
wise	✓
<hr/>	
John Wayne Conservative	
conservative	-
curious	
determined	-
emotional	-
mellow	relaxed
nostalgic	✓
old fashioned	set in ways

patriotic	-
political	-
Proud	
religious	-
reminiscent	nostalgic
Retired	✓
Tough	resilient
Wealthy	financially secure, comfortable
<hr/>	
Liberal Matriarch/Patriarch	
Frugal	thrifty
old-fashioned	set in ways
Liberal	
mellow	relaxed
Wealthy	financially secure, comfortable
<hr/>	
Activist	
health-conscious	-
liberal	
political	-
sexual	-
<hr/>	

		Negative subtypes	Study 2 semantic equivalent
Subtype	Trait		
Small Town Neighbour	conservative		-
	emotional		-
	frugal		thrifty
	old fashioned		set in ways
	quiet		-
	tough		resilient
Shrew/Curmudgeon	bitter		-
	bored		-
	complaining		moaning
	demanding		✓
	frugal		thrifty
	greedy		-
	hypochondriac		-
	humourless		-
	ill-tempered		grumpy
	inflexible		set in ways
	jealous		-
	nosy		
	prejudiced		judgemental, intolerant, narrow-
	selfish		✓
	Snobbish		arrogant
stubborn		set in ways	
Despondent	afraid		frightened
	bored		-
	depressed		-
	fragile		frail

frustrated	-
hopeless	
hypochondriac	-
lonely	✓
neglected	ignored
sad	-
sick	ill-health
tired	-
victimised	-
wary	
<hr/>	
Vulnerable	
afraid	frightened
bored	-
emotionless	-
hypochondriac	-
miserly	-
sedentary	inactive
victimised	-
wary	
worried	✓
<hr/>	
Severely impaired	
feeble	frail
forgetful	✓
hopeless	
inarticulate	-
incoherent	-
incompetent	-
poor	✓
rambling	-
senile	-
sexless	-

	sick	ill-health
	slow-moving	immobile
	slow-thinking	slow
<hr/>		
Recluse		
	dependent	✓
	forgetful	✓
	frustrated	
	naïve	-
	quiet	-
	sedentary	inactive
	timid	frightened
	worried	✓
<hr/>		
Mildly Impaired		
	dependent	✓
	emotionless	-
	forgetful	✓
	fragile	frail
	frustrated	
	Lonely	✓
	neglected	ignored
	Poor	✓
	rambling	-
	sedentary	inactive
	sexless	-
	Sick	ill-health
	slow-moving	immobile
	Tired	-
	victimised	-
	Worried	✓
<hr/>		
Self-Centred		
	emotionless	-

	greedy	-
	humourless	-
	inflexible	set in ways
	jealous	
	miserly	-
	nosy	-
	selfish	✓
	snobbish	arrogant
	stubborn	set in ways
<hr/>		
Elitist	demanding	✓
	naïve	-
	prejudiced	judgemental, intolerant, narrow-
	snobbish	arrogant
	wary	
<hr/>		

Note. Subtypes and their corresponding traits are reproduced from Hummert and colleagues (1994). Where multiple traits from the current study shared (elements of) semantic equivalence, they were noted together, separated by commas. ✓ = exact match.

Appendix XII

Additional materials and analyses from Study 4

Appendix 12 details all of the additional measures included in Study 4. These were not deemed to be of central importance for the thesis, and so were not included in the main text. Additional results are reported for incidental effects of the main analysis (e.g., interactions between covariates on the well-being measures) that similarly were not included in the main text due to lack of centrality to our main arguments.

12.3: Method

12.3.1: Materials.

Mathematical challenge. To assess cognitive functioning, participants were asked to count backwards from 956 and 375 for one minute, subtracting 7 each time from their previous answer (Levy et al., 2000). Participants were also asked to predict the number of correct responses that they would be able to make. The presentation order of the memory tasks and mathematical challenges were counterbalanced across participants.

Metamemory. Short and long-term metamemory beliefs were assessed through prediction questions, and three subscales from the Metamemory in Adulthood questionnaire (MIA; Dixon, Hultsch & Hertzog, 1988). The prediction questions were presented immediately prior to completion of the memory tasks, and asked participants to estimate the number of correct responses they would be able to make on each of the three measures. Participants were also asked to indicate, on a 7-point Likert scale, how well they would expect to perform on a test of knowledge, and on a test of memory. The same questions were completed in relation to how well participants thought another member of their age group would perform on these measures. Scales ranged from 1 (*Very badly*) to 7 (*Very well*).

Following Levy (1996), more long-term beliefs were assessed through three subscales from the MIA: the Locus, Change, and Capacity subscales. These scales assess individuals' perceptions of control over their memory (e.g., 'If I were to work on my memory I could improve it'), perception of change in memory abilities (e.g., 'I remember my dreams much less now than 10 years ago'), and beliefs about current levels of functioning (e.g., 'I am good at remembering things like recipes'). Self-ratings on these subscales have previously been shown to decrease with increasing age (Dixon et al., 1988), with acceptable levels of

reliability obtained for each of the scales (from .74 to .93; for a review, see Hertzog, Hultsch, & Dixon, 1989).

Self-perceptions of aging. Two scales assessed participants' views of aging. The *Aging Perceptions Questionnaire* (APQ; Barker, O'Hanlon, McGee, Hickey & Conroy, 2007) was used to assess self-perceptions of aging across eight subscales: timeline chronic (e.g., 'I am always aware of my age'), timeline cyclical (e.g., 'I go through phases of feeling old'), consequences positive (e.g., 'As I get older I appreciate things more'), consequences negative (e.g., 'Getting older restricts the things that I can do'), control positive (e.g., 'Whether getting older has positive sides to it depends on me'), control negative (reverse scored; e.g., 'How mobile I am in later life is not up to me'), and emotional representations (e.g., 'I get depressed when I think about getting older'). Scales ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). The final subscale assessed health-related changes across 17 symptoms (e.g., 'weight problems'), and whether participants believed the change was caused by advancing age.

The second scale assessing self-perceptions of aging concerned the positive aspects of the aging process. The first was an open-ended question from Studies 2-3, asking participants 'What pleases you (personally) the most about growing older'? The number of different examples provided was the output variable. The second asked participants to select the features of growing older that they believed constituted the best aspects of the ageing process (e.g., '*slower pace of life*'). Participants were instructed to select as many options as they believed applied, and were given the opportunity to enter any additional items. The choices were derived from a UK survey into quality of life with an older population (Bowling et al., 2002), and the number of selections was used as the output variable.

Results and discussion

Section 11.5.1.1: Did the priming intervention influence participants' psychological well-being?

To examine the impact of the priming manipulation on well-being, a mixed 2 (age group: young or older) x 2 (condition: positive or negative) x 2 (time of task: pre- or post-intervention) MANCOVA was conducted across the three subscales from the state self-esteem scale (SSE), the positive and negative mood subscales of the PANAS, and the state anxiety scale (STAI-I). Time of task was entered as the within-subjects variable, condition

and age-group were the between subjects variables, with NART scores, computer use and stereotype threat as covariates. Main effects of stereotype threat emerged for the performance ($F(1, 66) = 6.18, p < .05$), and social subscales of the SSE ($F(1, 66) = 7.30, p < .01$). In line with expectations, bivariate correlations indicated a significant and negative correlation between stereotype threat and performance self-esteem both pre- ($r = -.45, p < .001$) and post-intervention ($r = -.34, p < .005$)⁹⁵, although no effect emerged for the social subscale (both p values $> .94$). Similarly, for the appearance self-esteem subscale, although an interaction emerged between time and computer use ($F(1, 66) = 6.25, p < .05$), bivariate correlations did not reveal any significant differences (both p values $> .18$) between computer use and time of assessment.

Finally, although analysis of participants' STAI-I scores revealed a main effect of stereotype threat ($F(1, 69) = 7.62, p < .01$) on anxiety, post-hoc bivariate correlations did not reveal a significant effect either before ($r = .21, p > .07$) or after the intervention ($r = .13, p > .27$). This effect is surprising, as we would have expected those who reported increased stereotype threat to also report increased anxiety (e.g., Osborne, 2007). Findings from a study by Hess and colleagues (2003) provide a potential answer to this discrepancy, however, as stereotype threat was shown to influence participants' memory performance in this study, but only for participants who were invested in their own memory abilities. It is plausible that a similar effect may have been operating here: stereotype threat may only have resulted in increased anxiety for participants for whom memory performance was important. As we did not assess the importance of memory to our participants, we were not able to control for this mediating factor. This therefore constitutes another issue that could be addressed in future research.

As an effect of stereotype priming was only expected to emerge for older adults, separate analyses were conducted on older participants' well-being data (cf. Stein et al., 2002). Similar patterns were obtained for older adults as per the analysis for the whole sample. For the SSE subscales, interactions emerged between time and computer use for performance ($F(1, 28) = 10.09, p < .005$) and appearance self-esteem ($F(1, 28) = 6.69, p < .05$), yet bivariate correlations were not significant for either subscale at either time point (all p values $> .35$). Unsurprisingly, as the main differences emerging on the positive affect scale

⁹⁵ Critical p value $< .008$.

of the PANAS had been effects of age, separate analyses of PANAS scores revealed no main effects or interactions on the positive (all p values $> .17$) or negative scales (all p values $> .09$). Finally, the only significant effect to emerge on the STAI-I was an interaction between time and NART scores ($F(1, 27) = 4.31, p < .05$), although once again after Bonferroni corrections (critical p value $< .01$) bivariate correlations did not reveal a main effect at either time point (both p values $> .03$).

Section 11.5.1.2: Did the priming manipulation influence participants' cognitive performance?

To examine the impact of the priming manipulation on memory performance, a mixed 2 (age group: young or older) \times 2 (condition: positive or negative) \times 2 (time of task: pre- or post-intervention) MANCOVA was conducted for the photo recall task (PRT), free-recall task (FRT) and the recognition task (RT). Time of task was the within-subjects variable, with condition and age-group as the between subjects factors. NART scores, computer use, and stereotype threat were entered as covariates. Although a main effect of NART errors was obtained on the PRT ($F(1, 64) = 17.67, p < .001$) and FRT ($F(1, 67) = 9.75, p < .005$), after Bonferroni corrections (critical p value $< .013$) no significant correlations emerged between NART errors and memory performance on either task (both p values $> .31$). Similarly, although a significant interaction emerged between NART errors and time of test on the PRT ($F(1, 64) = 7.26, p < .01$) and FRT ($F(1, 67) = 5.36, p < .05$), post-hoc bivariate correlations did not reveal a significant relationship at either time point on either task (all p values $> .15$). These findings may be reflective of the (relatively) low power of the current study (power = .63).

As priming effects were only expected to emerge for older participants, separate analyses were also conducted on older adults' memory performance data. A significant interaction emerged between time of task and computer use on the PRT ($F(1, 25) = 4.35, p < .05$). Two further interactions were obtained between time and NART scores on both the PRT ($F(1, 25) = 8.35, p < .01$) and FRT ($F(1, 28) = 5.11, p < .05$). To determine the impact of these covariates on performance, bivariate correlations were conducted, which indicated that computer use did not exert a significant effect on memory performance either pre- ($r = .24, p > .19$) or post-intervention ($r = .04, p > .80$).

Significant effects of NART scores emerged for performance on both the PRT and FRT, although the direction of these differences varied. Bivariate correlations indicated that, whereas a significant relationship emerged between NART scores and memory performance on the PRT post-intervention ($r = -.60, p < .001$), this correlation was not significant pre-intervention ($r = -.28, p > .13$). In contrast, for FRT scores both correlations were significant (both p values $< .02$), although the pre-intervention correlation was of greater magnitude ($r = -.54, p < .001$) than at post-intervention ($r = -.36, p < .02$). The reason for the different direction of these differences (i.e., stronger, significant correlation at Time 2 for PRT, but stronger correlation between NART and FRT at Time 1) is unclear. Two possible explanations related to the increased verbal component of the FRT, in comparison to the PRT, and/or strategy use in the FRT.

Whereas the PRT relies on both visual and verbal components of memory (as participants are asked to related verbal labels to a photograph), the FRT has a stronger reliance on verbal intelligence, as participants are asked to study and recall a list of 30 words. The increased verbal demands of the FRT may therefore explain why significant effects of the NART were obtained at both time points, whereas the correlation was only significant for participants post-intervention on the PRT. In addition, anecdotally approximately 20% of our older participants reported that, during the first PRT task, they attempted to relate the activities to the photograph, whereas during the second presentation of the PRT they simply tried to recall the list of personality traits. As strategy use was not formally assessed in the current study (i.e., some participants spontaneously referred to their strategies during the interview process at the end of the study), it is impossible to determine whether this strategy des explain the lack of a significant difference pre-intervention. Future work should therefore ensure that memory strategies are formally assessed, possibly as part of the questionnaire measures.

A second explanation for the significant correlations at both time points on the FRT also concerns strategy use. As the word lists were organized in 6 semantic categories in the FRT (e.g., *furniture, trees*), when completing the task for the second time participants were able to explicitly employ this strategy. This explains why performance for both age groups showed a (non-significant) increase across time on this task. As significant correlations were obtained at both time points on the FRT, it therefore seems plausible that although verbal intelligence exerted an effect both pre- and post-intervention, this effect was over-written by

the effect of strategy use. As we did not assess participants' strategy use in the study, however, it is not possible to conduct mediation analysis to determine whether this interpretation was correct. Future work could address this limitation by explicitly assessing participants' strategies.

Finally, to examine the impact of the priming manipulation on the mathematical challenge, a 2 (age group: young or older) x 2 (condition: positive or negative) ANCOVA was conducted, with NART scores, computer use, and stereotype threat entered as the covariates. No significant effects emerged for condition ($F(1, 66) = 0.44, p > .51$) or age group ($F(1, 66) = 0.016, p > .90$), or any of the covariates (all p values $> .06$). Similarly, the critical age by condition interaction was also not significant ($F(1, 66) = 0.26, p > .61$), and separate analyses of the older adults' data also produced no significant effects (all p values $> .24$). These findings contrast with the results from Levy and colleagues (2000), where older participants in the positive condition performed significantly better than participants in the negative condition.

As with our previous findings, the lack of a significant effect on this task could be reflective of the low power of the current study. Analysis of the trends did not support this suggestion, however, as only small differences emerged between older participants in the positive ($M = 17.77, SD = 7.16$) and negative conditions ($M = 16.71, SD = 8.29$). A similar pattern was apparent for unaware participants ($M_{\text{pos}} = 15.36, SD = 7.03, M_{\text{neg}} = 14.50, SD = 9.28$). The reason for this difference across studies is unclear. As reviewed in Section 3.3.2, the current research employed stricter empirical controls than Levy and colleagues (2000) had employed (e.g., controlling the viewing distance between participants and the screen). This could underlie the difference in significant effects. As previous research has indicated that auto-stereotype activation only exerts an effect when participants are unaware (rather than aware) of the primes (Hess et al., 2004; Levy, 1996), however, the stricter controls that we employed (which reduced the possibility of conscious awareness of auto-stereotype activation; Macrae et al., 1994) would suggest the opposite pattern of effects (a significant difference in the current study, and no significant effects in Levy et al., 2000). Further work is therefore required to resolve the inconsistency across studies.

As the controls employed in the current research made conscious awareness *less* likely than in previous studies, however, this does not account for the current pattern of effects (i.e., no significant effect in the current study)

Section 11.5.2: Unaware participants

Section 11.5.2.1: Did the priming intervention influence unaware participants' well-being?

To examine the impact of the priming manipulation on well-being, a mixed 2 (age group: young or older) x 2 (condition: positive or negative) x 2 (time of task: pre- or post-intervention) MANCOVA was conducted across the three subscales from the state self-esteem scale (SSE), the positive and negative mood subscales of the PANAS, and the state anxiety scale (STAI-I). Time of task was entered as the within-subjects variable, condition and age-group were the between subjects variables, with NART scores, computer use and stereotype threat as covariates. A significant interaction emerged between time and computer use on the performance ($F(1, 41) = 13.44, p = .001$) and appearance subscales ($F(1, 41) = 7.34, p = .01$), although bivariate correlations revealed no main effects on either scale at either time (all p values $> .32$).

When older adults' responses were analysed separately, only two interactions emerged. These were between computer use and time on the performance self-esteem scale ($F(1, 8) = 14.72, p < .005$) and between NART and time on the STAI ($F(1, 8) = 9.53, p < .05$). Whereas the correlations for the self-esteem scale were not significant at either time point (both p values $> .35$), a main effect emerged for NART scores pre- ($r = .80, p < .001$) and post-intervention ($r = .73, p = .005$). This may reflect a tendency for those with higher verbal intelligence to be more aware of the negative stereotypes concerning ageing and memory performance, and thus to be more anxious about completing the relevant tasks. The current study did not enable us to test this hypothesis, but could form a component of further research.

Section 11.5.2.2: Did the priming intervention influence unaware participants' memory performance?

To examine the impact of the priming manipulation on memory performance, a mixed 2 (age group: young or older) x 2 (condition: positive or negative) x 2 (time of task: pre- or post-intervention) MANCOVA was conducted across the three subscales from the SSE, the positive and negative mood subscales of the PANAS, and the STAI-I. Time of task was

entered as the within-subjects variable, condition and age-group were the between subjects variables, with NART scores, computer use and stereotype threat as covariates. As reviewed in Chapter 5, the critical age group by condition interaction was not significant for any of the variables (all p values $> .30$). As with the analysis for the entire sample, significant interactions emerged between time and NART errors for the PRT ($F(1, 41) = 6.34, p < .05$) and FRT ($F(1, 42) = 5.09, p < .05$), plus a main effect of NART on the FRT ($F(1, 42) = 8.33, p > .01$). Bivariate correlations did not reveal a significant difference at either time point, however, for either task (all p values $> .11$).

An interaction between time and stereotype threat ($F(1, 41) = 6.34, p < .05$) emerged for unaware participants on PRT scores, with bivariate correlations indicating significance both pre- ($r = -.58, p < .001$) and post-intervention ($r = -.37, p < .005$). The magnitude of this effect was larger before the intervention. A main effect of threat was also obtained on the FRT ($F(1, 42) = 8.53, p < .05$), with significant effects arising pre- ($r = -.55, p < .001$) and post-intervention ($r = -.57, p < .001$). In line with findings from the whole sample, no main effects or interactions emerged on the RT, showing that our memory tasks were sensitive to age-related decline in the hypothesized direction (i.e., no effect on implicit measures; Craik et al., 1987).

Main Identity

From: "Tracy" <tlm1@st-andrews.ac.uk>
To: "Joanne Persson" <jkp3@st-andrews.ac.uk>
Cc: "Malcolm MacLeod" <mdm@st-andrews.ac.uk>; "Barbara Dritschel" <bd9@st-andrews.ac.uk>
Sent: 08 December 2008 15:23
Subject: PS5121_Persson Ethical Approval

8 December 2008

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS5121
Project Title:	Identity in Older Adulthood
Researchers Name(s):	Joanne Persson
Supervisor(s):	Professor M MacLeod & Dr B Dritschel

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 8 December. The following documents were reviewed:

- | | |
|-----------------------------|-----------------|
| 1. Ethical Application Form | 8 December 2008 |
| 2. Consent Form | 8 December 2008 |
| 3. Debriefing Form | 8 December 2008 |
| 4. Questionnaires | 8 December 2008 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for completion within the stated time period. Projects, which have not commenced within the time given must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

On behalf of the Convenor of the School Ethics Committee

OR

Convenor of UTREC



5 October 2009

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS5905
Project Title:	Perceptions of older adults
Researchers Name(s):	Joanne Persson
Supervisor(s):	Pror. Malcolm MacLeod & Dr Barbara Dritschel

Thank you for submitting your application which was considered at the School Ethics Committee meeting on the 2nd October 2009. The following documents were reviewed:

- | | |
|----------------------------------|----------|
| 1. Ethical Application Form | 02/09/10 |
| 2. Participant Information Sheet | 02/09/10 |
| 3. Consent Form | 02/09/10 |
| 4. Debriefing Form | 02/09/10 |
| 5. Questionnaires | 02/09/10 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convener of UTREC

Ccs Prof. Malcolm MacLeod
Dr Barbara Dritschel
School Ethics Committee



02 December 2009

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS5121
Project Title:	Identity in Older Adulthood
Researchers Name(s):	Joanne Persson
Supervisor(s):	Prof. Malcolm MacLeod & Dr Barbara Dritschel

Thank you for submitting your application which was considered at the School Ethics Committee meeting on the 2nd December 2009. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Amendment Form | 02/12/2009 |
| 2. Participant Information Sheet | 02/12/2009 |
| 3. Consent Form | 02/12/2009 |
| 4. Debriefing Form | 02/12/2009 |
| 5. Questionnaires | 02/12/2009 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convener of UTREC

Ccs Prof. Malcolm MacLeod (Supervisor)
Dr Barbara Dritschel (Supervisor)
School Ethics Committee



12 March 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS5010
Project Title:	Ageing Experience
Researchers Name(s):	Joanne Persson
Supervisor(s):	Prof. Malcolm MacLeod and Dr Barbara Dritschel

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 11th March 2010. The following documents were reviewed:

- | | |
|-----------------------------------|------------|
| 1. Ethical Amendment Form | 11/03/2010 |
| 2. Participant Information Sheets | 11/03/2010 |
| 3. Consent Forms | 11/03/2010 |
| 4. Debriefing Form | 11/03/2010 |
| 5. Questionnaire | 11/03/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convener of UTREC

Ccs Prof. Malcolm MacLeod (Supervisor)
Dr Barbara Dritschel (Supervisor)
School Ethics Committee



05 April 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 24th March 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Application Form | 24/03/2010 |
| 2. Participant Information Sheet | 24/03/2010 |
| 3. Consent Form | 24/03/2010 |
| 4. Debriefing Form | 24/03/2010 |
| 5. Advertisement | 24/03/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convenor of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



9 April 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS5121
Project Title:	Identity in older adulthood
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel, Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 7th April 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Amendment Form | 09/04/2010 |
| 2. Participant Information Sheet | 09/04/2010 |
| 3. Consent Form | 09/04/2010 |
| 4. Debriefing Form | 09/04/2010 |
| 5. Questionnaires | 09/04/2010 |
| 6. Advertisement | 09/04/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convenor of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



7 July 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6593
Project Title:	Photo ratings
Researchers Name:	Joanne Persson
Supervisors:	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 30th June 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Application Form | 30.06.2010 |
| 2. Participant Information Sheet | 30.06.2010 |
| 3. Consent Forms | 30.06.2010 |
| 4. Debriefing Form | 30.06.2010 |
| 5. Advertisements | 30.06.2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convener of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



12 July 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 9th July 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Application Form | 09/07/2010 |
| 2. Participant Information Sheet | 09/07/2010 |
| 3. Consent Form | 09/07/2010 |
| 4. Debriefing Form | 09/07/2010 |
| 5. Advertisement | 09/07/2010 |
| 6. Questionnaires | 12/07/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convener of the School Ethics Committee

OR

Convener of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



22 October 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 20th October 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Amendment Form | 20/10/2010 |
| 2. Participant Information Sheet | 20/10/2010 |
| 3. Consent Form | 20/10/2010 |
| 4. Debriefing Form | 20/10/2010 |
| 5. Questionnaires | 20/10/2010 |
| 6. Advertisement | 20/10/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convener of the School Ethics Committee

OR

Convener of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



5 November 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295 (Amendment)
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 20th October 2010. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Amendment Form | 04/11/2010 |
| 2. Participant Information Sheet | 04/11/2010 |
| 3. Consent Form | 20/10/2010 |
| 4. Debriefing Form | 20/10/2010 |
| 5. Advertisement | 20/10/2010 |
| 6. Questionnaires | 20/10/2010 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convener of the School Ethics Committee

OR

Convener of UTREC

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



20 November 2010

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295 (Amendment)
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Professor Malcolm MacLeod and Dr Barbara Dritschel

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 25th November 2010. The following documents were reviewed:

1. Ethical Amendment Form 25/11/2010
2. Advertisement 25/11/2010

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

OR

Convener of UTREC

Ccs Prof. Malcolm MacLeod (Supervisor)
Dr Barbara Dritschel (Supervisor)
School Ethics Committee



20 April 2011

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS6295 (Amendment)
Project Title:	Age-related stereotype priming
Researchers Name(s):	Joanne Persson
Supervisor(s):	Dr Barbara Dritschel and Professor Malcolm MacLeod

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 20th April 2011. The following documents were reviewed:

1. Ethical Amendment Form 20/04/2011

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

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Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

Ccs Dr Barbara Dritschel (Supervisor)
Professor Malcolm MacLeod (Supervisor)
School Ethics Committee



9 July 2012

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	PS8931
Project Title:	Stereotype labels
Researcher's Name:	Joanne Persson
Supervisor:	Professor Malcolm MacLeod and Dr Barbara Dritschel

Thank you for submitting your application which was considered at the Psychology School Ethics Committee meeting on the 14th June 2012. The following documents were reviewed:

- | | |
|----------------------------------|------------|
| 1. Ethical Application Form | 09/07/2012 |
| 2. Advertisement | 09/07/2012 |
| 3. Participant Information Sheet | 09/07/2012 |
| 4. Consent Form | 09/07/2012 |
| 5. Debriefing Form | 09/07/2012 |
| 6. Questionnaires | 09/07/2012 |

The University Teaching and Research Ethics Committee (UTREC) approves this study from an ethical point of view. Please note that where approval is given by a School Ethics Committee that committee is part of UTREC and is delegated to act for UTREC.

Approval is given for three years. Projects, which have not commenced within two years of original approval, must be re-submitted to your School Ethics Committee.

You must inform your School Ethics Committee when the research has been completed. If you are unable to complete your research within the 3 three year validation period, you will be required to write to your School Ethics Committee and to UTREC (where approval was given by UTREC) to request an extension or you will need to re-apply.

Any serious adverse events or significant change which occurs in connection with this study and/or which may alter its ethical consideration, must be reported immediately to the School Ethics Committee, and an Ethical Amendment Form submitted where appropriate.

Approval is given on the understanding that the 'Guidelines for Ethical Research Practice' (<http://www.st-andrews.ac.uk/media/UTRECguidelines%20Feb%2008.pdf>) are adhered to.

Yours sincerely

Convenor of the School Ethics Committee

Ccs Prof. M. MacLeod (Supervisor)
Dr B. Dritschel (Supervisor)
School Ethics Committee