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AGE AND SEXUAL ORIENTATION CATEGORIES COMBINATIONS: THE INTERSECTIONAL INVISIBILITY OF ELDERLY GAY MEN

Settore scientifico-disciplinare: **M-PSI/05**

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INTRODUCTION

The Cambridge dictionary (n.d.) defines *invisibility* as "the fact of being impossible to see, or of not being noticed". This definition involves two conceptual aspects for invisibility. First, invisibility is related to the physical impossibility of seeing something or someone. Second, and more metaphorically, invisibility is related to the possibility of overlooking something or someone even in the absence of any apparent obstacles. In this work, I extend the concept of invisibility by addressing the *intersectional invisibility* (Purdie-Vaughns & Eibach, 2008). Women are less "visible" than men in our society (Bailey et al., 2019). Also, Black people are more under-represented in highly visible professional roles than White people (Galinsky et al., 2013). Intersectional invisibility refers to the fact that specific category combinations, like Black women, are "invisible" within the Black community, which is primarily represented by Black men, and the female population which is predominately depicted by White women (Cole, 2009; Crenshaw, 1993; Sesko & Biernat, 2010; Thomas et al., 2014).

The current research project has focused on the combination of age and sexual orientation categories referring to men as the generative mechanism of the invisibility of older gay men. On a social level, elderly gay men have been called the "unseen minority" (Berger, 1982). Indeed, elderly gay men run the risk of being invisible among older people in general, as their particular needs have not always been acknowledged by, for instance, policymakers and healthcare services (Harrison, 2006; Kia et al., 2019). In addition, elderly gay men are invisible in the gay community, whose media representation (Jankowski et al., 2014; Saucier & Caron, 2008) is very much tied to the concept of youth (Bennett & Thompson, 1991; Hajek & Giles, 2002). Older gay people also are invisible as they likely refrain from coming out after living their whole lives under the pressure to pass as heterosexual (Harris & Fiske, 2006; Harrison, 2006).

Together, these studies acknowledge that elderly gay men are invisible (i.e., impossible to be seen) in society, metaphorically speaking, among the population. The current research is aimed at studying the cognitive processes that enact the cognitive invisibility of elderly gay men. Specifically, the current research project aimed at a) extending the intersectional perspective to the analysis of the combination of age and sexual orientation categories; b) understanding the cognitive processes involved in the perception of this specific case of sexual orientation by age categories intersection; c) developing a mixed method approach to the study of category intersections.

Built on these insights, we framed the "invisibility" of 'Elderly gay men' as the results of two distinct albeit related processes, that is the biased conceptualization of its category constituents, namely 'Elderly men' and 'Gay men', and the combination of such category constituents at the cognitive level.

First, research rooted in social cognition has long acknowledged that categories have a graded structure, with some category exemplars being more typical of the category as a whole than other exemplars (Barsalou, 1985; Mervis & Rosch, 1981). As a result, the representation of the category ends up being conflated with those exemplars that are highly typical (Hegarty & Pratto, 2001; Hegarty & Pratto, 2004). Indeed, such exemplars tend to come up to perceivers' minds easily when thinking of their category (Rothbart et al., 1996), and display features that are common to the category prototype (Rosch & Mervis, 1975). When thinking of 'Men', people strongly assumed that they are heterosexual and likely young. Hence, 'Heterosexual men' and 'Young men' are category defaults, namely the attended values, alias the "normality" (Lick & Johnson, 2016; North & Fiske, 2015).

We put forward that 'Gay men' has an age-graded structure that favors 'Young men' over 'Elderly men', and that 'Elderly men' has a sexual orientation-graded structure that favors 'Heterosexual men' over 'Gay men'. Hence, we expect that, as for the discrete categories of age, the heterosexual men default would be stronger in the category 'Elderly men' than 'Young men'. Also,

as for the discrete categories of sexual orientation, the young men default would be stronger in the category ‘Gay men’ than ‘Heterosexual men’. This first assumption was tested in Chapter 1.

Second, we assume that, if the category of age and sexual orientation intersect in the manner described above, then some category combinations are socially expected to be “deviant” category combinations. Said otherwise, if ‘Gay men’ category is assumed to be young by default, and ‘Elderly men’ is expected to be heterosexual by default, the implications of the former category would be at odds with the implications of the latter category, and vice versa. In other words, ‘Elderly gay men’ is conceptualized as an atypical subtype, that contradicts the prototypical representation of ‘Elderly men’. To test this theoretical assumption, we assess the age stereotyping of ‘Elderly gay men’. We reasoned that, as with any atypical subtype, ‘Elderly gay men’ is expected to be less stereotyped on traits that are consistent with their age category and more on traits that are inconsistent with that category: ‘Elderly gay men’ should be stereotyped as less old and younger that ‘Elderly men’. Such a prediction was tested in Chapter 2.

Moreover, and to extend the theoretical rationale of Chapter 2, we elaborate more on the nature of ‘Elderly gay men’ as an atypical subtype. Indeed, research on the category combination suggests that when combining discrete categories whose contents are inconsistent with each other, their cross-over would generate unique traits that are not part of the representation of the categories in question. To corroborate the idea that ‘Elderly gay men’ is represented as an atypical subtype, we directly test the characteristics that are associated with the discrete categories of sexual orientation and age, and their combinations. By quantitatively inspecting the contents of the generated characteristics, we expect that ‘Elderly gay men’ would be portrayed by characteristics that make them different and far away from the prototype of ‘Elderly men’ and, at least in part, from that of ‘Gay men’. These assumptions were tested in Chapter 3.

Overall, and to test the theoretical model outlined above, we adopted a multistep approach, in which each of the just mentioned assumptions was experimentally tested and then theoretically

discussed to inform the subsequent step. Specifically, in Chapter 1, a category interpretation paradigm has been used to ascertain whether the cognitive invisibility of 'Elderly gay men' was contingent to the interpretation of 'Gay men', more so than of 'Heterosexual men', as 'Young men', and to the interpretation of 'Elderly men', more than 'Young men' as 'Heterosexual men'. Two studies (N_{tot} = 317) analyzed whether, at the cognitive level, 'Elderly gay man' was "invisible" both when processing the labels 'Gay man' and 'Elderly man'. We suggested that 'Gay man' is conflated with 'Young man', and that 'Elderly man' is conflated with 'Heterosexual man'. In Chapter 2, four studies (N_{tot} = 440) relied on a stereotyping paradigm to investigate the age stereotypes perceivers apply to men depending on the combination of their age (Young vs. Elderly) and sexual orientation (Gay vs. Heterosexual). These studies have demonstrated that 'Elderly gay men' were stereotyped as less old and younger than both 'Elderly men' and 'Elderly heterosexual men'. Moreover, these studies suggested that 'Elderly gay men' might be represented at the cognitive level as an atypical subtype, likewise additional subtypes (i.e., 'Elderly atheist men' and 'Elderly athlete men') that clashed against the representation of 'Elderly men'. The results informed cognitive models of multiple category stereotyping. Such a claim was more thoroughly explored in Chapter 3. In the third chapter, three studies (N_{tot} = 364) investigated how people perceive combinations of sexual orientation and age through a multi-method approach. In particular, the results of Chapter 1 and 2 were expanded using a typicality measure. 'Elderly gay men' was shown to be perceived as atypical with respect to both its constituent categories. By using a free generation trait task, stereotype contents of 'Gay men' overlapping those of 'Young gay men' were analyzed. As well, the stereotype contents of 'Elderly men' overlapping those of 'Elderly heterosexual men' were considered. The novel, emergent features that characterize 'Elderly gay men' as "deviant" were investigated. Representations of both 'Gay men' and 'Elderly men' were shown to render this group invisible to its constituent categories.

An explorative goal of this research was to begin to ascertain the role played by perceivers' amount of contact with individuals defined by both age and sexual orientation categories in the

conceptualization of the age and sexual orientation discrete categories (Chapter 1) and the conceptualization of categories issued from the intersection between age and sexual orientation categories (Chapter 2). In both chapters, we conjectured that intergroup contact would provide perceivers with a more diverse category representation (Allan & Johnson, 2008; Caspi, 1984; Hale & Hewitt, 1998; Islam & Hewstone, 1993; Nichols & McAndrew, 1984; Shamloo et al., 2018). As a result, we suggested that higher levels of contact with 'Elderly gay men' might promote a more age-diverse representation of 'Elderly men' (Chapter 1) and a less stereotypical perception of 'Elderly gay men'(Chapter 2). Also, we put forward that higher levels of contact with 'Elderly gay men' might back a more sexual-orientation diverse representation of 'Elderly men' (Chapter 1) and an attenuated stereotypical perception of 'Elderly gay men' (Chapter 2).

Contrary to these conjectures, and as evidenced by studies on the subtyping model, an encounter with 'Elderly gay men' can lead perceivers to consider this group as a "deviant" subtype with respect to the category of 'Elderly men' (Carnaghi & Yzerbyt, 2006; Carnaghi & Yzerbyt, 2007; Hewstone et al., 1994; Kunda & Oleson, 1995; Richards & Hewstone, 2001; Weber & Crocker, 1983). If perceivers isolated 'Elderly gay men' as an atypical case, then the representation of 'Elderly men' would still show the heteronormative default and be victim of the age stereotyping.

Both the alternative speculations are well grounded in the literature. Hence, testing the association between the amount of contact with 'Elderly gay men' and the perception of this intersectional category appears to be mandatory to understand the interplay between intersectional category contact and the representation of age and sexual orientation discrete categories (Chapter 1, Study 2) and the age stereotyping of such category combinations (Chapter 2).

All studies were approved by the University Ethical Committee. All data, analyses, and supplemental materials associated with this project are available on the Open Science Framework website: https://osf.io/vk9np/?view_only=ffe3b597747840cca10bac91a4a951f8.

CHAPTER 1

A Cognitive Look at the "Invisibility" of Older Gay Men Within the Categories 'Gay Man' and 'Elderly Man'

Coladonato, R., Carnaghi, A., Ciosk, M. A., Bianchi, M., & Piccoli, V. (2022). A Cognitive Look at the "Invisibility" of Older Gay Men Within the Categories 'Gay Man' and 'Elderly Man'. *Journal of Language and Social Psychology*, *42*(2), 231-244. https://doi.org/10.1177/0261927X221137581

1. Introduction

Research addressing how gay men are perceived by mainstream society and gay culture has acknowledged the overemphasis both place on youthful characteristics in aspects such as physical appearance and sexuality (Bennett & Thompson, 1991; Hajek & Giles, 2002). The conflation of 'Gay men' with 'Young men' may foster in younger gay men a fear of aging (Warren, 2000), and older gay men might experience an inability to meet these appearance and sexuality standards (Hajek & Giles, 2002). Older gay men run the risk of being "invisible" in the gay community, as they may refrain from participating in gay social life both because it is mainly aimed at young gay men and because of anticipated ageism (Wight et al., 2015). Furthermore, older gay men may be "invisible" within the group of older men in general. For instance, healthcare services dedicated to older people tend to presume clients' heterosexuality, unless otherwise informed (Cronin & King, 2010). The increased social acceptability of diverse sexualities over time may contribute to the fact that younger people are more prone to identify as gay (8%, 16-24 years old) than older people (0.8%, 65+ years old; Office for National Statistics, 2022). Older gay men may refrain from coming out at later stages of their life because of the strong internalized pressure to pass as heterosexual in their early years (Harris & Fiske, 2006). Together, these societal factors contribute to rendering older gay men less visible within both 'Gay men' and 'Elderly men'.

Drawing on the cited works, the current research investigated whether the social-psychological evidence of 'Gay man' as prevalently young, and 'Elderly man' as prevalently heterosexual, maps onto individual cognition, thus creating a persistent young bias in the perception of 'Gay man', and heterosexual bias in the perception of 'Elderly man'. By shifting the focus from the societal determinants to the cognitive processes involved in the perception of this sexual orientation and age category intersection, we contributed to the literature from two related perspectives.

First, this work provided a cognitive account of the "invisibility" of the category 'Elderly gay man' as a result of the selective conceptualizing of its constituent categories, namely 'Gay man' as young and 'Elderly man' as heterosexual. We recast the "invisibility" of older gay men within the theoretical framework of the *non-prototypicality* of individuals with multiple non-prototypical memberships (Carnaghi et al., 2022; Purdie-Vaughns & Eibach, 2008; Schug et al., 2015). Categories display a graded structure, with some exemplars being more typical of the category than others (Barsalou, 1985; Mervis & Rosch, 1981). Highly typical members tend to be taken as the category default, thus conflating the general category representation with specific members (Hegarty & Pratto, 2001; Hegarty & Pratto, 2004). Young men and heterosexual men are category defaults (Lick & Johnson, 2016; North & Fiske, 2015). Thus, we predicted that 'Gay men' and 'Elderly men' would be overlooked when processing age and sexual orientation categories, respectively. Furthermore, we predicted that 'Elderly gay men' would be the most overlooked due to having two non-prototypical intersecting categories. This prediction was based on evidence that 'Gay men' has an age-graded structure, and 'Elderly men' has a sexuality-graded structure. Indeed, the higher representativeness of younger than older male exemplars is more pronounced for gay than heterosexual men, thus making 'Elderly gay men' particularly invisible within 'Gay men' (Coladonato et al., 2022). The higher representativeness of heterosexual than gay male exemplars is more pronounced with elderly than young men, rendering 'Elderly gay men' especially invisible within 'Elderly men' (Carnaghi et al., 2022). The "invisibility" of 'Elderly gay men' may stem from a perceived higher prevalence of 'Young men' within 'Gay men', and of 'Heterosexual men' within 'Elderly men'. Also, attributes equally true of two categories may be more central to the concept of one than the other, and youth and heterosexuality seem to be especially central attributes in the conceptualization of gay men and older men, respectively (Carnaghi et al., 2022; Medin & Shoben, 1988).

Drawing on this evidence, we predicted that 'Young gay men' would conceptualize 'Gay man', and the young-as-default would be stronger with 'Gay man' than 'Heterosexual man'. Also,

we predicted that 'Elderly heterosexual men' would conceptualize 'Elderly man', and the heteronormative default would be stronger with 'Elderly man' than 'Young man'. Hence, older gay men would be overlooked due to having two non-prototypical intersecting categories, as they are neither typical of 'Gay man' (who are prototyped as young) nor of 'Elderly man' (who are prototyped as heterosexual).

Second, we provided a baseline measurement of the defaults with sexual orientation and age categories by assessing the defaults with categories that are unrelated to both sexuality and age (i.e., irrelevant categories). We expected the defaults under analyses to shape the representation of these categories: irrelevant categories would be conceptualized as young and heterosexual. Moreover, we expected that the young-as-default with irrelevant categories would resemble that of 'Heterosexual man', and be less strong than that with 'Gay man'. Likewise, we expected that the heteronormative default with irrelevant categories should be more similar to that with 'Young man' than with 'Elderly man'. The inclusion of irrelevant categories as controls provided an additional test of the cognitive underpinnings of 'Elderly gay men' being particularly overlooked within 'Gay men' and 'Elderly men'.

2. Study 1

2.1 Method

2.1.1 *Participants*

One hundred thirty-three Italian participants (Table 1) provided informed consent orally. A sensitivity power analysis (α = .05, 1 - β = .80) indicated that the smallest effect size (f = .10) we could detect with this sample size fell within the small-effect size area (Cohen, 1988).

2.1.2 *Material*

Two sexual orientation category labels, namely 'Heterosexual' [*eterosessuale*] and 'Gay' [*omosessuale*], and two age category labels, namely 'Elderly' [*anziano*] and 'Young' [*giovane*], were

Table 1

Age, gender, sexual orientation, citizenship, and native language of participants as a function of the Study (Studies 1 and 2)

	STUDY 1	STUDY 2
Age		
Range	18 – 38	19 – 75
M	21.97	33.64
SE	0.29	0.92
Not reporting	4	5
Gender		
Female	87	109
Male	39	67
Other		2
Not reporting	7	6
Sexual orientation		
Heterosexual		152
Bisexual		18
Homosexual		4
Other		5
Not reporting		5
Citizenship		
Italian		178
Other than Italian		
Dual		1
Not reporting		5
Native language		
Italian		174
Other than Italian		1
Dual		3
Not reporting		6

Note. Values pertaining to the participants' age are expressed in years.

selected for the study. We used 'Right-handed' [*destrimane*] and 'English' [*Inglese*] as irrelevant category labels because both labels have been shown to be independent from both sexual orientation and age categories (see Carnaghi et al., 2022, Study 4). Additionally, multiple characteristics might cluster around 'English', but likely not 'Right-handed'. This reflects a natural difference between

social groups, in that some may trigger specific "group" characteristics, while others are considered "loose groups", less likely to be associated with well-defined stereotypes (Lickel et al., 2000).

The sexual orientation, age, and irrelevant category labels have opaque grammatical gender in Italian but are highly likely to be processed as referring to men (Carnaghi et al., 2022). 'Elderly' can be declined in both masculine and feminine forms. To be consistent with the other category labels, 'Elderly' was grammatically marked as masculine. This likely reinforced the understanding of the labels with opaque grammatical gender as referring to males.

2.1.3 *Procedure*

Participants were informed that *"This research aims to study how people use words, and what people refer to when using these words. We are not interested in the linguistic correctness, namely how people should use these words, but we seek to understand how these words are actually used in everyday life*." Participants were then presented with the age and the sexual orientation inference task, in a counterbalanced order. In the age inference task, participants were presented with the two sexual orientation category labels and the two irrelevant category labels. Participants rated each category label on a 7-point scale, ranging from 1 (*very elderly*) to 7 (*very young;* see Supplementary Material online). In the sexual orientation inference task, participants were presented with the two age category labels and the two irrelevant category labels. Participants rated each category label on a 7-point scale, ranging from 1 (*very gay*) to 7 (*very heterosexual*).

Irrelevant category labels were always presented as the first and the third labels. To estimate the defaults in irrelevant categories in general, participants' ratings of 'English man' and 'Right-handed man' were averaged together, separately in the two tasks. Within each task, the presentation order of the category labels relating to sexual orientation and age were counterbalanced across participants. Due to a material error, 104 participants were presented with the 'English man' label first. We subsequently collected an additional 32 participants that were presented with 'Right-handed

man' as the first label. The results were not affected by which type of label participants were presented with first (see Supplementary Material online).

2.2 Results

In the age inference task (Table 2), participants' ratings were analyzed by means of ANOVA 3(labels: Gay man *vs.* Heterosexual man *vs.* Irrelevant labels) repeated measures. Higher ratings indicated that the labels were thought of as referred to 'young man'. A significant effect of labels was found, $F(2, 264) = 80.40$, $p < .001$, $\eta^2_p = .38$. Post-hoc comparisons (Bonferroni correction) showed that 'Gay man' was thought of as referring to 'young man' to a greater extent than was 'Heterosexual man' ($t(132) = 10.41$, $p < .001$), and 'Irrelevant labels' ($t(132) = 12.12$, $p < .001$), while no difference occurred between 'Heterosexual man' and 'Irrelevant labels', $t(132) = 1.97$, $p = .151$.

In the sexual orientation inference task (Table 2), participants' ratings were analyzed by means of ANOVA 3(labels: Elderly man *vs.* Young man *vs.* Irrelevant labels) repeated measures. Higher ratings indicated that the labels were thought of as referred to 'heterosexual man'. A significant effect of labels was found, $F(2, 264) = 97.94$, $p < .001$, $\eta^2_p = .43$. Post-hoc comparisons (Bonferroni correction) showed that 'Elderly man' was considered to be referring to 'heterosexual man' to a greater extent than was 'Young man' ($t(132) = 10.11$, $p < .001$), and 'Irrelevant labels', $t(132) = 12.40$, $p < .001$, while no difference occurred between 'Young man' and 'Irrelevant labels' $t(132) = 0.35$, $p = 1.000$.

2.3 Discussion

These results indicated that participants made different age assumptions concerning the sexual orientation categories: 'Gay man' was considered as referring to young to a greater extent than 'Heterosexual man'. The young-as-default with irrelevant categories was similar to that with 'Heterosexual man'. Furthermore, participants differently made heteronormative assumptions depending on the age categories: 'Elderly man' was considered as referring to heterosexual to a

Table 2

Participants' ratings as a function of the task and labels, separately for Study 1 and Study 2

	Labels		
Study 1			
Task			
	Irrelevant labels	Young man	Elderly man
Sexual orientation estimation	4.25* (0.07)	4.22* (0.09)	5.57* (0.07)
	Irrelevant labels	Heterosexual man	Gay man
Age estimation	4.29* (0.06)	4.05 (0.11)	5.44* (0.09)
Study 2			
Task			
	Irrelevant labels	Young man	Elderly man
Sexual orientation estimation	4.55* (0.08)	4.67* (0.10)	5.63* (0.10)
	Irrelevant labels	Heterosexual man	Gay man
Age estimation	4.15* (0.06)	4.17 (0.10)	5.23* (0.09)

Note. Standard errors are displayed between brackets. In the sexual orientation inference task, higher scores indicated that the labels point to 'heterosexual men'; in the age inference task, higher scores indicated that the labels point to 'young men'. Mean values marked with * significantly differed from the midpoint of the scale, $p < .05$.

greater extent than 'Young man'. Also, the heteronormative bias in the irrelevant categories resembled that with 'Young man'.

Study 2 aimed to replicate these findings, and explored the role of contact with the sexual orientation and age category intersections in the defaults. Frequent encounters with specific category

members enhance the accessibility of those members from memory, leading them to be judged as more typical of the category (Barsalou, 1985; Kahneman & Miller, 1986). Hence, contact with 'Elderly gay men' could attenuate the young bias in 'Gay man', and the heterosexual bias in 'Elderly man'. However, enhanced contact with 'Young gay men' and/or 'Elderly heterosexual men' could further strengthen 'Gay men' being assumed young, and 'Elderly men' being assumed heterosexual.

3. Study 2

3.1 Method

3.1.1 *Participants*

One hundred eighty-four Italian participants (Table 1) provided written informed consent prior to their participation in the study. A sensitivity power analysis (α = .05, 1 - β = .80) suggested that, with the current *N*, the smallest detectable effect size (MDE) (Cohen's f = .09) falls within the small-effect size area (Cohen, 1988).

3.1.2 *Procedure*

The material and the procedures were the same as those in Study 1. Category labels were presented in a random order within each inference task.

Participants' direct and indirect contact with 'Elderly heterosexual men', 'Elderly gay men', 'Young heterosexual men', and 'Young gay men' were assessed after the inference tasks. As this procedure represents the first test of the potential role of intersectional contact in shaping the representations of the target groups, we decided to rely on both direct and indirect contact measures thus gaining a more reliable assessment of participants' first-hand and vicarious experience with the target groups. We adapted two items previously used by Voci and Hewstone (2003; see also Shamloo et al., 2018) to assess participants' amount of direct contact with the target groups. Specifically, participants were asked:

- "How many target group people do you know?" (*None-More than 10*) [in Italian: *Quante persone 'target group' conosci?*],
- "How frequently do you have contact with target group people?" (*Never-Very often*) [in Italian: *Quanto frequentemente hai contatti con persone 'target group'?*].

Also, two items assessed participants' amount of indirect contact with the target groups (Pagotto et al., 2010; Visintin et al., 2017). Namely, participants were asked:

- "How often do you hear or read news about target group people on the TV news, in newspapers, or on the radio?" (*Never-Very often*) [in Italian: *Quanto frequentemente senti o leggi di notizie su persone 'target group' al telegiornale, sui quotidiani, alla radio?*],
- "How often do you see target group people in films or in TV series?" (*Never-Very often*) [in Italian: *Quanto frequentemente vedi persone 'target group' nei film e nelle serie tv?*].

All answers were given on a five-point scale. We decided to evaluate participants' contact at the end of the questionnaire for two related reasons. First, as Study 2 was an exact replica of Study 1, in Study 2 we strictly followed the procedure of Study 1. For this reason, contact was assessed only after participants had performed the inference tasks. Second, previous works on person construal have shown that people make use of contextual information, such as specific exemplars, to conceptualize social categories (e.g., Smith & Zárate, 1992). Therefore, if we had assessed participants' contact with the intersections of sexual orientation and age categories, we would likely have induced a more diverse conceptualization of sexual orientation and age categories, influencing the observed results.

Participants reported their age, gender, sexual orientation, citizenship, and native language (see Table 1).

3.2 Results and Discussion

Participants' ratings in the age and sexual orientation inference task (Table 2) were analyzed as in Study 1. In the age inference task, results indicated a significant effect of labels, $F(2, 366) = 62.69$, $p < .001$, $\eta^2_p = .26$. Post-hoc comparisons (Bonferroni correction) showed that 'Gay man' was

thought of as referring to 'young man' to a greater extent than was 'Heterosexual man' ($t(183) = 8.87$, $p < .001$), and 'Irrelevant labels' ($t(183) = 10.71$, $p < .001$), while 'Heterosexual man' and 'Irrelevant labels' did not differ from each other, $t(183) = 0.20$, $p = 1.000$.

In the sexual orientation inference task, results indicated a significant effect of labels, $F(2, 366) = 77.01$, $p < .001$, $\eta^2_p = .30$. Post-hoc comparisons (Bonferroni correction) showed that 'Elderly man' was considered to be referring to 'heterosexual man' to a greater extent than 'Young man' ($t(183) = 9.14$, $p < .001$), and 'Irrelevant labels' ($t(183) = 10.90$, $p < .001$), while 'Young man' and 'Irrelevant labels' did not differ from each other, $t(183) = 1.50$, $p = .404$.

3.2.1 *Analyses of amount of contact*

Participants' ratings on the two items assessing the amount of direct contact with 'Elderly gay

Table 3

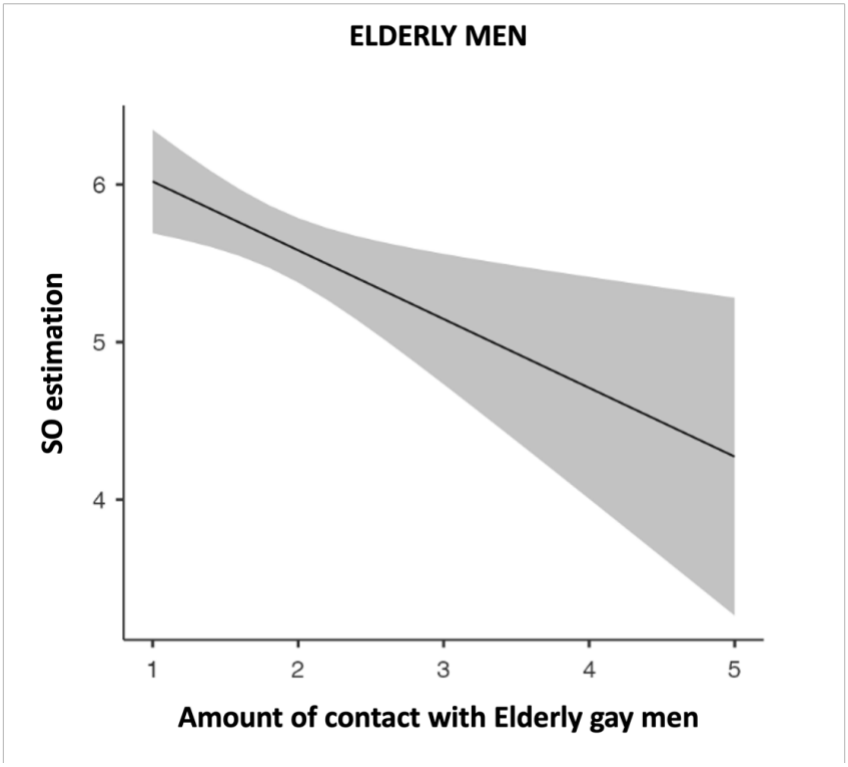
Regressions of association between participants' ratings of each label and the amount of contact with the target groups in Study 2

Predictors	ß	*SE*	*t*	*p*	95% CI
			Elderly man		
Amount of contact					
Elderly heterosexual men	-0.13	0.12	1.07	.287	[-0.23, 0.07]
Elderly gay men	-0.44	0.16	2.76	.007	[-0.36, -0.06]
			Young man		
Amount of contact					
Young heterosexual men	0.17	0.22	0.81	.417	[-0.09, 0.22]
Young gay men	-0.37	0.14	2.63	.009	[-0.36, -0.05]
			Heterosexual man		
Amount of contact					
Elderly heterosexual men	0.06	0.12	0.45	.654	[-0.12, 0.20]
Young heterosexual men	0.14	0.21	0.65	.515	[-0.11, 0.21]
			Gay man		
Amount of contact					
Elderly gay men	0.19	0.15	1.24	.215	[-0.06, 0.27]
Young gay men	-0.17	0.13	1.35	.178	[-0.28, 0.05]

Note. CI = confidence interval.

Figure 1

Participants' ratings of 'Elderly man' in the sexual orientation inference task (i.e., SO estimation) as a function of the amount of contact with 'Elderly gay men' in Study 2

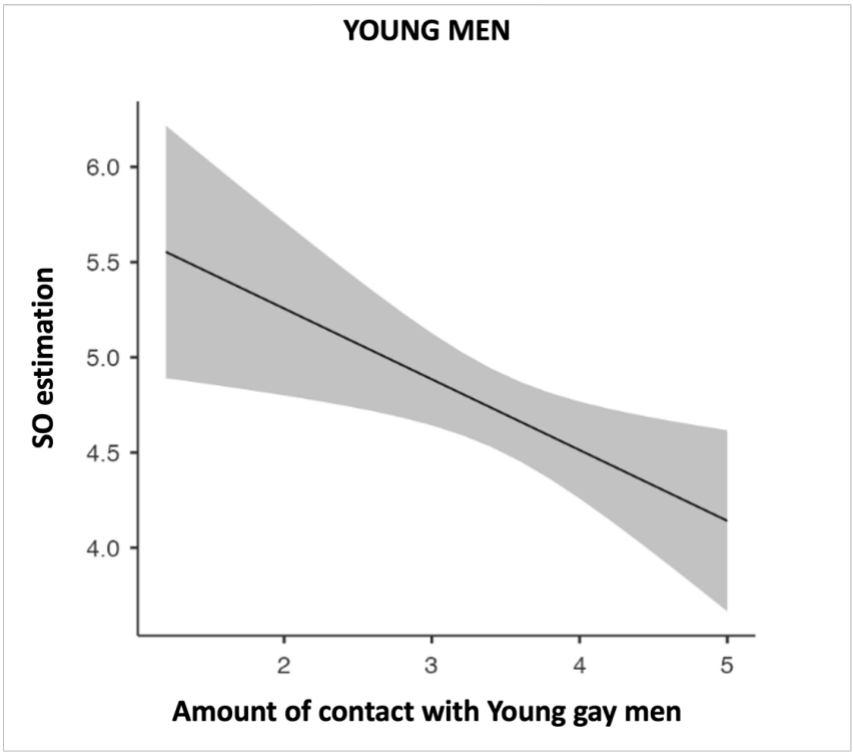


Note. Sexual orientation estimation (i.e., SO estimation), ranging from 1 = *very gay* to 7 = *very heterosexual*. The shaded gray area represents the 95% confidence level for the regression line.

men' (r = .66, p < .001, 95% CI [0.57, 0.73]), 'Elderly heterosexual men' (r = .52, p < .001, 95% CI [0.41, 0.62]), 'Young gay men' (r = .65, p < .001, 95% CI [0.56, 0.73]), and 'Young heterosexual men' (r = .51, p < .001, 95% CI [0.40, 0.61]), were averaged, separately. Participants reported a higher amount of direct contact with 'Young gay men' (M = 3.33, SE = .08) than with 'Elderly gay men' (M = 1.63, SE = .06; t(179) = 21.86, p < .001, d = 1.63). Also, participants reported a higher amount of direct contact with 'Young heterosexual men' (M = 4.71, SE = .04) than with 'Elderly heterosexual men' (M = 4.11, SE = .08; t(179) = 7.41, p < .001, d = 0.55).

Figure 2

Participants' ratings of 'Young man' in the sexual orientation inference task (i.e., SO estimation) as a function of the amount of contact with 'Young gay men' in Study 2



Note. Sexual orientation estimation (i.e., SO estimation), ranging from 1 = *very gay* to 7 = *very heterosexual*. The shaded gray area represents the 95% confidence level for the regression line.

Moreover, participants' ratings on the two items assessing the amount of indirect contact with 'Elderly gay men' (r = .55, p < .001, 95% CI [0.43, 0.64]), 'Elderly heterosexual men' (r = .57, p < .001, 95% CI [0.46, 0.66]), 'Young gay men' (r = .40, p < .001, 95% CI [0.28, 0.52]), and 'Young heterosexual men' (r = .33, p < .001, 95% CI [0.19, 0.45]), were averaged, separately. Participants reported a higher amount of indirect contact with 'Young gay men' (M = 3.57, SE = .06) than with 'Elderly gay men' (M = 2.03, SE = .06; $t(178)$ = 22.88, p < .001, d = 1.71). Also, participants reported a higher amount of indirect contact with 'Young heterosexual men' (M = 4.54, SE = .05) than with 'Elderly heterosexual men' (M = 4.11, SE = .07; $t(180)$ = 6.42, p < .001, d = 0.48).

Table 4

Participants' ratings (i.e., Marginal mean) of Elderly man (upper side of the table) and of Young man (lower side of the table) as a function of the amount of contact with Elderly gay men and Young gay men, respectively

	Amount of contact	Marginal mean	*SE*	95% CI
Elderly gay men				
- 1 SD	1.18	5.94	0.14	[5.65, 6.22]
Mean	1.84	5.65	0.10	[5.46, 5.85]
+ 1 SD	2.49	5.37	0.14	[5.08, 5.65]
Young gay men				
- 1 SD	2.69	5.00	0.15	[4.70, 5.30]
Mean	3.46	4.71	0.10	[4.51, 4.92]
+ 1 SD	4.23	4.43	0.15	[4.13, 4.73]

Note. CI = confidence interval. *SE* = Standard error. -1 SD/+1SD indicate the amount of contact at 1 Standard Deviation below/above the mean.

As we intend to merge together participants' direct and indirect contact with each target group, separately, we tested the reliability of the four items pertaining to these measures: 'Elderly gay men': ω = .77; 'Elderly heterosexual men': ω = .75; 'Young gay men': ω = .69; and 'Young heterosexual men': ω = .63. Hence, direct and indirect contact were averaged into a single index of *amount of contact* for each target group.

In the sexual orientation inference task, participants' ratings of 'Elderly man' and 'Young man' were regressed on participants' amount of contact with 'Elderly gay men' and 'Elderly heterosexual men', 'Young gay men' and 'Young heterosexual men', separately (Table 3). Results indicated that higher levels of contact with 'Elderly gay men' were associated with a lower pointing of 'Elderly man' to 'heterosexual man', β = -0.44; t = 2.76, p = .007 (see Figure 1 and Table 4), and

that higher levels of contact with 'Young gay men' were associated with a lower pointing of 'Young man' to 'heterosexual man', β = -0.37; t = 2.63, p = .009 (see Figure 2 and Table 4).

In the age inference task, participants' ratings of 'Heterosexual man' and 'Gay man' were regressed on participants' amount of contact with 'Elderly heterosexual men' and 'Young heterosexual men', and 'Elderly gay men' and 'Young gay men', separately (Table 3). No significant result was found.

4. General Discussion

This research investigates the processes that can account for the invisibility of 'Elderly gay men' at the cognitive level. Confirming our predictions based on category default theories, 'Gay man' was thought of being young, and to a greater extent than 'Heterosexual man'. Likewise, 'Elderly man' was perceived as heterosexual, and to a greater extent than 'Young man'. As expected, irrelevant categories were processed as young and heterosexual by default, and were processed more similarly to normative categories (i.e., 'Heterosexual men' and 'Young men') than non-normative categories (i.e., 'Gay men' and 'Elderly men'). Both studies confirmed that participants made distinct age assumptions concerning the two sexual-orientation categories, and distinct sexual-orientation assumptions about the two age categories. In line with the theoretical framework of the *non-prototypicality*, the cognitive "invisibility" of 'Elderly gay men' is a byproduct of the narrow and non-inclusive conceptualization of 'Gay man' (prototyped as young) and 'Elderly man' (prototyped as heterosexual). These findings are consistent with studies suggesting that the stereotypes about older gay men (Bennett & Thompson, 1991) do not match the stereotypes of either of their constituent categories and older gay men are relegated to an atypical subtype within both the categories gay men and older men (Coladonato et al., 2022). The intersection of contrasting discrete categories (e.g., 'Gay man' and 'Elderly man') can be

represented by a "compound category", whose emergent attributes cannot be reduced to the sum of their constituent category attributes (Kunda et al., 1990; Roccas & Brewer, 2002).

Moreover, the results suggested that the non-normative category (e.g., 'Elderly men') was particularly likely to be combined with the normative intersecting category (e.g., 'Heterosexual men') rather than the non-normative category (e.g., 'Gay men'). This conjecture is in line with evidence suggesting that, for instance, 'Black people' are more likely to be processed as 'Men' rather than 'Women' (Galinsky et al., 2013).

Participants' amount of contact with both 'Elderly gay men' and 'Young gay men' reduced the heteronormative defaults in both age categories. By contrast, contact with 'Elderly gay men' and 'Elderly heterosexual men' did not weaken the young-as-default in the construal of either 'Gay man' or 'Heterosexual man'. Conjecturally, age categories might be more likely to be represented by exemplars perceivers encountered, while sexual orientation categories, and 'Gay man' in particular, more by abstract knowledge, alias, by prototype. Unusual encounters, such as those with 'Elderly gay men', may be isolated as atypical instances, and not generalize the age information to the category 'Gay man' (Carnaghi & Yzerbyt, 2007). Future studies can experimentally vary the frequency of encounters with elderly gay and young gay individuals and test their effects on the young-as-default of 'Gay man' as well as on the heteronormativity of 'Elderly man'.

It is worth noting that the hypotheses were tested by relying only on the category interpretation paradigm (Rosch et al., 1976). Although this paradigm has been largely employed to ascertain preferential representation (e.g., plastic *vs*. glass) of a given category (e.g., bottles), future studies may test the current hypotheses by comparing the attributes associated with discrete categories (e.g., 'Gay men') to those associated with intersectional categories (i.e., 'Young gay men', 'Elderly gay men'; Kunda et al., 1990; Preddie & Biernat, 2021). Such a limit has been addressed in Chapter 2.

These studies warn that labels such as 'Gay men' and 'Elderly men' convey non-inclusive representations, even unintentionally. Because such labels are considered neutral and non-offensive,

their use may incidentally normalize the cognitive invisibility of older gay men (Ng, 2007). Institutions may adopt two strategies to counteract the defaults. At the linguist level, more intersectional age- and sexuality-diverse language should be routinized in public communication. At the social level, broader age representation of gay men (e.g., through the media; Avila-Saavedra, 2009; Fejes, 2000) should be increased to weaken the heteronormativity of age categories (Rosenfeld, 2009). Together, these initiatives may strengthen the diversity perceived within both gay and older men.

CHAPTER 2

Age Stereotyping of Gay and Heterosexual Men: Why Does a Minority Sexual Orientation Blur the Age of Old Men, in Particular?

Coladonato R., Bianchi M., Case F., Carnaghi A. (2022). Age stereotyping of gay and heterosexual men: Why does a minority sexual orientation blur the age of old men, in particular? *European Journal of Social Psychology*, *52*(4), 611–625. https://doi.org/10.1002/ejsp.2841

1. Introduction

Social perceivers have to manage the complexity of their environment and try to simplify the overburden of information with which they are exposed. To achieve this goal, perceivers spontaneously rely on categorization (Brewer, 1988; Fiske & Neuberg, 1990; Macrae & Bodenhausen, 2000). Indeed, grouping individuals into specific classes leads perceivers to simplify the social context and gain access to a set of beliefs and expectations concerning the members of those categories (i.e., stereotypes; Ashmore & Del Boca, 1981; Brigham, 1971; McCauley et al., 1980). Consequently, perceivers are highly likely to consider such individuals not on the basis of their idiosyncratic characteristics, but on the basis of the category stereotypes (stereotype application; Gilbert & Hixon, 1991; Kunda & Spencer, 2003). Indeed, categorizing individuals in a given group leads perceivers to rely on category stereotypes to form impressions of these individuals, elicits biases that disadvantage these individuals, and likely promotes discrimination (Dovidio & Jones, 2019; Fiske & Neuberg, 1990; Tajfel et al., 1971).

The stereotyping activity is complicated by the fact that individuals display multiple categories at a time, such as, for example, age, gender, race, and sexual orientation. Previous research has demonstrated that when processing an individual simultaneously defined by two different categories (e.g., Asian women), contextual cues can selectively activate a given category (e.g., race) which then dominates the stereotyping of such an individual (Craig & Bodenhausen, 2018; Macrae et al., 1995).

Recently, research has begun to address how perceivers stereotype individuals defined by multiple categories when no selective category activation is triggered by contextual cues (Kang & Bodenhausen, 2015). Specifically, accumulated evidence has addressed the stereotyping of category combinations in which one of the categories is assumed to be the default, also referred to as "normality" or the expected value in a given context (Cheryan & Markus, 2020; Devos & Banaji,

2005; Smith & Zárate, 1992; Zárate & Smith, 1990). For instance, in the category combination of 'White women', the race category is the default, as women are prototypically represented as 'White'. As a consequence, the gender stereotyping of 'White women' is mainly driven by the gender category (Stroessner, 1996), as evidenced by the fact that the stereotypes of 'White women' overlap the stereotypes of women in general (Ghavami & Peplau, 2013; Goff et al., 2008). In a similar vein, 'Black men' are prototyped as heterosexuals by default (Carnaghi et al., 2020; Johnson & Ghavami, 2011; Stragà et al., 2020), and the racial stereotyping of heterosexual Black men seems to be similar to the racial stereotyping of Black men as a whole (Petsko & Bodenhausen, 2019a).

A different case is represented by the combination of two categories in which the two constituents are in contrast with each other. For example, Black people are prototyped as men by default and as heterosexual by default. Hence, 'Black women' and 'Black gay men' appear to be category combinations in which the constituents are at odds with each other (herewith referred to as conflicting intersectional category; Goff et al., 2008; Petsko & Bodenhausen, 2019a). This research demonstrated that race stereotyping of 'Black men' was erased when this category was combined with 'Gay men' (i.e., 'Black gay men' were characterized less as Black and more as White than 'Black men'; Petsko & Bodenhausen, 2019a). The gender stereotyping of 'Women' was blurred when this category intersected the category 'Black' (i.e., 'Black women' were characterized as more masculine and less attractive compared to 'White women'; Goff et al., 2008).

Thus far, the analysis of the stereotyping of conflicting intersectional categories has been limited in its investigation to the racial stereotyping of the inconsistent categories issued by the combination of ethnic and sexual orientation memberships (e.g., 'Black gay men'; Petsko & Bodenhausen, 2019a; see also Preddie & Biernat, 2021; Semrow et al., 2020), and the gender stereotyping of the intersection between ethnic and gender categories (e.g., 'Black women'; Goff et al., 2008; see also Chaney et al., 2020; Craig & Bodenhausen, 2018).

In the current research we extend these lines of investigation by analyzing the age stereotypes perceivers apply to men depending on the simultaneous combination of their age and their sexual orientation memberships. Previous studies have generally analyzed the stereotypes perceivers associated with the discrete categories of both 'Elderly men' and 'Young men', and showed that the former category is stereotyped as warmer (although not competent), less energetic, more demanding and stubborn, for example, than the latter category (Chasteen et al., 2002; Cuddy & Fiske, 2002; Fiske et al., 2002; Kite et al., 1991; Wright & Canetto, 2009). Yet no study thus far has addressed how age-related stereotypes apply to age categories when intersecting sexual orientation.

The current endeavor is guided by recent findings documenting that the discrete category of 'Elderly men', but not that of 'Young men', is prototyped as 'Heterosexual', and that the discrete category of 'Gay men', but not that of 'Heterosexual men', is prototyped as 'Young' (Carnaghi et al., 2022). Hence, it appears that 'Elderly gay men' could be overlooked when thinking of both 'Elderly men' (who are prototyped as heterosexual by default) and when thinking of 'Gay men' (who are prototyped as young by default). The defaulting processes operating on such discrete categories have likely contributed to leading perceivers in general, and policymakers and health care institutions to assume that old men were heterosexual by default, thus "erasing" the sexuality of 'Elderly gay men' (Cronin & King, 2010; Harrison, 2006; Kia et al., 2019). This claim has been further corroborated by experimental research showing that participants miscategorized pictures of the faces of old gay men, but not of young gay men, as heterosexual (Tskhay et al., 2016). An additional, as yet uninvestigated, consequence of the cognitive representation of the age and sexual orientation categories in question concerns the possibility that perceivers also "erase" age-related content when cognitively representing 'Elderly gay men'. We reasoned that the combination of 'Elderly men' and 'Gay men', namely two categories presumably in contrast with each other, would lead perceivers to blur the age stereotyping of such a unique category crossover: 'Elderly gay men' might turn out to be

characterized as younger and less old than both ‘Elderly men’ and ‘Elderly heterosexual men’. This hypothesis was tested in the current studies.

1.1 On the stereotyping of conflicting intersectional categories: a comparison of theoretical accounts

At least three alternative theoretical accounts could explain how perceivers apply the stereotypes to intersectional categories in general, and the age stereotypes to the conflicting intersectional category issued by the combination of ‘Elderly men’ and ‘Gay men’ in particular.

First, early works on social categorization claimed that perceivers assess the similarity between a set of exemplars and the prototype of a given category (i.e., the best example for that category; Rosch & Mervis, 1975). The similarity is an increasing function of features common to this set of exemplars and the prototype (Tversky, 1977). Research has shown that category stereotypes are less likely to apply to a category member(s) as the number of uncommon characteristics between that (those) member(s) and the category prototype increases (Brewer et al., 1981; Fiske & Neuberg, 1990; Nisbett et al., 1981). Given that ‘Elderly gay men’ displays an uncommon feature (i.e., sexual orientation) with the prototype ‘Elderly men’, the former may be less stereotyped on the typical traits of ‘Elderly men’. It is worth noting that similar expectations would be formulated not only for conflicting intersectional categories, but also for the category combination whose instances are not inconsistent with each other, such as ‘Elderly right-handed men’. In fact, any piece of additional information that is uncommon with ‘Elderly men’, and not only the category information that is at odds with ‘Elderly men’, could account for the diluted application of the stereotypes of ‘Elderly men’ to such a category combination.

Thus far, no study has verified these assumptions. In the current research we compared the age stereotyping of conflicting intersectional categories (i.e., Elderly gay men) to the age stereotyping of multiple, albeit not inconsistent categories (e.g., Elderly right-handed men). This model, herewith referred to as the *similarity model*, offers accurate predictions regarding the decreased attribution of

elderly-stereotypical traits to both ‘Elderly gay men’ and ‘Elderly right-handed men’ compared to ‘Elderly men’, but it is nearly silent on the prediction regarding the attribution of elderly counter-stereotypical traits to these target groups, namely young-stereotypical traits. Predictions regarding the attribution of both elderly and young-stereotypical traits to ‘Elderly gay men’ are put forward by two different models which are herewith referred to as the *stereotype-inconsistent model* and the *non-prototypicality model*.

Second, and according to the stereotype-inconsistent model, the manner in which perceivers stereotype a conflicting intersectional category is assumed to be a function of the stereotypes implied by each of the discrete categories (Beale, 1970; Craig & Bodenhausen, 2018; Freeman & Ambady, 2011; Petsko & Bodenhausen, 2019b). For instance, ‘Black men’ are stereotyped as virile and masculine, and these stereotypical characteristics are at odds with the stereotypes of ‘Gay men’ who are assumed to be feminine (Carnaghi et al., 2020; Stragà et al., 2020). Hence, the racial prototypicality of ‘Black gay men’ with respect to ‘Black men’ would be reduced by the fact that the stereotypes of ‘Gay men’ are inconsistent with the stereotypical representations of ‘Black men’. As a consequence, ‘Black gay men’ become “deracialized”, namely they are stereotyped less on Black-stereotypical traits than ‘Black men’ (Petsko & Bodenhausen, 2019a). Moreover, ‘Black men’ are believed to be particularly “poor” (Fiske et al., 2002), while ‘Gay men’ are stereotyped as having as high status as White people (Barrett & Pollack, 2005; Bettinsoli et al., 2022). Thus, and given the association of the stereotypes of ‘Gay men’ and ‘White people’, ‘Black gay men’ are “whitened”, namely they are stereotyped more on White-stereotypical traits than ‘Black men’ (Petsko & Bodenhausen, 2019a). Recasting the age stereotyping of ‘Elderly gay men’ within the stereotype-inconsistent model, research has acknowledged that ‘Elderly men’ are particularly stereotyped on traits associated with ‘Heterosexual men’, which clashes with the stereotypical implications of ‘Gay men’ (Carnaghi et al., 2022). Hence, ‘Elderly gay men’ should be stereotyped less on elderly-stereotypical traits compared to ‘Elderly men’. ‘Gay men’ are stereotyped on young-stereotypical

traits, which run against the stereotypical implications of 'Elderly men' (Carnaghi et al., 2022; Fejes, 2000; Jankowski et al., 2014; Saucier & Caron, 2008). Hence, and compared to 'Elderly men', 'Elderly gay men' should be stereotyped more on young-stereotypical traits which are implicated by the gay-as-young stereotype. In sum, and according to the predictions stemming from the stereotype-inconsistent model, 'Elderly gay men' should be "rejuvenated" compared to 'Elderly men'.

We reasoned that if the premises of the stereotype-inconsistent model were appropriate, similar predictions should be extended to intersectional categories involving 'Elderly men' and an inconsistent category whose stereotypes imply attributes related to 'Young men', such as 'Athlete men', as it did the category 'Gay men' (Hummert et al., 1994). Similar to 'Elderly gay men', 'Elderly athlete men' should be "rejuvenated", namely they should be stereotyped less on elderly-stereotypical traits and more on young-stereotypical traits compared to 'Elderly men'. Although testing for the above predictions is of fundamental importance in probing whether conflicting intersectional category stereotyping is indeed driven by the implications derived from the stereotypes of the discrete categories, no study based on these theoretical assumptions has addressed this issue to date.

Third, the manner in which perceivers stereotype a conflicting intersectional category is assumed to be a function of the "non-prototypical status" of such category combination. Indeed, conflicting intersectional categories are subtypes of their respective discrete categories (Purdie-Vaughns & Eibach, 2008). For instance, 'Elderly gay men' jointly possess a low prototypical status relative to both 'Elderly men' and 'Gay men' (Carnaghi et al., 2022). Research rooted in the social cognition demonstrated that atypical subtypes are weakly stereotyped on characteristics typical of the category and are more likely to display characteristics at odds with that category (Bodenhausen et al., 1995; Brewer et al., 1981; Carnaghi et al., 2022; Sherman, 1996). Given the claims of the non-prototypicality model, we expected that compared to 'Elderly men', 'Elderly gay men' would be less stereotyped on elderly-stereotypical traits and more stereotyped on counter-stereotypical traits,

namely young-stereotypical traits. If the non-prototypical status of ‘Elderly gay men’ accounted for the predicted findings, the pattern of the age stereotyping described above should be found for any category combination involving a category that is atypical of ‘Elderly men’ and that does not necessary imply young-related stereotypical content—as is the assertion of the stereotype-inconsistent model. For instance, ‘Atheist men’ appears to be inconsistent with ‘Elderly men’ and does not necessarily bring about the stereotypical content associated with ‘Young men’ (Hummert et al., 1994). Hence, ‘Elderly gay men’ as well as ‘Elderly atheist men’ constitute two atypical subtypes with respect to ‘Elderly men’. If the non-prototypical status of such subtypes per se accounted for the age stereotyping of such subtypes, the stereotype of ‘Elderly gay men’ should not differ from that of ‘Elderly atheist men’, and both ‘Elderly gay men’ and ‘Elderly atheist men’ should be stereotyped less on elderly-stereotypical traits and more on young-stereotypical traits compared to ‘Elderly men’.

2. Overview of Studies

In four studies we tested whether ‘Elderly gay men’ were stereotyped as less old and younger than ‘Elderly heterosexual men’ (Study 1) and ‘Elderly men’ (Studies 2–4). In Study 1, we ascertained whether such a pattern was found only when ‘Gay men’, but not ‘Heterosexual men’, was combined with ‘Elderly men’ and not when intersecting ‘Young men’. In Study 2, we further compared the age stereotyping of ‘Elderly gay men’ and ‘Young gay men’ to the age stereotyping of the two discrete categories respectively, namely ‘Elderly men’ and ‘Young men’. Study 3 more directly tested the predictions derived from the similarity model. The age stereotyping of ‘Elderly men’ was compared to that of ‘Elderly gay men’ and that of the category intersection between ‘Elderly men’ and an additional, albeit age-unrelated category, namely ‘Right-handed men’. Study 4 aimed at gathering preliminary evidence on the predictions issued by the stereotype-inconsistent and non-prototypicality model. We assessed and compared the age stereotyping of ‘Elderly men’ to that of ‘Elderly gay men’, and to that of ‘Elderly athlete men’ and ‘Elderly atheist men’. We relied on

these two latter category intersections as 'Athlete men' and 'Atheist men' are both inconsistent with 'Elderly men', and 'Athlete men' especially implied young-stereotypical content.

3. Methodological Information

The sample size for all the studies was based on a sensitivity power analysis using G*Power 3.1 statistical tool (Faul et al., 2007, 2009). Data analyses were conducted only when data collection was closed. We reported and detailed all the independent and dependent variables used in the current studies.

In all studies, we a priori decided to exclude from each experimental sample those participants who skipped the rating of one or more given target groups on one or both stereotypical dimensions (i.e., young- and elderly-stereotypical traits). Moreover, for missing values concerning participants' ratings pertaining to a specific stereotypical dimension, only those participants who rated at least 5 out of 10 traits of that dimension were retained in the analyses. The exclusion of participants is reported and discussed in each study (see Participants section).[1]

Data were collected online using the Qualtrics survey platform (Qualtrics, 2020). The on-line link to each of the studies was advertised on social media and instant messaging platforms by a student in charge of data collection. Data were analyzed using the JAMOVI statistical package (JAMOVI, 2020). To decrease the likelihood of a Type I error in the Post-hoc analyses, we set the significance level using the Bonferroni correction method: the *p* level was obtained by dividing the alpha (i.e., .05) by the number of the post-hoc comparisons performed in each of the four studies. The *p* values we report in each of the studies have not yet been adjusted (see Results sections). We report below only the results relevant to our hypotheses (see Supporting information for the full analyses).

[1] We *a priori* did not exclude sexual minority participants, in line with the prior research on a similar issue (e.g., Petsko and Bodenhausen, 2019a; Carnaghi et al. 2022). Analyses carried out on experimental samples that excluded such participants are reported in the Supporting information.

A secondary goal of this research was to continue to explore the role played by perceivers' direct contact with 'Elderly gay men' in the age stereotyping of this group. In Chapter 1, no relation was found between the contact with both 'Elderly gay men' and 'Young gay men' and the age interpretation of both 'Heterosexual man' and 'Gay man'. Given the precursory nature of these results, in Chapter 2 we tested the same hypotheses outlined in Chapter 1 by assessing the relationship between contact and the age stereotyping of the intersectional categories under analysis. The measures of direct contact are fully described in the procedure section of each of the studies, and the data concerning these measures are analyzed and discussed in a dedicated section.

4. Study 1

Study 1 aimed to test the premise of our theoretical efforts, that is the gay, but not the heterosexual, sexual orientation, in combination with the category of 'Elderly men', but not with the category of 'Young men', would constitute a case of conflicting intersectional category. Previous research demonstrated that 'heterosexual' is a default category for 'Elderly men', while 'Young men' are not prototyped in terms of sexual orientation (Carnaghi et al., 2022). Hence, we would expect that the sexual orientation category information would interfere more with the stereotyping of 'Elderly men' than 'Young men'. Specifically, we expected that compared to 'Elderly heterosexual men', 'Elderly gay men' should be stereotyped less on elderly-stereotypical traits, as predicted by the three theoretical models. Moreover, and as envisaged by the stereotype-inconsistent model and the non-prototypicality model, compared to 'Elderly heterosexual men', 'Elderly gay men' should be stereotyped more on young-stereotypical traits. Also, 'Elderly heterosexual men' would be stereotyped more on elderly- than on young-stereotypical traits. 'Young heterosexual men' and 'Young gay men' would show similar levels of age stereotyping, these being stereotyped more on young- than elderly-stereotypical traits.

4.1 Method

4.1.1 *Participants*

We recorded thirty-four clicks[2] on the link to the online survey which did not result in any

Table 1

Age, gender, sexual orientation, citizenship, native language of participants as a function of the Study (Studies 1- 4)

	STUDY 1	STUDY 2	STUDY 3	STUDY 4
Age				
Range	18 – 72	19 – 60	18 – 65	18 – 56
M	40.56	28.17	39.41	27.71
SE	1.89	0.78	1.41	0.69
Not reporting	1			
Gender				
Female	65	90	74	62
Male	22	28	50	40
Other			1	
Not reporting	5	1	1	1
Sexual orientation				
Heterosexual	81	99	109	96
Bisexual	5	10	9	2
Homosexual	1	7	2	2
Other		2	5	2
Not reporting	5	1	1	1
Citizenship				
Italian	89	115	122	102
Other than Italian	1	1	1	
Dual	1	2		1
Not reporting	1	1	3	
Native language				
Italian	87	114	121	101
Other than Italian	3	2		1
Dual	1	2	2	1
Not reporting	1	1	3	

Note. Values pertaining to the participant age are expressed in years.

[2] People who accessed the survey and agreed to participate but did not provide any rating on the dependent variables and who might have reported demographic characteristics only.

part of the survey being completed. One-hundred and two people participated in the study. Of these, N = 10 participants skipped the ratings on either the young-stereotypical traits or the elderly-stereotypical traits of one or more target groups. The final sample comprised N = 92 participants (see Table 1 for detailed demographic characteristics).

A sensitivity power analysis with α = .05, 1 − β = .80, and N = 92, indicated a minimal detectable effect (MDE) size Cohen's f = .12. Hence, the smallest effect size which we would be able to detect (at 80% power) with this sample size falls within the small-effect size area (Cohen, 1988).

4.1.2 *Materials and procedure*

In line with the procedures outlined by previous studies on stereotyping (Carnaghi et al., 2020; Petsko & Bodenhausen, 2019a), participants were briefed that they would be presented with different social

Table 2

List of young- and elderly-stereotypical traits used in Studies 1-4

Elderly-stereotypical traits	Young-stereotypical traits
Positive traits	*Positive traits*
Balanced (Equilibrato)	Energetic (Energico)
Wise (Saggio)	Adventurous (Avventuroso)
Patient (Paziente)	Carefree (Spensierato)
Cautious (Prudente)	Curious (Curioso)
Practical (Concreto)	Flexible (Flessibile)
Negative traits	*Negative traits*
Forgetful (Smemorato)	Reckless (Imprudente)
Tired (Affaticato)	Rebellious (Ribelle)
Shabby (Trascurato)	Disrespectful (Irrispettoso)
Inflexible (Inflessibile)	Irresponsible (Impulsivo)
Lonely (Solitario)	Impatient (Impaziente)

Note. The Italian translation of each trait is provided between brackets.

groups and asked to think about how society in general represented each of these groups. After having consented to take part in the experiment, participants were presented with the following labels pertaining to four target groups, one at a time: 'Young heterosexual men' (in Italian: *giovani eterosessuali*), 'Elderly heterosexual men' (in Italian: *anziani eterosessuali*), 'Young gay men' (in Italian: *giovani omosessuali*), and 'Elderly gay men' (in Italian: *anziani omosessuali*). All four target group labels were presented in Italian and in the masculine plural form. The order of the presentation of the target groups was randomized across participants. Each target group was presented along with 20 traits. Ten traits were stereotypical of young men and ten traits were stereotypical of elderly men (see Table 2 for all traits). Traits were selected on the basis of past research relevant to the scope of the current study and translated to Italian (Carnaghi et al., 2022; Chasteen et al., 2002; Wright & Canetto, 2009). The presentation order of all 20 traits was randomized across participants. Participants indicated the extent to which each trait was typical of the target group in question by means of a 7-point scale, ranging from 1 (*not at all typical*) to 7 (*very much typical*).

Then, participants' amount of direct intergroup contact with 'Young heterosexual men', 'Elderly heterosexual men', 'Young gay men' and 'Elderly gay men' as the target groups was measured. Specifically, for each target, participants were presented with two items from Shamloo et al. (2018; adapted from Voci & Hewstone, 2003):

- "How many [target group] do you know?" (*None-More than ten*),
- "How frequently do you have contact with [target group]?" (*Never-Very frequently*).

All answers were given on a five-point scale. The order of presentation of the target groups was randomized across participants.

At the end of the questionnaire, participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

4.2 Results

Participants' ratings on the ten young-stereotypical traits had good reliability with regard to the four target groups ('Young heterosexual men': ω = .86; 'Elderly heterosexual men': ω = .77; 'Young gay men': ω = .86; and 'Elderly gay men': ω = .84). Also, participants' ratings of elderly-stereotypical traits had good reliability across target groups ('Young heterosexual men': ω = .71; 'Elderly heterosexual men': ω = .77; 'Young gay men': ω = .79; 'Elderly gay men': ω = .78).

Participants' ratings on young-stereotypical traits and elderly-stereotypical traits were averaged separately and for all target groups. Participants' ratings were analyzed by means of a 2 (target group age: young men vs. elderly men) × 2 (target group sexual orientation: heterosexual vs. gay) × 2 (traits: young-stereotypical traits vs. elderly- stereotypical traits) ANOVA, with all variables as within-participants factors[3]. For the complete results see Supporting information.

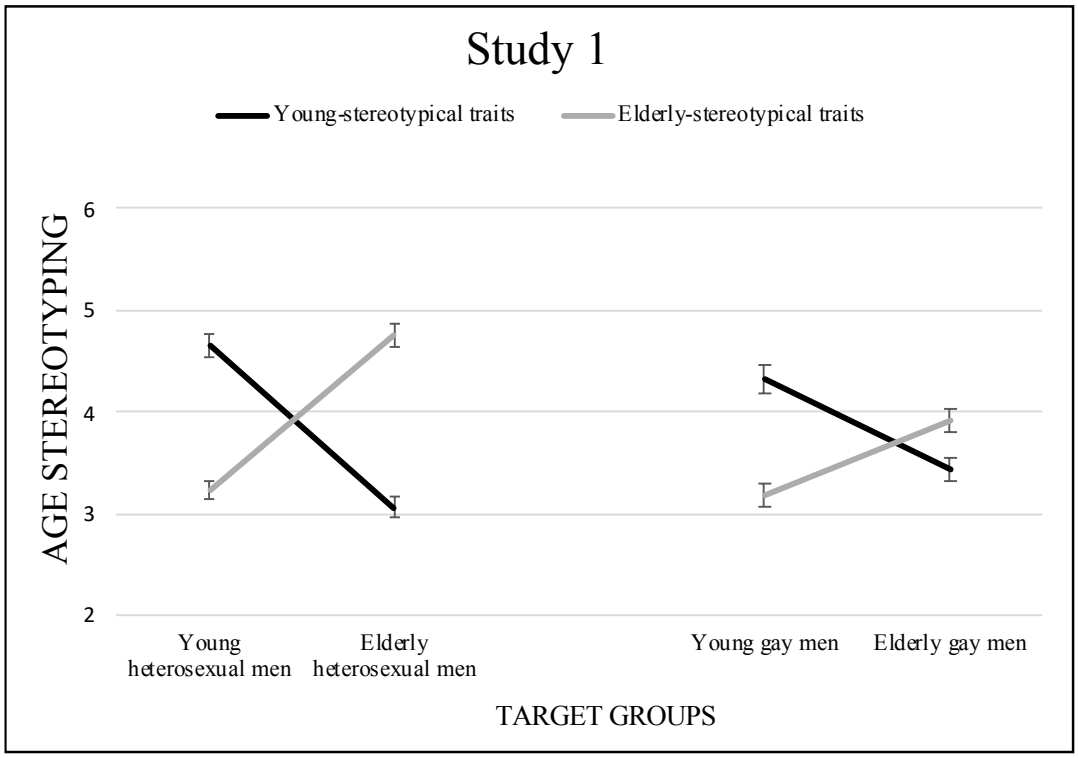
Relevant to our hypothesis, the three-way interaction was significant, $F(1, 91) = 47.91$, $p < .001$, $\eta^2_p = .34$ (see Figure 1). Post-hoc comparisons were carried out and marginal means are reported. As eight post-hoc comparisons were performed, the p level was set at .006 (i.e., .05/8, Bonferroni correction); the reported p values have not yet been adjusted. Compared to 'Elderly heterosexual men' (M = 4.47, SE = .10), participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' (M = 3.73, SE = .11; $t(91) = 6.88$, $p < .001$). Also, and compared to 'Elderly heterosexual men' (M = 2.96, SE = .10), participants attributed more young-stereotypical traits to 'Elderly gay men' (M = 3.29, SE = .11; $t(91) = 2.92$, $p = .004$). Participants characterized 'Elderly heterosexual men' more by elderly-stereotypical traits than young-stereotypical traits, $t(91) = 12.15$, $p < .001$. 'Elderly gay men' were characterized more by elderly-stereotypical traits than young-

[3] Following the suggestion made by Reviewer 1, we ascertained whether the above-pattern of results was independent from the valence of traits (see Table 2 for the list of positive and negative elderly- and young-stereotypical traits). Participants' ratings were then analyzed by means of a 2 (target group age: young men vs. elderly men) × 2 (target group sexual orientation: heterosexual vs. gay) × 2 (traits: young-stereotypical traits vs. elderly- stereotypical traits) x 2 (trait valence: positive vs. negative) ANOVA. The target group age x target group sexual orientation x traits interaction was significant as in the original analysis, $F(1, 91) = 47.89$, $p < .001$, $\eta^2_p = .34$. Importantly, this pattern of results was not modified by the trait valence, as indicated by the non-significant four-ways interaction, $F(1, 91) = 1.20$, $p = .276$, $\eta^2_p = .01$. Analyses are available in the OSF folder.

stereotypical traits, $t(91) = 3.08$, $p = .003$. In sum, both 'Elderly heterosexual men' and 'Elderly gay

Figure 1

Participants' ratings on young- and elderly-stereotypical traits as a function of the target group age, target group sexual orientation and traits in Study 1



Note. Error bars represent standard errors of the means.

men' were characterized as elderly men, but 'Elderly gay men' were stereotyped as less old and younger than 'Elderly heterosexual men'.

Moreover, participants equally attributed elderly-stereotypical traits to both 'Young heterosexual men' ($M = 3.12$, $SE = .08$) and 'Young gay men' ($M = 3.07$, $SE = .10$; $t(91) = 0.548$, $p = 1.000$), and equally attributed young-stereotypical traits to both 'Young heterosexual men' ($M = 4.39$, $SE = .11$) and 'Young gay men' ($M = 4.10$, $SE = .12$; $t(91) = 2.48$, $p = .015$). Also, 'Young heterosexual men' were characterized more by young-stereotypical traits than elderly-stereotypical traits, $t(91) = 9.98$, $p < .001$ as well as 'Young gay men' were stereotyped more by young- than

elderly-stereotypical traits, $t(91) = 7.25$, $p < .001$. Hence, both 'Young gay men' and 'Young heterosexual men' were, to a similar extent, stereotyped more as young than as elderly men.

4.2.1 *Amount of contact*

Participants' ratings on the two items assessing the quantity of contact with 'Young heterosexual men' ($r = .59$, $p < .001$, 95% CI [0.44, 0.71]), 'Elderly heterosexual men' ($r = .59$, $p < .001$, 95% CI [0.44, 0.71]), 'Young gay men' ($r = .62$, $p < .001$, 95% CI [0.47, 0.73]), and 'Elderly gay men' ($r = .70$, $p < .001$, 95% CI [0.58, 0.79]), were averaged, separately. Participants reported a higher amount of contact with 'Young heterosexual men' ($M = 4.53$, $SE = .08$) than with 'Elderly heterosexual men' ($M = 4.19$, $SE = .10$; $t(91) = 4.42$, $p < .001$, $d = 0.46$). Also, participants reported a higher amount of contact with 'Young gay men' ($M = 2.55$, $SE = .11$) than with 'Elderly gay men' ($M = 1.41$, $SE = .06$; $t(91) = 10.62$, $p < .001$, $d = 1.11$). No significant correlation was found between the amount of contact with 'Young heterosexual men' and both the attribution of young- ($r = -.08$, $p = .466$, 95% CI [-0.28, 0.13]) and elderly-stereotypical traits ($r = -.01$, $p = .896$, 95% CI [-0.22, 0.19]) to this target group. Similarly, no significant correlation was found between the amount of contact with 'Elderly heterosexual men' and the attribution of both young- ($r = -.01$, $p = .955$, 95% CI [-0.21, 0.20]) and elderly-stereotypical traits ($r = .13$, $p = .218$, 95% CI [-0.08, 0.33]) to this target group. No significant correlation was found between the amount of contact with 'Young gay men' and the attribution of both young- ($r = -.07$, $p = .507$, 95% CI [-0.27, 0.14]) and elderly-stereotypical traits ($r = -.19$, $p = .064$, 95% CI [-0.38, 0.01]) to this target group. No significant correlation was found between the amount of contact with 'Elderly gay men' and the attribution of both young- ($r = -.07$, $p = .499$, 95% CI [-0.27, 0.14]) and elderly-stereotypical traits ($r = -.17$, $p = .108$, 95% CI [-0.36, 0.04]) to this target group.

4.3 Discussion

The results from Study 1 showed that the gay, but not the heterosexual, sexual orientation affected the age stereotyping of elderly target groups, but not that of young target groups. Specifically,

‘Elderly heterosexual men’ were characterized more as elderly than young. ‘Elderly gay men’ were characterized as less elderly than ‘Elderly heterosexual men’, as predicted by the three models. Moreover, ‘Elderly gay men’ were stereotyped as younger than ‘Elderly heterosexual men’ as more specifically predicted by the stereotype-inconsistent and non-prototypicality model. By contrast, the age stereotyping of ‘Young heterosexual men’ and ‘Young gay men’ did not differ from each other and these target groups were both stereotyped more on young- than elderly-stereotypical traits.

These patterns of results indicated that the gay, and not the heterosexual, sexual orientation category, especially in combination with the category of ‘Elderly men’, and not with the category of ‘Young men’, is highly likely to constitute a conflicting intersectional category. Moreover, these results provide preliminary evidence attesting that the stereotype-inconsistent model and the non-prototypicality model could provide a more parsimonious account for the stereotyping of ‘Elderly gay men’ than the similarity model.

5. Study 2

Study 2 was designed to further compare predictions derived from the similarity model to those derived from both the stereotype-inconsistent model and the non-prototypicality model. To attain this aim, and differently from Study 1, we compared the age stereotyping of ‘Elderly gay men’ and ‘Young gay men’ to the age stereotyping of the two discrete categories respectively, namely ‘Elderly men’ and ‘Young men’.

According to both the stereotype-inconsistent model and the non-prototypicality model, the gay sexual orientation information would dramatically affect the age stereotyping of ‘Elderly men’ but not that of ‘Young men’, albeit for different reasons. While ‘Elderly gay men’ would be stereotyped less on elderly- and more on young-stereotypical traits than ‘Elderly men’, ‘Young gay men’ would still be characterized more on young- than on elderly-stereotypical traits. By contrast, as discussed in the introduction, the similarity model would provide an analogous account for the

stereotyping of conflicting intersectional categories as well as category combinations whose constituents are not in conflict with each other. As both 'Elderly gay men' and 'Young gay men' shared an uncommon feature with 'Elderly men' and 'Young men' respectively, the stereotypes associated with the discrete categories would be less applied to the more specialized subsets, namely 'Elderly gay men' and 'Young gay men'. Hence, 'Elderly gay men' should be stereotyped less than 'Elderly men' on the elderly-stereotypical traits, while 'Young gay men' should be less stereotyped than 'Young men' on the young-stereotypical traits.

5.1 Method

5.1.1 *Participants*

We recorded sixty-seven clicks[4] on the link to the online survey which did not result in any part of the survey being completed. One-hundred and thirty-six people participated in the study. Of these, $N = 16$ participants skipped the ratings on either the young-stereotypical traits or the elderly-stereotypical traits of one or more target groups. Furthermore, $N = 1$ rated less than 5 out of 10 traits of the young-stereotypical dimension of a given target group. The participant was excluded from the experimental sample. The final sample comprised $N = 119$ participants (see Table 1 for detailed demographic characteristics).

A sensitivity power analysis, with $\alpha = .05$, $1 - \beta = .80$, and $N = 119$, indicated a minimal detectable effect (MDE) size Cohen's $f = .11$. Hence, the smallest effect size which we would be able to detect (at 80% power) with this sample size falls within the small-effect size area (Cohen, 1988).

5.1.2 *Materials and procedure*

The experimental procedures were identical to those from Study 1. All participants were presented with the following labels concerning four target groups one at a time: 'Young men' (in Italian: *giovani*), 'Elderly men' (in Italian: *anziani*), 'Young gay men' (in Italian: *giovani*

[4] People who accessed the survey and agreed to participate but did not provide any rating on the dependent variables and who might have reported demographic characteristics only.

omosessuali), and 'Elderly gay men' (in Italian: *anziani omosessuali*). All four target group labels were presented in the masculine plural form, and their order of presentation was randomized across participants. Participants' age stereotyping of the target groups was assessed as in Study 1. Also, participants' amount of intergroup contact with 'Young gay men' and 'Elderly gay men' were measured as in Study 1.

At the end of the questionnaire, participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

5.2 Results

Participants' ratings on the ten young-stereotypical traits had good reliability with regard to the four target groups ('Young men': ω = .74; 'Elderly men': ω = .75; 'Young gay men': ω = .79; and 'Elderly gay men': ω = .82). Also, participants' ratings of elderly-stereotypical traits had good reliability across target groups ('Young men': ω = .65; 'Elderly men': ω = .65; 'Young gay men': ω = .73; 'Elderly gay men': ω = .79).

Participants' ratings on young-stereotypical traits and elderly-stereotypical traits were averaged separately and for all target groups. Participants' ratings were analyzed by means of a 2 (target group age: young men vs. elderly men) × 2 (target group sexual orientation: gay vs. no info) × 2 (traits: young-stereotypical traits vs. elderly- stereotypical traits) ANOVA, with all variables as a within-participants factor[5]. For the complete results of this study see Supporting information.

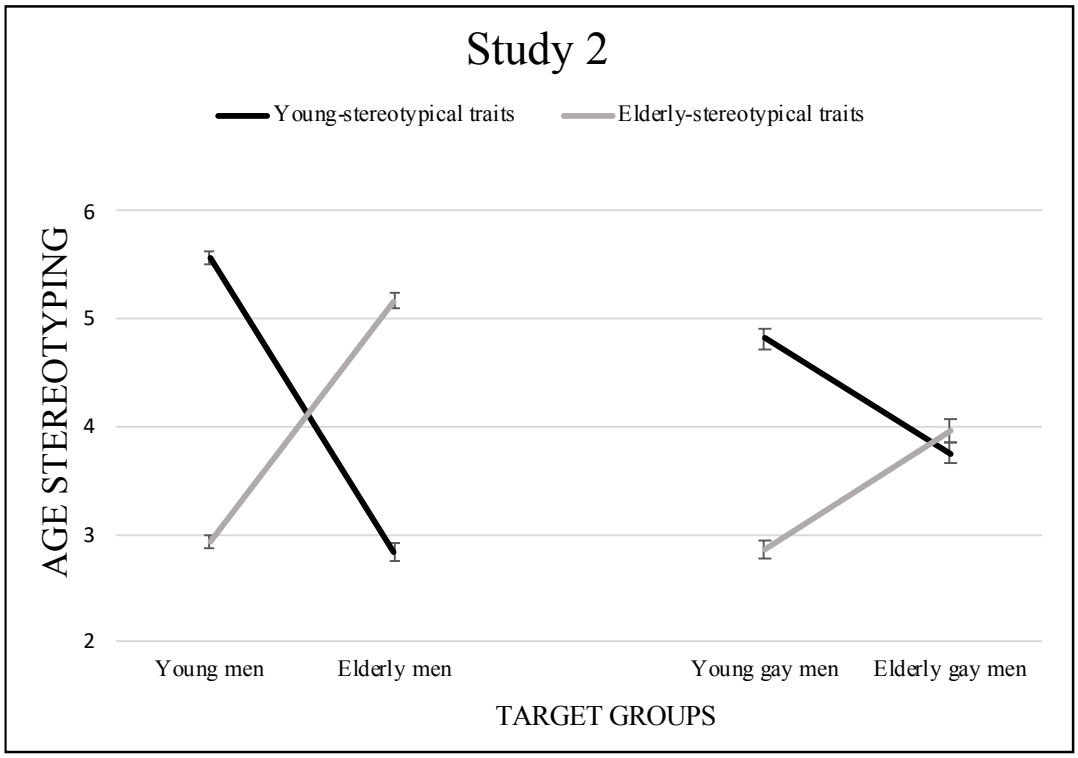
The three-way interaction was significant, $F(1, 118) = 185.53$, $p < .001$, $\eta^2_p = .61$ (see Figure 2). Post-hoc comparisons were carried out and marginal means are reported. As in Study 1, eight

[5] Following the suggestion made by Reviewer 1, we ascertained whether the above-pattern of results was independent from the valence of traits (see Table 2 for the list of positive and negative elderly- and young-stereotypical traits). Participants' ratings were then analyzed by means of a 2 (target group age: young men vs. elderly men) × 2 (target group sexual orientation: gay vs. no info) × 2 (traits: young-stereotypical traits vs. elderly- stereotypical traits) x 2 (traits valence: positive vs. negative) ANOVA. The target group age x target group sexual orientation x traits interaction was significant as in the original analysis, $F(1, 118) = 182.56$, $p < .001$, $\eta^2_p = .61$. Importantly, this pattern of results was not modified by the trait valence, as indicated by the non-significant four-ways interaction, $F(1, 118) = 2.46$, $p = .120$, $\eta^2_p = .02$. Analyses are available in the OSF folder.

post-hoc comparisons were performed and the *p* level was set at .006 (i.e., .05/8, Bonferroni

Figure 2

Participants' ratings on young- and elderly-stereotypical traits as a function of the target group age, target group sexual orientation and traits in Study 2



Note. Error bars represent standard errors of the means.

correction). The reported *p* values have not yet been adjusted. Compared to 'Elderly men' ($M = 4.85$, $SE = .06$), participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' ($M = 3.76$, $SE = .09$; $t(118) = 11.89$, $p < .001$). Also, and with respect to 'Elderly men' ($M = 2.75$, $SE = .07$), participants attributed more young-stereotypical traits to 'Elderly gay men' ($M = 3.58$, $SE = .09$; $t(118) = 8.82$, $p < .001$). Participants characterized 'Elderly men' more by elderly-stereotypical traits than young-stereotypical traits, $t(118) = 19.48$, $p < .001$. Also, both elderly- and young-stereotypical traits were equally attributed to 'Elderly gay men', $t(118) = 1.54$, $p = .126$. Hence, 'Elderly men'

were characterized as elderly men, and this was not the case for 'Elderly gay men' who were stereotyped as less old and younger than 'Elderly men'.

Moreover, participants equally attributed elderly-stereotypical traits to both 'Young men' and 'Young gay men' (M = 2.77, SE = .07; $t(118)$ = 1.08, p = .282), but attributed fewer young-stereotypical traits to 'Young gay men' (M = 4.54, SE = .08) than to 'Young men', $t(118)$ = 8.53, p < .001. 'Young men' were characterized more by young-stereotypical traits (M = 5.21, SE = .06) than elderly-stereotypical traits (M = 2.84, SE = .06; $t(118)$ = 26.38, p < .001). Also, 'Young gay men' were stereotyped more by young- than elderly-stereotypical traits, $t(118)$ = 17.10, p < .001. Hence, 'Young men' and 'Young gay men' were stereotyped more as young than as elderly, although the attribution of young-stereotypical traits to 'Young men' was stronger than the attribution of these traits to 'Young gay men'.

5.2.1 *Amount of contact*

Participants' ratings on the two items assessing the quantity of contact with 'Young gay men' (r = .62, p < .001, 95% CI [0.49, 0.72]) and 'Elderly gay men' (r = .75, p < .001, 95% CI [0.66, 0.82]) were averaged, separately. Participants reported a higher amount of contact with 'Young gay men' (M = 3.03, SE = .09) than with 'Elderly gay men' (M = 1.38, SE = .06; $t(118)$ = 19.48, p < .001, d = 1.79). No significant correlation was found between the amount of contact with 'Young gay men' and both the attribution of young- (r = .08, p = .399, 95% CI [-0.10, 0.25]) and elderly-stereotypical traits (r = .10, p = .303, 95% CI [-0.09, 0.27]) to this target group. Similarly, no significant correlation was found between the amount of contact with 'Elderly gay men' and the attribution of both young- (r = -.11, p = .223, 95% CI [-0.29, 0.07]) and elderly-stereotypical traits (r = -.01, p = .917, 95% CI [-0.19, 0.17]) to this target group.

5.3 Discussion

The results from Study 2 suggest that 'Elderly gay men' were characterized more by young- and less by elderly-stereotypical traits than 'Elderly men'. By contrast, 'Young gay men' were less characterized by young traits compared to 'Young men', while no difference occurred in terms of the attribution of elderly-stereotypical traits to both 'Young gay men' and 'Young men'. This pattern of results corroborates the claim based on Study 1 that the gay sexual orientation information concerning young and elderly men played a different role in the age stereotyping of such categories. In the case of 'Young gay men', it appears that the information regarding homosexuality enhanced the dissimilarity between this target group and the prototype of 'Young men', thus decreasing but not modifying the age stereotyping of 'Young gay men' compared to 'Young men'. This pattern of results seemed to be in line with the prediction made by the similarity model. On the contrary, the age stereotyping of 'Elderly gay men' appears to fit the hypotheses derived from both the stereotype-inconsistent model and the non-prototypicality model.

These findings suggest that the stereotyping of conflicting intersectional categories is predicted by both the stereotype-inconsistent model and the non-prototypicality model, while the predictions stemming from the similarity model do not apply to conflicting intersectional categories, as in the case of 'Elderly gay men', but may involve the stereotyping of a non-conflicting category combination such as 'Young gay men'.

6. Study 3

In Study 3 we compared the age stereotyping of 'Elderly men', 'Elderly gay men', and 'Elderly right-handed men' (in Italian: *destrimani*). We decided to rely on 'Right-handed men', as this category information is highly likely to be non-diagnostic, irrelevant to and not conflicting with the age categories (see Carnaghi et al., 2022). If the similarity model accounts for the age stereotyping of 'Elderly right-handed men', then we should find that 'Elderly right-handed men' were less stereotyped on elderly-stereotypical traits than 'Elderly men', but equally stereotyped on young-

stereotypical traits. Also, 'Elderly right-handed men' would be stereotyped more on elderly-stereotypical traits than young-stereotypical traits.

In sharp contrast, we expected that 'Elderly gay men' would be stereotyped less on elderly- and more on young-stereotypical traits compared to both 'Elderly men'—as in Study 2—and 'Elderly right-handed men'. If this were the case, the predictions of the similarity model would be limited to non-conflicting category combinations only, while the age stereotyping of conflicting intersectional categories would be better predicted by both the stereotype-inconsistent model and the non-prototypicality model.

6.1 Method

6.1.1 *Participants*

We recorded twenty-three clicks[6] on the link to the online sur- vey which did not result in any part of the survey being completed. One-hundred and fifty-nine people participated in the study. Of these, $N = 32$ participants skipped the ratings on either the young-stereotypical traits or the elderly-stereotypical traits of one or more target groups. Furthermore, $N = 1$ rated fewer than 5 out of 10 traits of the young-stereotypical dimension and on the elderly-stereotypical dimension of a given target group. The final sample comprised $N = 126$ participants (see Table 1 for detailed demographic characteristics).

A sensitivity power analysis (ANOVA: repeated measures, within factors), with $\alpha = .05$, $1 - \beta = .80$, $N = 126$, indicated a minimal detectable effect (MDE) size Cohen's $f = .11$. Hence, the smallest effect size which we would be able to detect (at 80% power) with this sample size falls within the small-effect size area (Cohen, 1988).

6.1.2 *Materials and procedure*

[6] People who accessed the survey and agreed to participate but did not provide any rating on the dependent variables and who might have reported demographic characteristics only.

The experimental procedures were identical to those of Studies 1 and 2 except for the target group labels. In this experiment participants were presented with the labels of three target groups, one at a time: 'Elderly men' (in Italian: *anziani*), 'Elderly gay men' (in Italian: *anziani omosessuali*), and 'Elderly right-handed men' (in Italian: *anziani destrimani*). All three target group labels were presented in the masculine plural form, and their order of presentation was randomized across participants. Participants rated each target group on the 20 traits as in Studies 1 and 2. Also, participants' amount of intergroup contact with 'Elderly gay men' and 'Elderly right-handed men' target groups was measured with the same items used in Studies 1 and 2. At the end of the questionnaire, participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

6.2 Results

Participants' ratings on the ten young-stereotypical traits had good reliability with regard to the four target groups ('Elderly men': ω = .80; 'Elderly gay men': ω = .84; and 'Elderly right-handed men': ω = .87). Also, participants' ratings of elderly-stereotypical traits had good reliability across target groups ('Elderly men': ω = .75; 'Elderly gay men': ω = .83; 'Elderly right-handed men': ω = .84).

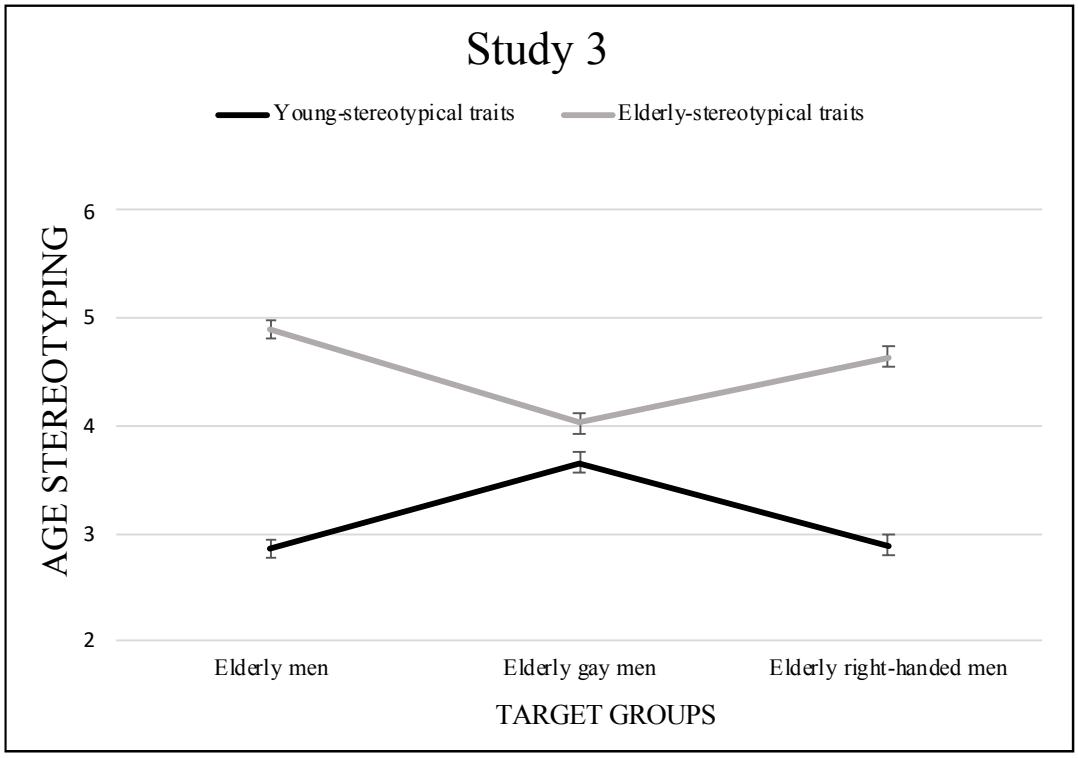
Participants' ratings on young-stereotypical traits and elderly-stereotypical traits were averaged separately and for all target groups. Participants' ratings were analyzed by means of a 3 (target group information: no info vs. gay vs. irrelevant) × 2 (traits: young-stereotypical traits vs. elderly-stereotypical traits) ANOVA, with all variables as within-participants factors[7]. For the complete results of this study see Supporting information. The predicted interaction between target

[7] Following the suggestion made by Reviewer 1, we ascertained whether the above-pattern of results was independent from the valence of traits (see Table 2 for the list of positive and negative elderly- and young-stereotypical traits). Participants' ratings were then analyzed by means of a 3 (target group information: no info vs. gay vs. irrelevant) × 2 (traits: young-stereotypical traits vs. elderly-stereotypical traits) x 2 (traits valence: positive vs. negative) ANOVA. The target group information x traits interaction was significant as in the original analysis, $F(2, 250) = 93.33$, $p < .001$, $\eta^2_p = .43$. Importantly, this pattern of results was not modified by the trait valence, as indicated by the non-significant three-way interaction, $F(2, 250) = 2.22$, $p = .111$, $\eta^2_p = .02$. Analyses are available in the OSF folder.

group information and traits was statistically significant, $F(2, 250) = 92.61$, $p < .001$, $\eta^2_p = .43$ (see Figure 3). Post-hoc comparisons were carried out and marginal means are reported. As nine post-hoc comparisons were performed, the p level was set at < .006 (i.e., .05/9 = .0055, Bonferroni correction)

Figure 3

Participants' ratings on young- and elderly-stereotypical traits as a function of the target group information and traits in Study 3



Note. Error bars represent standard errors of the means.

and the reported p values have not yet been adjusted. Compared to 'Elderly men' ($M = 4.61$, $SE = .07$), participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' ($M = 3.82$, $SE = .09$; $t(125) = 9.44$, $p < .001$). Also, and with respect to 'Elderly men', participants attributed fewer elderly-stereotypical traits to 'Elderly right-handed men' ($M = 4.38$, $SE = .09$; $t(125) = 3.06$, $p = .003$). Moreover, participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' compared to 'Elderly right-handed men', $t(125) = 7.35$, $p < .001$.

Compared to 'Elderly men' (M = 2.77, SE = .08), participants attributed more young-stereotypical traits to 'Elderly gay men' (M = 3.49, SE = .09; $t(125) = 9.85$, $p < .001$). By contrast, participants equally attributed young-stereotypical traits to both 'Elderly men' and 'Elderly right-handed men' (M = 2.80, SE = .08; $t(125) = 0.66$, $p = .508$). Participants attributed more young-stereotypical traits to 'Elderly gay men' compared to 'Elderly right-handed men', $t(125) = 8.96$, $p < .001$.

Participants characterized 'Elderly men' more by elderly-stereotypical traits than young-stereotypical traits, $t(125) = 16.50$, $p < .001$. Participants equally attributed both elderly- and young-stereotypical traits to 'Elderly gay men', $t(125) = 2.56$, $p = .012$. Participants characterized 'Elderly right-handed men' more by elderly- stereotypical traits than young-stereotypical traits, $t(125) = 14.22$, $p < .001$.

6.2.1 *Amount of contact*

Participants' ratings on the two items assessing the quantity of contact with 'Elderly gay men' (r = .75, $p < .001$, 95% CI [0.66, 0.82]) and 'Elderly right-handed men' (r = .58, $p < .001$, 95% CI [0.45, 0.68]) were averaged, separately. Participants reported a higher amount of contact with 'Elderly right-handed men' (M = 3.74, SE = .10) than with 'Elderly gay men' (M = 1.40, SE = .05; $t(125) = 21.88$, $p < .001$, d = 1.95). No significant correlation was found between the amount of contact with 'Elderly gay men' and both the attribution of young- (r = .10, p = .278, 95% CI [-0.08, 0.27]) and elderly-stereotypical traits (r = -.09, p = .327, 95% CI [-0.26, 0.09]) to this group. Similarly, no significant correlation was found between the amount of contact with 'Elderly right-handed men' and both the attribution of young-stereotypical traits (r = -.04, p = .647, 95% CI [-0.21, 0.13]) and elderly-stereotypical traits (r = .03, p = .770, 95% CI [-0.15, 0.20]) to this target group.

6.3 Discussion

The results of Study 3 showed that 'Elderly right-handed men' were less characterized by elderly traits compared to 'Elderly men', while no difference occurred in terms of attribution of

young-stereotypical traits to both ‘Elderly right-handed men’ and ‘Elderly men’. This pattern of stereotyping is consistent with the idea that the right-handedness information concerning the elderly men decreased the similarity between this target group and the prototype of ‘Elderly men’, thus lessening but not modifying the age stereotyping of ‘Elderly right-handed men’ compared to ‘Elderly men’. Replicating the results of Study 2, ‘Elderly gay men’ were characterized more by young- and less by elderly-stereotypical traits than ‘Elderly men’. Importantly, ‘Elderly gay men’ were characterized more by young- and less by elderly-stereotypical traits than ‘Elderly right-handed men’.

Together, these results suggest that a similarity-based mechanism could account for the age stereotyping of ‘Elderly right-handed men’ but not of ‘Elderly gay men’, whose observed stereotyping was in line with the predictions of both the stereotype-inconsistent model and the non-prototypicality model. Said otherwise, the similarity model appears to be effective in accounting for the stereotyping of category combinations not at odds with each other, while the predictions of the stereotype-inconsistent model and the non-prototypicality model seem to better fit the stereotyping of conflicting intersectional categories.

7. Study 4

In Study 4 we furthered our understanding of the underpinnings of the age stereotyping of ‘Elderly gay men’ by testing the predictions of the stereotype-inconsistent model and the predictions stemming from the non-prototypicality model. To attain this aim, the age stereotyping of ‘Elderly gay men’ was compared to the age stereotyping of the conflicting intersectional category resulting from the combination of ‘Elderly men’ with a category that was inconsistent with ‘Elderly men’. More specifically, we relied on two different inconsistent categories, namely ‘Athlete men’ and ‘Atheist men’. Both categories were inconsistent with the category of ‘Elderly men’, who are assumed to be feeble/sedentary as well as religious (Carnaghi et al., 2022; Hummert et al., 1994). Importantly, while ‘Athlete men’ implied young-related traits, this was less the case for the ‘Atheist men’ category. This

claim was corroborated in a follow-up study (see Supporting information) showing that the category 'Athlete men' was stereotyped more by young- than elderly-stereotypical traits, while 'Atheist men' was equally stereotyped on both young- and elderly-stereotypical traits. Also, 'Athlete men' were stereotyped more on young-stereotypical traits than 'Atheist men', while both 'Athlete men' and 'Atheist men' displayed a similar level of stereotyping on elderly-stereotypical traits. In sum, 'Athlete men' is highly likely to bring about the stereotypical content associated with 'Young men', while 'Atheist men' does not appear to convey specific age-related stereotypical content.

According to the stereotype-inconsistent model, both 'Elderly gay men' and 'Elderly athlete men', but not 'Elderly atheist men', should be "rejuvenated" compared to 'Elderly men'. Since 'Gay men' and 'Athlete men' are at odds with 'Elderly men', and because their stereotypes involved young-stereotypical traits, 'Elderly gay men' and 'Elderly athlete men' should be stereotyped less on elderly-stereotypical traits and more on young-stereotypical traits compared to 'Elderly men'. Alternatively, and in line with the non-prototypicality model, 'Elderly gay men', 'Elderly athlete men', and 'Elderly atheist men' were all atypical subtypes with respect to the prototype of 'Elderly men', and they would then be stereotyped less on elderly-stereotypical traits and more on counter-stereotypical features, namely young-stereotypical traits, compared to 'Elderly men'.

7.1 Method

7.1.1 *Participants*

We recorded twenty-eight clicks[8] on the link to the online survey which did not result in any part of the survey being completed. One-hundred and twenty-two people participated in the study. Of these, $N = 18$ participants skipped the ratings on either the young-stereotypical traits or the elderly-stereotypical traits of one or more groups. Furthermore, $N = 1$ rated fewer than 5 out of 10 traits of the young-stereotypical dimension and the elderly-stereotypical dimension of a given target group.

[8] People who accessed the survey and agreed to participate but did not provide any rating on the dependent variables and who might have reported demographic characteristics only.

This participant was not retained for further analyses. The final sample comprised N = 103 participants (see Table 1 for detailed demographic characteristics).

A sensitivity power analysis (ANOVA: repeated measure, within- between interaction), with α = .05, 1 − β = .80, N = 103, indicated a minimal detectable effect (MDE) size Cohen's f = .13. Hence, the smallest effect size which we would be able to detect (at 80% power) with this sample size falls within the small-effect size area (Cohen, 1988).

7.1.2 *Materials and procedure*

The experimental procedures were identical to those of Studies 1–3. As in previous studies, all participants were presented with the target groups 'Elderly men' (in Italian: *anziani*) and 'Elderly gay men' (in Italian: *anziani omosessuali*). Moreover, participants were further presented with another target group based on the combination of disconfirming category information and 'Elderly men'. Specifically, half of the participants were presented with 'Elderly athlete men' (in Italian: *anziani atleti*), the other half of participants were presented with 'Elderly atheist men' (in Italian: *anziani atei*). Participants were randomly assigned to the former or the latter disconfirming category information.

All target groups were presented in the masculine plural form, and the order of presentation was randomized across participants. Participants' age stereotyping of the target groups was assessed as in Studies 1–3. Also, participants' amount of intergroup contact with the 'Elderly gay men' and 'Elderly athlete/atheist men' target groups were measured as in Studies 1–3.

At the end of the questionnaire, participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

7.2 Results

Participants' ratings on the ten young-stereotypical traits had good reliability with regard to the target groups ('Elderly men': ω = .76; 'Elderly gay men': ω = .82; 'Elderly athlete men': ω = .74; 'Elderly atheist men': ω = .78). Also, participants' ratings of elderly-stereotypical traits had good

reliability across target groups ('Elderly men': ω = .73; 'Elderly gay men': ω = .81; 'Elderly athlete men': ω = .77; 'Elderly atheist men': ω = .72). Both ratings of young and elderly stereotypes were averaged for all participants for all target groups.

Participants' ratings were analyzed by a 3 (target group information: no info *vs*. gay *vs*. inconsistent) × 2 (inconsistent condition: athlete *vs*. atheist) × 2 (traits: young-stereotypical traits *vs*. elderly-stereotypical traits) ANOVA, with both the target group information and traits as within-participants factors, and inconsistent condition as the between-participants factor[9]. For the complete results of this study see Supporting information.

A significant interaction between target group information and traits was found, ($F(2, 202) = 86.67$, $p < .001$, $\eta^2_p = .46$) as shown in Figure 4. Post-hoc comparisons were carried out and marginal means are reported. As nine post-hoc comparisons were performed the p level was set at < .006 (i.e., .05/9 = .0055, Bonferroni correction). The reported p values have not yet been adjusted. The analysis showed that, compared to 'Elderly men' ($M = 4.58$, $SE = .08$), participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' ($M = 3.61$, $SE = .10$; $t(101) = 7.92$, $p < .001$). Also, and with respect to 'Elderly men', participants attributed fewer elderly-stereotypical traits to elderly men also described by inconsistent information ($M = 3.82$, $SE = .09$; $t(101) = 7.71$, $p < .001$). Moreover, participants equally attributed elderly-stereotypical traits to both 'Elderly gay men' and elderly men described by inconsistent information, $t(101) = 2.39$, $p = .019$.

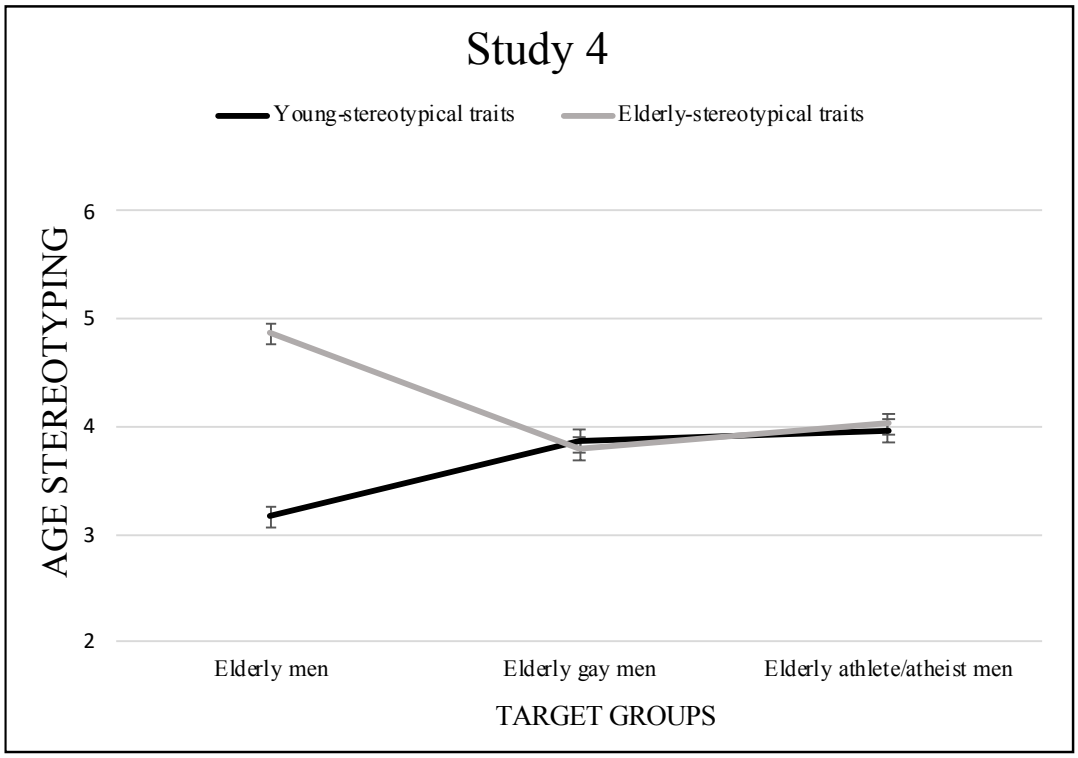
Compared to 'Elderly men' ($M = 3.04$, $SE = .08$), participants attributed more young-stereotypical traits to 'Elderly gay men' ($M = 3.68$, $SE = .10$; $t(101) = 5.86$, $p < .001$). This pattern

[9] Following the suggestion made by Reviewer 1, we ascertained whether the above-pattern of results was independent from the valence of traits (see Table 2 for the list of positive and negative elderly- and young-stereotypical traits). Participants' ratings were then analyzed by means of a 3 (target group information: no info *vs*. gay *vs*. inconsistent) × 2 (inconsistent condition: athlete *vs*. atheist) × 2 (traits: young-stereotypical traits *vs*. elderly-stereotypical traits) ANOVA x 2 (traits valence: positive vs. negative) ANOVA. The target group age x inconsistent condition x traits interaction was significant as in the original analysis, $F(2, 202) = 5.55$, $p = .004$, $\eta^2_p = .05$. Importantly, this pattern of results was not modified by the trait valence, as indicated by the non-significant four-way interaction, $F(2, 202) = 1.21$, $p = .299$, $\eta^2_p = .01$. Analyses are available in the OSF folder.

replicated the findings of Studies 2–3. Also, and with respect to ‘Elderly men’, participants attributed

Figure 4

Participants’ ratings on young- and elderly-stereotypical traits as a function of the target group information and traits in Study 4



Note. Error bars represent standard errors of the means.

more young-stereotypical traits to elderly men also described by inconsistent information ($M = 3.76$, $SE = .09$; $t(101) = 7.99$, $p < .001$), while participants equally attributed young-stereotypical traits to both ‘Elderly gay men’ and elderly men described by inconsistent information, $t(101) = 0.94$, $p = .347$.

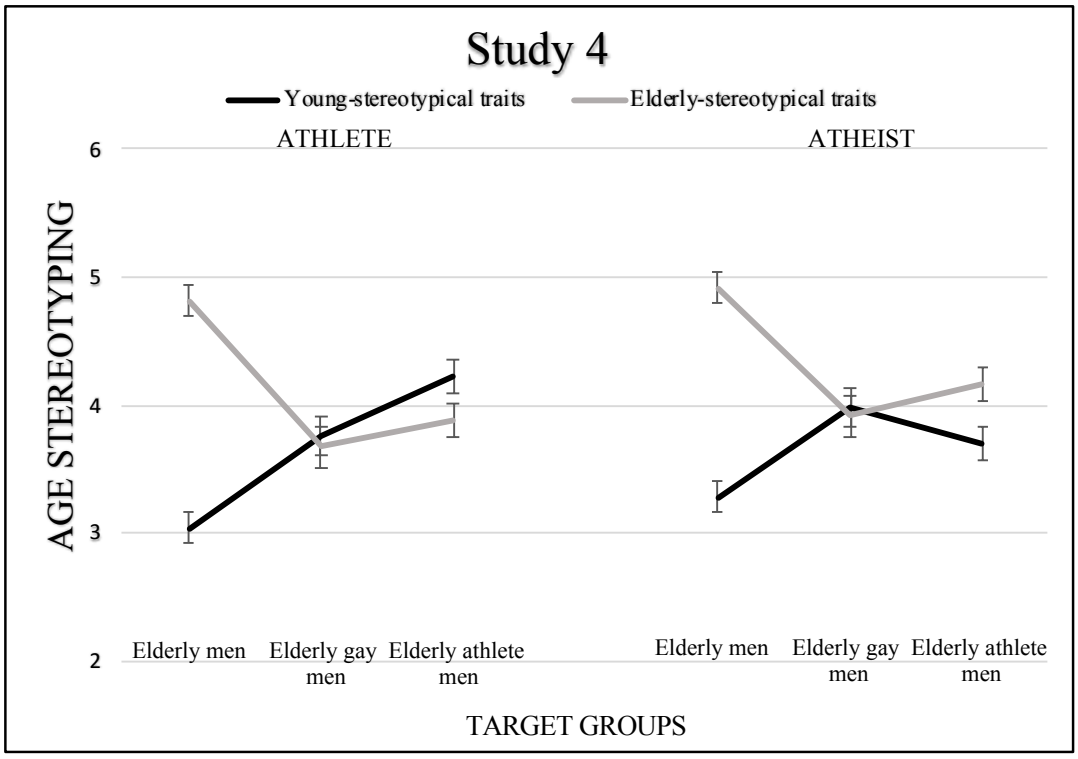
Finally, participants characterized ‘Elderly men’ more by elderly-stereotypical traits than young-stereotypical traits, $t(101) = 15.38$, $p < .001$. Participants equally attributed young- and elderly-stereotypical traits to ‘Elderly gay men’, $t(101) = 0.65$, $p = .514$. Also, participants equally attributed

elderly- and young-stereotypical traits to elderly men described by inconsistent information, $t(101) = 0.57$, $p = .569$.

The three-way interaction was significant, $F(2, 202) = 5.55$, $p = .005$, $\eta^2_p = .05$ (see Figure 5). Pairwise-comparisons were conducted by comparing participants' ratings in the two inconsistent conditions. As six post-hoc comparisons were performed the p level was set at .008 (i.e., .05/6 = .008, Bonferroni correction). As for the age stereotyping of 'Elderly men', no difference occurred between the inconsistent conditions on the elderly-stereotypical traits ($M = 4.53$, $SE = .11$; $M = 4.63$, $SE = .11$) for the 'Atheist' and the 'Athlete' conditions respectively, $t(101) = 0.62$, $p = .534$, and on the young-stereotypical traits ($M = 2.93$, $SE = .11$; $M = 3.15$, $SE = .11$) for the 'Atheist' and the 'Athlete'

Figure 5

Participants' ratings on young- and elderly-stereotypical traits as a function of the target group information, traits, and inconsistent information in Study 4



Note. Error bars represent standard errors of the means.

conditions respectively, $t(101) = 1.37$, $p = .174$. With regard to the age stereotyping of 'Elderly gay men', no difference occurred between the inconsistent conditions on the elderly-stereotypical traits ($M = 3.50$, $SE = .14$; $M = 3.72$, $SE = .14$) for the 'Atheist' and the 'Athlete' conditions respectively, $t(101) = 1.13$, $p = .262$, and on the young-stereotypical traits ($M = 3.58$, $SE = .14$; $M = 3.78$, $SE = .14$) for the 'Atheist' and the 'Athlete' conditions respectively, $t(101) = 1.05$, $p = .295$. Importantly, while the 'Elderly athlete men' ($M = 3.70$, $SE = .12$) and the 'Elderly atheist men' ($M = 3.95$, $SE = .12$) were equally stereotyped on elderly-stereotypical traits ($t(101) = 1.46$, $p = .147$), 'Elderly athlete men' were stereotyped more on young-stereotypical traits ($M = 4.00$, $SE = .12$) than 'Elderly atheist men' ($M = 3.53$, $SE = .12$; $t(101) = 2.76$, $p = .007$). Hence, the three-way interaction appears to be driven by the fact that 'Elderly athlete men' were more characterized as young than 'Elderly atheist men'. To corroborate the above data interpretation, we performed two repeated measures ANOVA analyses separately for each inconsistent condition. We report the athlete condition analysis first and then the atheist condition analysis. In the athlete condition analysis, participants' ratings were analyzed by means of a 3 (target group information: no info *vs*. gay vs. athlete) × 2 (traits: young-stereotypical traits *vs*. elderly-stereotypical traits) ANOVA, with all variables as within-participants factors. The two-way interaction was significant, $F(2, 100) = 52.12$, $p < .001$, $\eta^2_p = .51$. Post-hoc comparisons were carried out and marginal means are reported. As 6 post-hoc comparisons were performed the p level was set at .008 (i.e., .05/6, Bonferroni correction). The reported p values have not yet been adjusted. Compared to 'Elderly men' ($M = 4.53$, $SE = .12$), participants attributed fewer elderly-stereotypical traits to 'Elderly gay men' ($M = 3.50$, $SE = .15$; $t(50) = 5.73$, $p < .001$). Also, and with respect to 'Elderly men', participants attributed fewer elderly-stereotypical traits to 'Elderly athlete men' ($M = 3.70$, $SE = .13$; $t(50) = 5.48$, $p < .001$). Moreover, participants equally attributed elderly-stereotypical traits to 'Elderly gay men' and 'Elderly athlete men', $t(50) = 1.37$, $p = .176$.

Compared to 'Elderly men' ($M = 2.93$, $SE = .10$), participants attributed more young-stereotypical traits to 'Elderly gay men' ($M = 3.58$, $SE = .14$; $t(50) = 4.89$, $p < .001$). Also, and with

respect to ‘Elderly men’, participants attributed more young-stereotypical traits to ‘Elderly athlete men’ ($M = 4.00$, $SE = .12$; $t(50) = 9.60$, $p < .001$). Moreover, they attributed fewer young-stereotypical traits to ‘Elderly gay men’ than to ‘Elderly athlete men’, $t(50) = 3.42$, $p = .001$.

In the atheist condition analysis, participants’ ratings were analyzed by means of a 3 (target group information: no info *vs*. gay *vs*. atheist) × 2 (traits: young-stereotypical traits *vs*. elderly-stereotypical traits) ANOVA, with all variables as within-participants factors. The two-way interaction was significant, $F(2, 102) = 38.25$, $p < .001$, $\eta^2_p = .43$. Post- hoc comparisons were carried out and marginal means are reported. As nine post-hoc comparisons were performed the p level was set at .008 (i.e., .05/6, Bonferroni correction). The reported p values have not yet been adjusted. Compared to ‘Elderly men’ ($M = 4.63$, $SE = .10$), participants attributed fewer elderly-stereotypical traits to ‘Elderly gay men’ ($M = 3.72$, $SE = .12$; $t(51) = 5.47$, $p < .001$). Also, and with respect to ‘Elderly men’, participants attributed fewer elderly-stereotypical traits to ‘Elderly atheist men’ ($M = 3.95$, $SE = .11$; $t(51) = 5.46$, $p < .001$). Moreover, participants equally attributed elderly-stereotypical traits to ‘Elderly gay men’ and ‘Elderly atheist men’, $t(51) = 2.15$, $p = .036$.

Compared to ‘Elderly men’ ($M = 3.15$, $SE = .12$), participants attributed more young-stereotypical traits to ‘Elderly gay men’ ($M = 3.78$, $SE = .13$; $t(51) = 3.66$, $p < .001$). Also, and with respect to ‘Elderly men’, participants tended to attribute more young- stereotypical traits to ‘Elderly atheist men’ ($M = 3.53$, $SE = .12$; $t(51) = 2.67$, $p = .010$), although this result was not statistically significant. Moreover, participants equally attributed young-stereotypical traits to ‘Elderly gay men’ and ‘Elderly atheist men’, $t(51) = 2.06$, $p = .045$.

7.2.1 *Amount of contact*

Participants’ ratings on the two items assessing the quantity of contact with ‘Elderly gay men’ ($r = .64$, $p < .001$, 95% CI [0.50, 0.74]) and ‘Elderly athlete/atheist men’ ($r = .67$, $p < .001$, 95% CI [0.55, 0.76]) were averaged, separately. Participants reported a higher amount of contact with ‘Elderly

athlete men' (M = 2.02, SE = .12) than with 'Elderly gay men' (M = 1.38, SE = .07; $t(50) = 4.64$, $p < .001$, d = .65). Also, participants reported a higher amount of contact with 'Elderly atheist men' (M = 2.14, SE = .14) than with 'Elderly gay men' (M = 1.46, SE = .09; $t(51) = 4.18$, $p < .001$, d = .58). In general, participants reported a higher amount of contact with elderly men described by an inconsistent information (M = 2.08, SE = .09) than with 'Elderly gay men' (M = 1.42, SE = .06; $t(102) = 6.21$, $p < .001$, d = .61). A significant correlation was found between the amount of contact with 'Elderly gay men' and the attribution of young-stereotypical traits to 'Elderly gay men' (r = .23, p = .020, 95% CI [0.04, 0.41]), indicating that higher levels of contact with 'Elderly gay men' were associated with a stronger stereotyping of 'Elderly gay men' on young-stereotypical traits. No significant correlation was found between the amount of contact with 'Elderly gay men' and the attribution of elderly-stereotypical traits to this target group (r = .16, p = .118, 95% CI [-0.04, 0.34]). Also, no significant correlation was found between the amount of contact with 'Elderly athlete/atheist men' and both the attribution of young- (r = .08, p = .423, 95% CI [-0.12, 0.27]) and elderly-stereotypical traits (r = .03, p = .756, 95% CI [-0.16, 0.22]) to this target group.

7.3 Discussion

The results of Study 4 showed that 'Elderly gay men' were characterized more by young-stereotypical traits and less by elderly-stereotypical traits than 'Elderly men', thus replicating the findings of Studies 2–3. In a similar vein, elderly men who were described by inconsistent information were attributed fewer elderly-stereotypical traits and more young-stereotypical traits than 'Elderly men'. Importantly, no difference occurred in terms of age stereotyping between 'Elderly gay men' and elderly men described by inconsistent information. Hence, the target group information by traits interaction suggests that when coming across an atypical subtype, participants decreased the attribution of the elderly-stereotypical traits and enhanced the attribution of counter-stereotypical traits (i.e., young-stereotypical traits) as predicted by the non-prototypicality model.

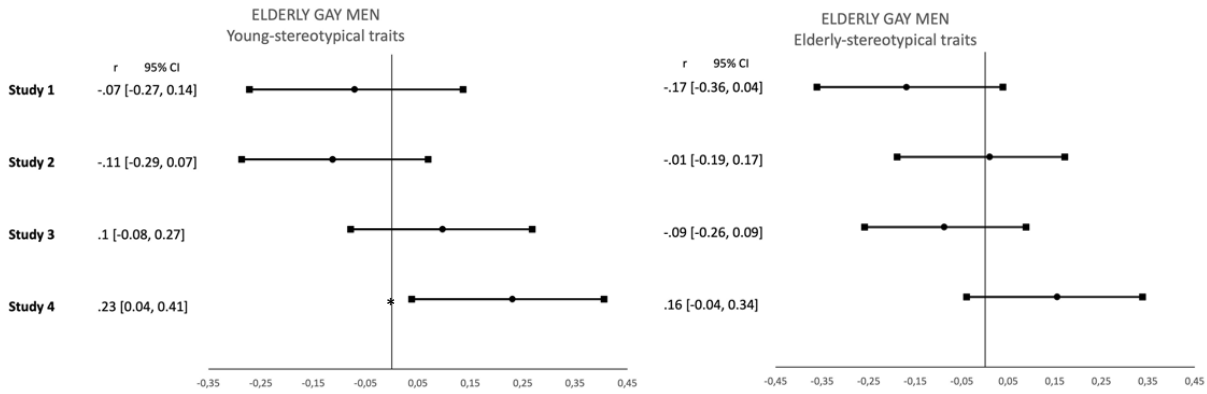
However, the three-ways interactions suggest that when processing 'Elderly athlete men', the young-stereotypical implications of the 'Athlete men' category were incorporated in the age stereotyping of 'Elderly athlete men'. Indeed, this atypical subtype was stereotyped more on young-stereotypical traits than both the 'Elderly gay men' and the 'Elderly atheist men'. This pattern of results appears to be in line with the predictions of the stereotype-inconsistent model.

8. Correlation Analyses

We calculated Pearson's correlations between the attribution of young- and elderly-stereotypical traits to a given target group and the amount of contact with that target group (Figure 6; for more details on these analyses see Supporting information). In general, participants' levels of age

Figure 6

Combined results: forest plot depicting correlations between the attribution of young- (left-hand panel) and elderly-stereotypical traits (right-hand panel) to 'Elderly gay men' and the amount of contact with this target group, separately for the 4 studies



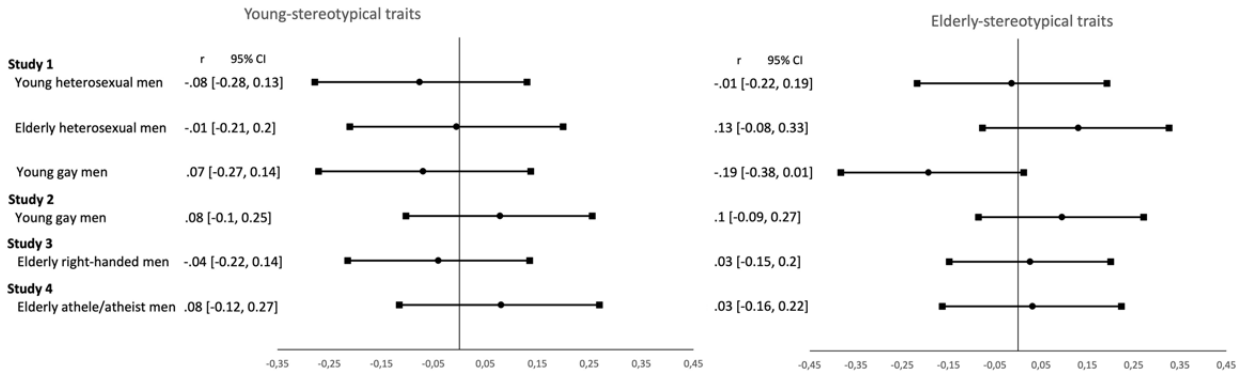
Note. In the left-hand column are listed all the studies. Values of each coefficient and its 95% confidence intervals are listed in a separate column (r[CI]). Each horizontal line represents the coefficient (dots) and the associated confidence intervals (squares). Statistically significant effects are indicated with an asterisk.

* $p = .020$

stereotyping and their amount of contact appears to be independent from each other. Specifically, across Studies 1 - 4, only in one case was the amount of contact with 'Elderly gay men' positively

Figure 7

Combined results: forest plot depicting correlations between the attribution of young- (left-hand panel) and elderly-stereotypical traits (right-hand panel) and the amount of contact with all presented target groups, separately for the 4 studies



Note. In the left-hand column are listed all the studies and the presented target groups. Values of each coefficient and its 95% confidence intervals are listed in a separate column (r[CI]). Each horizontal line represents the coefficient (dots) and the associated confidence intervals (squares).

and significantly correlated with the attribution of young-stereotypical traits to this target group: Higher levels of contact with 'Elderly gay men' were associated with the stronger stereotyping of this target group on young traits. Also, the attribution of elderly-stereotypical traits to 'Elderly gay men' was uncorrelated with the amount of contact with this target group.

As shown in Figure 7, no significant correlation was found between the age stereotyping of all the additional target groups presented in Studies 1-4 and the amount of contact with these groups.

9. General Discussion

Across four studies we analyzed the age stereotypes perceivers apply to men depending on the simultaneous combination of their age and sexual orientation. Together, the current results suggest

that distinct cognitive underpinnings account for the age stereotyping of different age and sexual orientation category intersections.

Specifically, when category combinations comprised constituents that are not inconsistent with each other, such as in the case of 'Young gay men' (Studies 1–2) and 'Elderly heterosexual men' (Study 1), the age stereotyping of such category intersections follows the predictions derived by the similarity model. In line with this model, we found that the age stereotyping of 'Young gay men' appears to be diluted with respect to the age discrete category: 'Young gay men' were perceived as less young but equally old as 'Young men' (Study 2). Also, diluted age stereotyping was found when 'Elderly men' was combined with an additional category which is not at odds with 'Elderly men' as well as ostensibly unrelated to age categories, that is 'Right-handed men' (Study 3). In fact, 'Elderly right-handed men' were perceived as less old but equally young as 'Elderly men'. In sum, in such category combinations (e.g., 'Young gay men', 'Elderly heterosexual men'), sexual orientation constitutes an additional piece of information that enhances the dissimilarity between these category combinations and the prototype of the age discrete categories (e.g., 'Young men', 'Elderly men'), thus weakening but not erasing their age stereotyping.

A different case is represented by the age stereotyping of category combinations whose constituents are inconsistent with each other, as in the case of 'Elderly gay men'. Across studies, we showed that compared to 'Elderly men', 'Elderly gay men' were characterized less on traits that are stereotypical of 'Elderly men' and more on traits that are counter-stereotypical of this discrete category, namely young-stereotypical traits (Studies 2–4). Hence it appears that the gay sexual orientation in association with the category 'Elderly men' blurs the age stereotyping of this conflicting intersectional category.

The age stereotyping of 'Elderly gay men' does not appear to be driven by the fact that this conflicting intersectional category works as a more specific subset of 'Elderly men', as predicted by the similarity model. In fact, when comparing the age stereotyping of two potential specific subsets,

that is ‘Elderly gay men’ and ‘Elderly heterosexual men’, the former category was still perceived as younger and less old than the latter category (Study 1). Also, the category of ‘Elderly gay men’ was perceived as younger and less old than both ‘Elderly right-handed men’ and ‘Elderly men’ (Study 3), thus ruling out the possibility that the age stereotyping of ‘Elderly gay men’ was driven by its hypothetical status of a more specific subtype.

In sharp contrast, the fact that age stereotyping of ‘Elderly gay men’ appears to be blurred seems to be due to the atypical status of this subtype with respect to ‘Elderly men’ as a whole. Indeed, the findings of Study 4 indicate that ‘Elderly gay men’ were perceived as younger and less old than ‘Elderly men’, and this pattern of age stereotyping was replicated when ‘Elderly men’ was combined with an inconsistent category, namely ‘Atheist men’ and ‘Athlete men’. This atypical status may result either from the fact that the category in combination with ‘Elderly men’ is inconsistent with this age category, as in the case of ‘Atheist men’, or from the fact that the category in combination with ‘Elderly men’ is not only inconsistent with this age category but further contradicts it, due to its association with young-related content, as in the case of ‘Athlete men’. These results suggest that both the atypical status of a conflicting intersectional category as well as the stereotypical implications of the intersected categories played a crucial, and not an antagonist, role in shaping the stereotyping of ‘Elderly gay men’.

Moreover, we found that ‘Elderly athlete men’ were perceived as younger than ‘Elderly atheist men’ and ‘Elderly gay men’. Such a result may indicate that the availability of young-stereotypical content in one of the combined categories amplified the pattern of age stereotyping of this subtype on the young-stereotypical traits. In other words, perceivers integrated the stereotypes implicated by the combined categories, in line with the stereotype-inconsistent model. An alternative interpretation of such a pattern of results is derived by the non-prototypicality model. Indeed, ‘Elderly athlete men’ could be considered a more extreme atypical, and “deviant” case compared to ‘Elderly gay men’ and ‘Elderly atheist men’. Research has long acknowledged that counter-stereotypical content was more

intensively applied to extreme, compared to less peripheral atypical members (Bodenhausen et al., 1995; Sherman, 1996). If this were the case, the age stereotyping of 'Elderly athlete men' is particularly blurred compared to the other categories presented, which may be accounted for by its atypicality rather than the specific stereotypical content attached to this category cross-over. Unfortunately, when selecting the experimental material, we failed to assess the perceived atypicality of 'Athlete men' and 'Atheist men' with respect to 'Elderly men', and therefore rely on categories that might display comparable levels of atypicality. Given this methodological flaw, we are unable to adjudicate between these two alternative accounts.

The current research had additional limitations. First, we compared the stereotyping of 'Elderly gay men' with that of the combination of 'Elderly men' with a category ostensibly unrelated to age (Study 3; 'Right-handed'). However, 'Right-handed men' represents a majority/normative group. Given that 'Gay men' is a minority/stigmatized category, we failed to compare the unique stereotyping of 'Elderly gay men' with that of 'Elderly men' in combination with another minority/stigmatized category. Minority/stigmatized categories in general are perceived as highly homogeneous and stereotyped in an extreme fashion (Cadinu et al., 2013; Mullen, 1991). Such a comparison would have allowed us to understand whether the atypical status and/or the minority/stigmatized status of the combined categories could have played a crucial role in blurring the age stereotyping of 'Elderly gay men'.

Second, the current research focused on category intersections involving male individuals only, thus perpetuating androcentrism in social psychology research (Lee & Crawford, 2007). Our findings might be equivalent for 'Elderly lesbian women', as 'Lesbian women' might also be appraised as an atypical case of 'Elderly women', or may be different due to the overlap (and not the inconsistency) between the stereotypes of 'Elderly women' and 'Lesbian women', as both categories are stereotyped as unattractive and lonely (e.g., Berger, 1982; Kite et al., 1991; Schope, 2005). Also, the current study relied on sexual orientation categories only as binary concepts, thus leaving out

additional sexual orientation categories (e.g., bisexual men and women, pansexual individuals). Future research could further analyze the age stereotyping of more fluid and nonbinary sexual orientation categories.

Moreover, in three out of four studies we found that the attribution of young- and elderly-stereotypical traits to 'Elderly gay men' did not differ from each other. This recurring pattern of results could be due at least to two different processes that the current studies are unable to unravel, which is a limit of this research. First, conflicting intersectional categories, like the combination of inconsistent categories, possess unique stereotypical features that cannot be reduced to the stereotypes of the constituent categories (Carnaghi et al., 2022; Kunda et al., 1990; Preddie & Biernat, 2021). In such a case, perceivers apply neither young- nor elderly-stereotypical traits to the atypical case of 'Elderly gay men', because such an atypical subtype is characterized by specific features. Second, stereotypical features belonging to the constituent categories might coexist to a similar extent in the stereotypes of the conflicting intersectional categories. This claim is coherent with evidence suggesting that rather than being homogeneous, stereotypes associated with age and race groups, for instance, are non-uniform and display ambivalent content (Cuddy et al., 2005; Katz et al., 1986). If this were the case, stereotypes of conflicting intersectional categories might constitute a case of mixed, ambivalent stereotypical features. Accordingly, perceivers may apply the young- and the elderly-stereotypical traits to 'Elderly gay men' to a similar degree. In Chapter 3 we addressed this issue.

Finally, an ancillary goal of this set of studies was to assess whether the degree of contact with intersectional categories would alter the observed pattern of age stereotyping across studies. In four studies, the association between contact and stereotyping was almost elusive. Hence, and given this null result (see also Chapter 1), the association in question was no longer investigated in Chapter 3.

CHAPTER 3

Combining Social Concepts of Age and Sexual Orientation: The Case of Elderly Gay Men as an Atypical Intersection

Coladonato R., Carnaghi A., & Yzerbyt, V.

1. Introduction

On August 24, 2020, The Guardian advertised an exhibition by Melissa Ianniello entitled "Wish it was a coming out: older gay people in Italy". The artist portrayed "*the double taboo of homosexuality and old age in Italy*", in a series of pictures of older gay men. Ianniello was unquestionably successful in making elderly men visible among gay men. She also made homosexuality visible among elderly people. In a unique way, an exhibition of this nature makes a significant claim: the way sexual orientation and age categories intersect favors some specific category combinations (e.g., young gay men) while hiding others (e.g., older gay men). In the present research, we aimed to examine this claim in a systematic and indeed scientific rather than artistic way by testing whether and how particular combinations of sexual orientation and age are cognitively more prototypical than others.

The available research on category intersections has mainly focussed on how individuals are represented when belonging to two subordinate categories (for a review, Kang & Bodenhausen, 2015). Two competing approaches stand out (Kang & Chasteen., 2009; Preddie & Biernat, 2021) in past studies. The "double jeopardy" approach proposes that individuals who belong to two subordinate categories (Latina women) experience cumulative forms of discrimination (Beal, 1970; Berdahl & Moore, 2006; Blakemore & Boneham, 1994), and are cognitively represented by the sum of the stereotypical attributes pertaining to both (e.g., "uneducated" + "attractive", for Latino people and women, respectively; Ghavami & Peplau, 2013; Gonzales et al., 2002). In contrast, the multiplicative approach argues that the representations of individuals belonging to two subordinate categories are not the result of an additive combination of the category stereotypes, but rather stem from the interaction of the category memberships. For instance, the stereotype of Black women is not the sum of the stereotype of Black people and that of women (Ghavami & Peplau, 2013; Sesko &

Biernat, 2010), and their experience of discrimination corresponds to a specific form of sexism and racism (Crenshaw, 1993).

In our view, these approaches may not be mutually exclusive. Rather, they take into account different cases of category membership combinations. In particular, we argue that the additive approach turns out to be predictive of the way perceivers represent individuals with multiple category memberships when the stereotypes of the categories are not at odds with each other as in the case of Latina women. Indeed, the stereotypes of Latino people (e.g., uneducated) do not clash with the stereotypes related to women (e.g., attractive). At the very least, the category stereotypes should exhibit some commonalities. For instance, the stereotype of Asian people (e.g., gentle, graceful, delicate) exhibits commonalities with the stereotype of women more than with the stereotype of men (Axt et al., 2022; Galinsky et al., 2013). In contrast, the multiplicative approach provides a better account for the representation of individuals with multiple category memberships when the categories stereotypes are in conflict with each other - as in the case of Black women. Indeed, the stereotype of Black people largely overlaps with the stereotypes of men, and the stereotype of women exhibits characteristics typically ascribed to White women (Goff et al., 2008). Hence, the stereotype of Black people appears to run against the stereotype of women.

In the present endeavor and in line with a conciliatory view of the above approaches, we build on the *modification model for conceptual combination* (e.g., Kunda et al., 1990; Medin & Shoben, 1988). This model provides a more encompassing theoretical framework to deal with the intersectionality issue. Moreover, we test the predictions derived from this suggested framework by analyzing the intersectional representation of sexual orientation and age categories. The conceptual combination model suggests that when it comes to understanding how perceivers bring categories together and represent them cognitively, one should first look at the way each of the constituent categories is conceptualized. A critical issue concerns the question of whether and how the stereotypes associated with the categories correlate with each other. When the stereotypes associated

with the to-be-combined categories are uncorrelated (e.g., ethnic group and mother tongue, as in the case of a White person who speaks French), the range of the category exemplars of one category (White person) is restricted to the dimension implied by the other category (French speaker), thus enhancing the significance of this dimension.

If, however, the stereotypes correlate, a follow-up question is whether the correlation is positive or negative. In the presence of a positive correlation, as in the case of the stereotype of Asian people and the stereotype of women (Schug et al., 2015) or the stereotype of Black people and the stereotype of men (Galinsky et al., 2013; Nicolas et al, 2017), the attributes associated with one category are partially redundant with the attributes associated with the other. Such a strong overlap between the stereotypes of the categories could lead perceivers to conflate one category with the other.

When the correlation is negative, three possible ways in which perceivers combine constituent categories are considered. First, the representation of the to-be-combined categories is derived from the average representations of the discrete categories (e.g., Anderson, 1965). Given the negative correlation between stereotypes, the representation of one category overrides the stereotypical implications of the other category, thus blurring the conceptualization of the combined category (Petsko & Bodenhausen, 2019a). Second, the representation of the to-be-combined categories inherits the attributes of one but not of the others. This is likely to occur when one of the to-be-combined categories points to a stigmatized group (e.g., a blind person), and ends up dominating the representation of the category combination as a whole (Goffman, 1963; Stroessner, 1996). Third, the combination of negatively correlated categories leads perceivers to generate novel characteristics not found in either of the constituent categories (Crisp & Hewstone, 2007; Kunda et al., 1990; Preddie & Biernat, 2021). Such emergent attributes account for the atypicality of representation of the to-be-combined categories with respect to the constituent categories (Kunda & Oleson, 1995; Yzerbyt et al., 1999).

To illustrate, let us go back to our introductory example and examine in more detail the categories associated with age, i.e., young and elderly, and with sexual orientation, i.e., heterosexual and gay. In this research, we focus exclusively on men as most crimes of hate and the largest share of discrimination concern gay men (Herek, 2007). Recent work by Carnaghi et al. (2022) and Coladonato et al. (2022) indicates that people use stereotypical traits that evoke young versus old age equally to characterize 'Heterosexual men'. That is, the 'Heterosexual men' category tends to be uncorrelated with age categories. In addition, perceivers rely equally on stereotypical traits that refer to homosexuality or heterosexuality when describing 'Young men'. Thus the 'Young men' category is uncorrelated with the sexual orientation categories.

For both 'Heterosexual men' and 'Young men', the modification model for conceptual combination thus predicts a new restricted category. As stated, 'Heterosexual men' is not perceived in terms of a specific age. 'Young heterosexual men' will be perceived as younger than 'Heterosexual men', while 'Elderly heterosexual men' will be perceived as older than 'Heterosexual men'. Said otherwise, the perception of 'Heterosexual men' will be "restricted" to the age categories with which it is associated. 'Young men' tends not to be perceived in terms of a specific sexual orientation, so 'Young heterosexual men' will be perceived as more heterosexual than 'Young men', while 'Young gay men' will be perceived as more gay than 'Young men'. That is to say, the perception of 'Young men' will be "restricted" to the sexual orientation categories with which it is combined.

A different outcome prevails when the constituent categories correlate positively. Carnaghi et al. (2022) and Coladonato et al. (2022) have shown that 'Gay men' is stereotyped more as being young than old, i.e., perceivers preferentially assign traits that evoke young age. 'Elderly men', instead, is stereotyped more as being heterosexual than homosexual, i.e., perceivers preferentially assign traits that denote heterosexuality. In other words, perceivers by default represent 'Gay men' as being younger and 'Elderly men' as being heterosexual. This means that the category 'Gay men' is positively related to young age. For this reason, people represent the combined category 'Young

gay men' similarly to the category 'Gay men' because the qualification "young" is redundant when associated with 'Gay men.' Similarly, the category 'Elderly men' is positively related to heterosexuality. This means that perceivers see the combined category 'Elderly heterosexual men' similarly to the category 'Elderly men' because the qualification "heterosexual" happens to be redundant when associated with 'Elderly men'.

As we noted above, another situation emerges when the constituent categories correlate negatively, like in the case of 'Gay men' (represented as young) and 'Elderly men' (represented as heterosexual). According to the averaging model, a conflicting category combination inherits the characteristics of both constituent categories but, because of the conflict, these characteristics should cancel each other out. In our specific case, 'Elderly gay men' would come across as neither gay nor old because the default representation of 'Gay men' as young cancels out the default representation of 'Elderly men' as heterosexual. According to the dominance model (Kang & Chasteen, 2009; Macrae et al., 1995), a conflicting category combination likely inherits the characteristics of the more salient of the two categories. Because 'Gay men' is a stigmatized minority, we would expect perceivers to conceive of 'Elderly gay men' more readily as 'Gay men' than as 'Elderly men'. As for the emergent attributes model (Kunda et al., 1990), the prediction is that the attributes that emerge from the conflicting category combination are unique to this combination. In other words, these attributes do not characterize the constituent categories and presumably account for the atypicality of this category combination with respect to its constituents. Thus, according to this model, perceivers should characterize 'Elderly gay men' using unique attributes that do not readily define the constituent categories. Interestingly, some researchers suggest that the dominance model and the emergent attributes model can operate together (Kunda et al., 1990; Roccas & Brewer, 2002).

In the present study, we aimed to examine whether and how the overlap and relations of characteristics between discrete categories allow predicting of how categories intersect with each other. Extending the work on category combinations where concepts are overtly in opposition (e.g.,

a straight boomerang; Medin & Shoben, 1988), this research would contribute to the literature on conceptual combination by focusing on combinations in which social concepts are tacitly congruent or incongruent. Specifically, an understanding of how people perceive combinations of sexual orientation and age through a multimethod approach is presented.

1.1 Overview of the studies and hypotheses

In the first two studies, we decided to rely on the typicality measure of categorical combinations as a direct means to verify how categories of age and sexual orientation combine. The literature suggests that the categories show a graded structure, with some members coming across as more typical of the category than others (Bailey et al., 2019). Previous studies have explored the discrete categories of age and sexual orientation using inference-based measurements (Coladonato et al, 2023; Park et al., 2001) such as ranking and stereotyping (Carnaghi et al., 2022; Coladonato et al., 2022). In contrast, research that has focussed on various categorical combinations using the conceptual combination model relied on similarity as a proxy for typicality (e.g., Preddie & Biernat, 2021). In Study 1, we asked participants to rate the extent to which discrete categories of sexual orientation (i.e., 'Heterosexual men' and 'Gay men') and different combinations of categories of sexual orientation and age were typical of the categories of young and elderly men, respectively. In Study 2, we asked participants to rate the extent to which discrete categories of age (i.e., 'Young men' and 'Elderly men') and different combinations of categories of age and sexual orientation were typical of heterosexual and gay men, respectively.

We predicted that, consistent with the above predictions, the different types of categorical combinations (i.e., uncorrelated, positively correlated, and negatively correlated) would consistently alter the typicality of male individuals in terms of age and sexual orientation. Concretely, we predicted that the *modification model* would drive the typicality of the uncorrelated combinations (e.g., 'Young men' + 'Heterosexual men'). We also expected that the *redundancy model* would account for the typicality of the positively correlated combinations (e.g., 'Gay men' + 'Young men'). Finally, the

combination of 'Elderly gay men' should constitute the only case of a conflicting combination of age and sexual orientation whose typicality could be driven by both constituents (i.e., *averaging model*) or by only one of them (i.e., *dominance model*). Alternatively, it is also possible that the typicality of this category rests not on the joint or single contribution of the constituents but on a unique and combination-specific set of elements (i.e., *emergent attributes model*).

In Study 3, we decided to turn to a more indirect, indeed open-ended, approach with the goal to shed light on people's spontaneous reactions when combine conflicting categories. We presented participants with categories of sexual orientation, age, and their combinations and asked them to list the words they associated with these target categories. This type of procedure constitutes a less direct comparison between constituent and combined categories. Some authors (Hinzman & Maddox, 2017; Park et al., 2001) have suggested that the typicality measure may exacerbate the differences between comparable instances by focusing too much on the degree of fit. Using this reasoning, the differences between discrete and combined categories of age and sexual orientation in Studies 1 and 2 may have been overestimated.

Instead, research has also confirmed the covariation between processes of typicality and stereotyping (e.g., Hantzi, 1995; Johnston & Hewstone, 1992; Maurer et al., 1995). Hewstone and Hamberger (2000, p. 106) argued that the perception of typicality of a category and the degree of stereotyping are "intricately linked", and "probably occurring simultaneously or interactively, rather than one casually preceding the other". That is to say, perceived typicality and stereotyping go hand in hand. A clear asset of the open-ended approach is that nothing is imposed on participants other than providing us with their spontaneous descriptions of each category. This should allow for a test of the earlier obtained pattern of findings using a truly alternative method.

Differently from Chapter 1 and 2, we decided to not further explore the role of participants' contact with the categories under analysis, given the lack significant evidence shown in previous chapters.

2. Methodological considerations

We conducted the analyses after the data collection. In Studies 1 and 2, we decided a priori to exclude participants with missing values. In Study 3, we excluded participants who did not list at least one characteristic for each category. In addition, we deleted non-Italian and non-native Italian-speaking participants from the final sample. We provide more detail on the exclusion of participants in the participant section of each study.

The Qualtrics survey platform (2021) was used. For Studies 1-2, an online link to each of the studies via social media and instant messaging platforms was distributed. For Study 3, data were collected in two successive waves. In the first, an online link to the study with psychology students was distributed during a lecture at a large university in northern Italy. For the second, participants were sampled via Prolific (www.prolific.co).

We performed the analyses using RStudio statistical package (Version 4.1.2; 2021). To decrease the likelihood of a Type I error in the post-hoc analyses of Studies 1-2, we set the significance level using the Bonferroni correction method, that is, we determined the *p* level by dividing the alpha (i.e., .05) by the number of the contrasts. Because we performed six contrasts, the *p*-level was .008 (i.e., .05/6). In the Result section of Studies 1-2, we report unadjusted *p* values. Below we report only the results relevant to our hypotheses (see Supplementary material for the full analyses). All datasets and data analyses are available on OSF via https://osf.io/vk9np/?view_only=ffe3b597747840cca10bac91a4a951f8.

All the studies received ethical approval from the University of Trieste Ethical Committee. Participants provided their written informed consent prior to participating in the studies.

3. Study 1

3.1 Method

3.1.1 *Participants*

We recorded two hundred and seventeen clicks on the link to the online survey. Of these, n = 8 accessed the survey and agreed to participate but did not complete any part of the survey. Also, we excluded n = 47 participants who did not rate one or more than one category. The final experimental sample comprised N = 162 participants (see Table 1 for detailed demographic characteristics).

Table 1

Age, gender, sexual orientation, citizenship, and native language of participants as a function of the Studies 1-3

	STUDY 1	STUDY 2	STUDY 3
Age			
Range	18 – 79	18 – 68	18 – 64
M	28.92	29.83	26.74
SE	0.84	0.97	0.81
Not reporting	5	1	1
Gender			
Female	90	76	41
Male	55	43	40
Other	10		
Not reporting	7	2	
Sexual orientation			
Heterosexual	117	112	68
Bisexual	15	4	7
Homosexual	14	1	2
Other	10	2	4
Not reporting	6	2	
Citizenship			
Italian	153	117	81
Other than Italian	2	3	
Dual	1	1	
Not reporting	6		
Native language			
Italian	148	115	81
Other than Italian	8	5	
Dual		1	
Not reporting	6		

Note. Values pertaining to the participant's age are expressed in years.

3.1.2 *Materials and Procedure*

Participants learned that they would have to think of a specific category and its representation at the societal level. In particular, we indicated that we were interested in understanding how people in general see these categories. To clarify the task, we provided participants with the following example: "Try to think about 'apples'. How, in your opinion, are apples considered to be typical (= characteristics) of fruits in general?" [10]. Then, we presented participants with 8 categories, one at a time: 'Heterosexual men', [in Italian: *eterosessuali*] and 'Gay men' [in Italian: *omosessuali*]), namely the sexual orientation discrete categories; 'Young heterosexual men' [in Italian: *giovani eterosessuali*], 'Elderly heterosexual men' [in Italian: *anziani eterosessuali*], 'Young gay men' [in Italian: *giovani omosessuali*], 'Elderly gay men' [in Italian: *anziani omosessuali*], namely the sexual orientation and age category intersections; 'Heterosexual chef men' [in Italian: *eterosessuali cuochi*], 'Gay chef men' [in Italian: *omosessuali cuochi*], filler categories. The presentation order between and within the discrete, intersectional, and filler categories was randomized across participants. Participants indicated the extent to which each category was typical of elderly men and young men, separately (order counterbalanced across participants), by means of a 7-point scale, ranging from 1 (= *not at all typical*) to 7 (= *very typical*).

Participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

3.2 Results

In line with the goals of this study, we focused on the sexual orientation categories (i.e., 'heterosexual men' and 'gay men') and on intersectional categories (i.e., 'young heterosexual men', 'elderly heterosexual men', 'young gay men', and 'elderly gay men'), excluding the filler categories

[10] [in Italian: *Prova a pensare alle 'mele'. Quanto, a tuo avviso, le mele sono considerate tipiche (= caratteristiche) della frutta in generale?*]

from the analyses. In other words, we relied on a 2 (sexual orientation: heterosexual men *vs* gay men) x 3 (age: young *vs*. elderly *vs*. control) design with both factors varying within participants and the "control" referring to the fact that sexual orientation was the only category available.

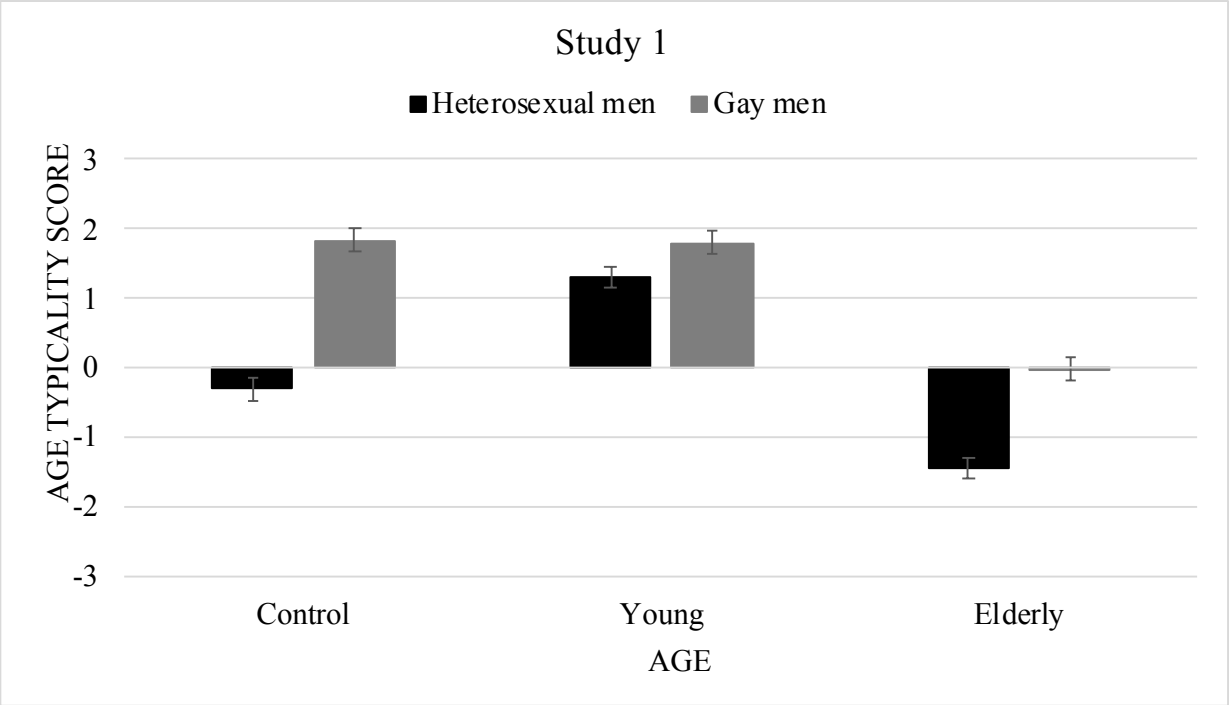
For each category, an age typicality score was computed by subtracting the typicality ratings with respect to elderly men from the typicality ratings with respect to young men. Positive values indicated a higher typicality of the category with respect to young over elderly men. This score was submitted to a 2 (sexual orientation: heterosexual men *vs* gay men) x 3 (age: young *vs*. elderly *vs*. control) repeated measures ANOVA (see Figure 1). The sexual orientation main effect was significant, $F(1, 805) = 106.9$, $p < .001$, $\eta^2_p = .12$. Participants perceived gay men as more typical of young men ($M = 1.21$, $SE = .09$) than of elderly men, $t(485) = 14.00$, $p < .001$, $d = 0.63$ for the one-sample *t*-test against zero, and they did more so than for heterosexual men ($M = -0.15$, $SE = .09$), $t(805) = 10.34$, $p < .001$. They also perceived the latter as no more typical of young men than of elderly men, $t(485) = -1.20$, $p = .200$, $d = 0.06$ for the one-sample *t*-test against zero.

The age main effect was also significant, $F(2, 805) = 103.4$, $p < .001$, $\eta^2_p = .20$. The age typicality score of the young categories ($M = 1.55$, $SE = .12$) was significantly greater than zero, $t(323) = 12.00$, $p < .001$, $d = 0.66$. The age typicality score of the elderly categories ($M = -0.73$, $SE = .12$) was significantly lower than zero, $t(323) = -5.60$, $p < .001$, $d = 0.31$. Participants perceived the categories defined as young as younger than those defined as elderly, $t(805) = 14.15$, $p < .001$. Control categories ($M = 0.77$, $SE = .12$) were perceived overall as more typical of young men than of elderly men, $t(323) = 7.40$, $p < .001$, $d = 0.41$, for the one-sample *t*-test against zero. The age typicality score of the control categories fell between that concerning young men, $t(805) = 4.84$, $p < .001$, and that of elderly men, $t(805) = 9.30$, $p < .001$.

The sexual orientation by age interaction proved significant, $F(2, 805) = 13.10$, $p < .001$, $\eta^2_p = .03$. We conducted a series of follow-up analyses to examine the impact of age on each sexual

Figure 1

Age typicality scores of heterosexual and gay men as a function of age in Study 1



Note. Error bars represent standard errors of the differential scores. Positive values on the age typicality score indicate that the category was considered as typical of young men, while negative values indicate that the category was considered as typical of elderly men.

orientation category. First participants' scores regarding heterosexual men as a sexual orientation were examined.

As a baseline, participants considered 'heterosexual men' to be as neither typical of young nor of elderly men (M = -0.30, SE = .16), $t(161) = -2.60$, $p = .01$, $d = 0.20$ for the one-sample t-test against zero. Compared to 'heterosexual men', namely the baseline, participants judged 'young heterosexual men' (M = 1.30, SE = .16) more typical of young men, $t(805) = 7.04$, $p < .001$, and 'elderly heterosexual men' (M = -1.44, SE = .16) more typical of elderly men, $t(805) = 5.00$, $p < .001$. Corroborating this interpretation, the age typicality score of 'young heterosexual men' (M = 1.30, SE = .16) fell significantly above zero, $t(161) = 6.20$, $p < .001$, $d = 0.49$, whereas the age typicality score

of ‘elderly heterosexual men’ (M = -1.44, SE = .16) fell significantly below zero, $t(161) = -6.70$, $p < .001$, $d = 0.53$, and ‘young heterosexual men’ were considered as more typical of young men than ‘elderly heterosexual men’, $t(805) = 12.04$, $p < .001$.

Next, the scores for gay men as a sexual orientation were analysed. Participants considered ‘gay men’ as more typical of young men than of elderly men (M = 1.84, SE = .16), $t(161) = 15.00$, $p < .001$, $d = 1.20$ for the one-sample t-test against zero. The same held for ‘young gay men’ (M = 1.80, SE = .16), $t(161) = 12.00$, $p < .001$, $d = 0.93$ for the one-sample t-test against zero. Participants regarded ‘gay men’ and ‘young gay men’ as equally typical of young men, $t(805) = 0.19$, $p = .850$. As for ‘elderly gay men’ (M = -0.01, SE = .16), participants perceived them as neither typical of young or of elderly men, $t(161) = 0.10$, $p = .900$, $d = 0.00$. Also, ‘elderly gay men’ were considered as less typical of young men than ‘gay men’, $t(805) = 8.15$, $p < .001$, or than ‘young gay men’, $t(805) = -7.96$, $p < .001$.

Next, the scores for gay men as a sexual orientation were analysed. Participants considered ‘gay men’ as more typical of young men than of elderly men (M = 1.84, SE = .16), $t(161) = 15.00$, $p < .001$, $d = 1.20$ for the one-sample t-test against zero. The same held for ‘young gay men’ (M = 1.80, SE = .16), $t(161) = 12.00$, $p < .001$, $d = 0.93$ for the one-sample t-test against zero. Participants regarded ‘gay men’ and ‘young gay men’ as equally typical of young men, $t(805) = 0.19$, $p = .850$. As for ‘elderly gay men’ (M = -0.01, SE = .16), participants perceived them as neither typical of young or of elderly men, $t(161) = 0.10$, $p = .900$, $d = 0.00$. Also, ‘elderly gay men’ were considered as less typical of young men than ‘gay men’, $t(805) = 8.15$, $p < .001$, or than ‘young gay men’, $t(805) = -7.96$, $p < .001$.

3.3 Discussion

These results show that participants perceived ‘Heterosexual men’ as equally typical of both young and elderly men, while they viewed ‘Gay men’ as more typical of young than of elderly men. The significance of these results is twofold. First, these findings replicate, albeit with a different

measure, earlier findings on the age stereotyping of sexual orientation categories referring to men (e.g., Carnaghi et al., 2022; Coladonato et al., 2022). Second, they suggest that the category 'Heterosexual men' is uncorrelated with age categories, while 'Gay men' is correlated with age categories. In line with the hypothesis derived from the modification model for uncorrelated categories, the range of category exemplars instantiating by 'Heterosexual men' is restricted to those implied by the age categories (i.e., 'Young men', 'Elderly men'), thus enhancing the significance of the age category in the perception of the combined categories (i.e., 'Young heterosexual men', 'Elderly heterosexual men'). In fact, participants considered 'Young heterosexual men' as more typical of young men than 'Heterosexual men', and 'Elderly heterosexual men' as more typical of elderly men than 'Heterosexual men'.

In line with the predictions issued from the redundancy model for correlated categories, and because 'Gay men' is positively correlated with 'Young men', the information about age attached to the former category appeared redundant with that of the latter age category. That is, 'Gay men' and 'Young gay men' were considered as equally typical of young men. Also, 'Elderly gay men' constituted the only category combination for which the two constituent categories (i.e., 'Elderly men' and 'Gay men') were negatively correlated. 'Elderly gay men' came across as neither typical of young men nor of elderly men, results again consistent with both predictions of the average model (i.e., the representation of 'Gay men' as young and the age of 'Elderly men' canceled each other out) and those of the emergent attributes model ('Elderly gay men' showed emergent attributes that rendered it neither typical of young nor of elderly men).

Whereas Study 1 assessed the age typicality of the sexual orientation categories, namely 'Gay men' and 'Heterosexual men', and their combinations with sexual orientation categories, Study 2 assessed the sexual orientation typicality of age categories, namely 'Young men' and 'Elderly men', and their combinations with sexual orientation categories.

4. Study 2

4.1 Method

4.1.1 *Participants*

We recorded one hundred and fifty-nine clicks on the link to the online survey. Of these, n = 14 accessed the survey and agreed to participate but did not complete any part of the survey. Also, we excluded n = 4 participants who did not rate one category, and another n = 20 who did not rate more than one category. The final experimental sample comprised N = 121 participants (see Table 1 for detailed demographics).

4.1.2 *Materials and Procedure*

The procedure was identical to that of Study 1. We presented participants with 8 categories, one at a time: 'Young men', [in Italian: *giovani*] and 'Elderly men' [in Italian: *anziani*]), namely the age discrete categories; 'Young heterosexual men', 'Young gay men', 'Elderly heterosexual men', 'Elderly gay men', namely the age and sexual orientation category intersections; 'Young right-handed men' [in Italian: *destrimani giovani*], 'Elderly right-handed men' [in Italian: *destrimani anziani*], filler categories. As in Study 1, the presentation order between and within the discrete, intersectional, and filler categories was randomized across participants. Participants indicated the extent to which each category was typical of heterosexual men and gay men, separately (order counterbalanced across participants), by means of a 7-point scale, ranging from 1 (= *not at all typical*) to 7 (= *very typical*).

Participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

4.2 Results

As in Study 1, we focused on the age categories (i.e., 'young men' and 'elderly men') and on intersectional categories (i.e., 'young heterosexual men', 'young gay men', 'elderly heterosexual men', and 'elderly gay men'), excluding the filler categories from the analyses. A 2 (age: young men

vs elderly men) x 3 (sexual orientation: heterosexual *vs*. gay *vs*. control) design was utilized with both factors varying within participants and the "control" condition referring to the fact that age is the only category available.

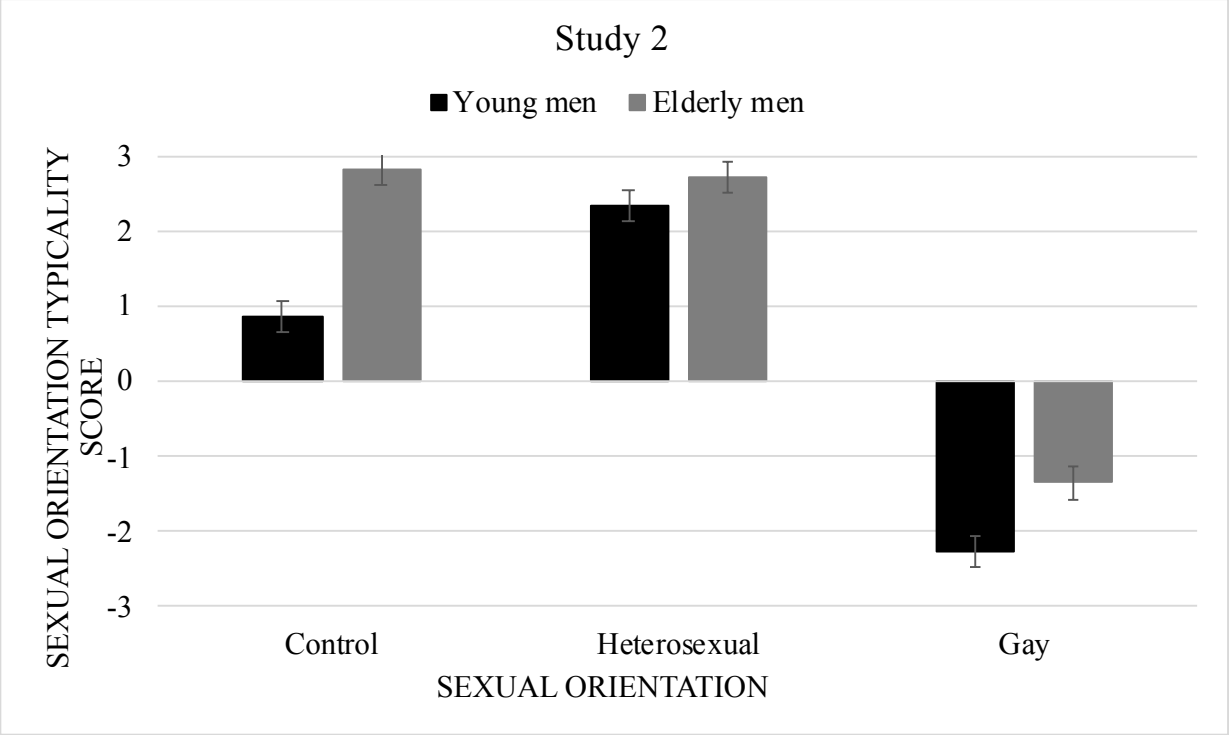
For each category, a sexual orientation typicality score was computed by subtracting the typicality ratings with respect to gay men from the typicality ratings with respect to heterosexual men. Positive values indicated a higher typicality of the category with respect to heterosexual over gay men. This score was then submitted to a 2 (age: young men *vs* elderly men) x 3 (sexual orientation: heterosexual *vs*. gay *vs*. control) repeated measures ANOVA (see Figure 2).

The age main effect was significant, $F(1, 600) = 41.59$, $p < .001$, $\eta^2_p = .06$. Participants perceived both 'elderly men' ($M = 1.41$, $SE = .13$) and 'young men' ($M = 0.32$, $SE = .13$) more as typical of heterosexual men than of gay men, $t(362) = 8.80$, $p < .001$, $d = 0.46$ and $t(362) = 2.00$, $p = .040$, $d = 0.11$, respectively for the one-sample *t*-test against zero. Importantly, compared to 'young men', participants perceived 'elderly men' as more typical of heterosexual men, $t(600) = 6.45$, $p < .001$.

The sexual orientation main effect was also significant, $F(2, 600) = 255.93$, $p < .001$, $\eta^2_p = .46$. Overall, participants perceived the categories defined as heterosexual ($M = 2.53$, $SE = .15$) as more typical of heterosexual men than of gay men, $t(241) = 16.00$, $p < .001$, $d = 1.04$, for the one-sample *t*-test against zero, whereas they perceived the categories defined as gay ($M = -1.80$, $SE = .15$) as more typical of gay men than of heterosexual men, $t(241) = 12.00$, $p < .001$, $d = 0.74$, for the one-sample *t*-test against zero. This pattern also materialized in the fact that the sexual orientation typicality score concerning the categories defined as heterosexual statistically differed from that concerning the categories defined as gay, $t(600) = 21.03$, $p < .001$. Moreover, participants perceived the control categories ($M = 1.86$, $SE = .15$) as more typical of heterosexual men than of gay men, $t(241) = 13.00$, $p < .001$, $d = 0.80$ for the one-sample *t*-test against zero. The sexual orientation typicality score concerning the control categories fell between that of the categories defined as

Figure 2

Sexual orientation typicality scores of elderly and young men as a function of sexual orientation in Study 2



Note. Error bars represent standard errors of the differential scores. Positive values on the sexual orientation-typicality score indicate that the category was considered typical of heterosexual men, while negative values indicate that the category was considered as typical of gay men.

heterosexual, $t(600) = -3.29$, $p = .001$, and that of the category defined as gay, $t(600) = 17.74$, $p < .001$.

More importantly for our research purpose, the age by sexual orientation interaction proved significant, $F(2, 600) = 7.84$, $p < .001$, $\eta^2_p = .03$. A series of follow-up analyses to examine the impact of sexual orientation on each age category was conducted. Participants' scores regarding young men were first examined. As a baseline, participants considered 'young men' to be more typical of heterosexual men than gay men ($M = 0.87$, $SE = .21$), $t(120) = 5.50$, $p < .001$, $d = 0.50$ for the one-

sample *t*-test against zero. Moreover, the sexual orientation typicality score of 'young heterosexual men' (M = 2.35, SE = .21) fell significantly above zero, $t(120) = 10.00$, $p < .001$, $d = 0.95$, whereas the sexual orientation typicality score of 'young gay men' (M = -2.26, SE = .21) fell significantly below zero, $t(120) = -9.80$, $p < .001$, $d = 0.89$, indicating that the former were judged to be more typical of heterosexual men than of gay men, while the latter were rated as more typical of gay men than of heterosexual men. Compared to 'young men', participants judged 'young heterosexual men' as more typical of heterosexual men, $t(600) = -5.07$, $p < .001$, and 'young gay men' as more typical of gay men, $t(600) = 10.72$, $p < .001$. In line with this interpretation, they also considered 'young heterosexual men' as more typical of heterosexual men than 'young gay men', $t(600) = 15.79$, $p < .001$.

Next, the scores for elderly men were analysed. Participants considered 'elderly men', namely the baseline, as more typical of heterosexual men than of gay men (M = 2.84, SE = .21), $t(120) = 13.00$, $p < .001$, $d = 1.19$ for the one-sample *t*-test against zero. The same held for 'elderly heterosexual men' (M = 2.72, SE = .21), $t(120) = 12.00$, $p < .001$, $d = 1.13$ for the one-sample *t*-test against zero. Importantly, participants perceived 'elderly men' and 'elderly heterosexual men' as equally typical of heterosexual men, $t(600) = 0.43$, $p = .671$. On the contrary, they saw 'elderly gay men' (M = -1.35, SE = .21) as more typical of gay men than of heterosexual men, $t(120) = -6.70$, $p < .001$, $d = 0.61$, for the one-sample *t*-test against zero. Compared to 'elderly men', namely the baseline, participants considered 'elderly gay men' as more typical of gay men, $t(600) = -13.95$, $p < .001$.

4.3 Discussion

Study 2 shows that, although participants perceived both 'Young men' and 'Elderly men' as more typical of heterosexual than gay men, the perceived typicality of 'Elderly men' with respect to heterosexual men was much greater than that of 'Young men'. Such a pattern of results suggests that the category 'Elderly men', rather than the category 'Young men', is strongly correlated with sexual orientation categories in general, and with 'Heterosexual men' in particular. Given the elusive

correlation between ‘Young men’ and the sexual orientation categories, the way in which ‘Young men’ combined with the sexual orientation categories (i.e., ‘Heterosexual men’, ‘Gay men’) is expected to follow the pattern derived from the modification model. Indeed, compared to ‘Young men’, participants perceived ‘Young heterosexual men’ as more typical of heterosexual men, and ‘Young gay men’ as more typical of gay men. In line with the assumptions of the modification model, the range of category exemplars instantiated by ‘Young men’ was limited to those implied by the sexual orientation categories (i.e., ‘Heterosexual men’, ‘Gay men’), thus reinforcing the significance of the sexual orientation category in the perception of the combined categories (i.e., ‘Young heterosexual men’, ‘Young gay men’).

‘Elderly men’ was positively correlated with ‘Heterosexual men’. The sexual orientation information given by the former category appeared to be redundant with that of the latter sexual orientation category. Indeed, participants considered ‘Elderly men’ and ‘Elderly heterosexual men’ as equally typical of heterosexual men. Such a pattern of results is in line with the predictions derived from the redundancy model. Lastly, ‘Elderly gay men’ represented the only category combination for which the two constituent categories (i.e., ‘Elderly men’ and ‘Gay men’) were negatively correlated. As a result, compared to ‘Elderly men’, participants perceived ‘Elderly gay men’ as less typical of heterosexual men and more typical of gay men. This result dovetails well with the predictions of the dominance model in that the salience of the category ‘Gay men’ is greater than the salience of the age category.

Building on these findings, Study 3 was designed to replicate the results of Study 1 and 2 on how unrelated or weakly correlated categories are combined with each other as well as on how positively correlated categories are cognitively combined. In addition, Study 3 aimed to shed light on the generative mechanism that underpins the combination of ‘Gay men’ and ‘Elderly men’ as discrete categories. In fact, while Study 1 suggested that the age typicality of ‘Elderly gay men’ could be explained by both the averaging and emergent attributes models, Study 2 suggested that the dominant

model provided a better account of the sexual orientation typicality of 'Elderly gay men'. To do this, we changed the research methodology of Study 3 to an open-ended approach. Specifically, we secured participants' spontaneous generation of traits in reaction to the discrete categories of age and sexual orientation and their combinations.

5. Study 3

5.1 Method

5.1.1 *Participants*

We collected the data in two subsequent waves. In the first, data were collected from psychology students. Of the 84 clicks on the link to the online survey, 40 participants were dropped, $n = 26$ did not complete any part of the questionnaire and $n = 14$ participants did not list at least one characteristic for each given category. In the second, 40 clicks were recorded on the link to the online survey. Of these, $n = 3$ participants were dropped, $n = 2$ failed to list at least one characteristic for each given category and $n = 1$ did not report Italian citizenship and native language. The final sample comprised $N = 81$ participants (see Table 1 for detailed demographic characteristics).

5.1.2 *Materials and Procedure*

Participants completed an online survey and were briefed to think of a specific category and the way this category was perceived on a societal level. After agreeing to participate, participants read the following instructions:

> *In this study, we are interested in understanding how certain social groups are represented in the society nowadays. Specifically, we are not interested in what you personally think about the social groups, but the manner in which the society in general thinks about these groups. For this reason, you will be asked to think about some groups, one at a time. For each group, you will be asked to list at least 6 characteristics/adjectives that society, not you in particular,*

considers typical of that social group. Your task will be to list the first 6 characteristics or adjectives that come to your mind to describe how society, not you in particular, represents that social group.

Next, we presented participants with 8 categories, one at a time. We randomized the order of presentation of the categories across participants. Specifically, two categories were the discrete categories of sexual orientation (i.e., 'Heterosexual men', 'Gay men'), two categories were the discrete categories of age (i.e., 'Young men', 'Elderly men'), and four categories were the intersectional categories stemming from the combination of the discrete categories of sexual orientation and age (i.e., 'Heterosexual young men', 'Gay young men', 'Heterosexual elderly men', 'Gay elderly men'). To control word order effects, intersectional categories were labeled by first mentioning either sexual orientation first (e.g., 'Heterosexual young men') or age (e.g., 'Young heterosexual men') and randomly assigning participants to one of the two labels (for similar procedure, see Kunda et al. 1990). For each category, participants were requested to report up to six characteristics/adjectives, each of which in one of the six displayed boxes.

At the end of the questionnaire, participants reported their demographics (i.e., age, gender, sexual orientation, citizenship, native language). They were then debriefed and thanked.

5.2 Results

5.2.1 *Treatment of free-response data*

Participants generated a total of 3379 attributes or short sentences. The average number of attributes generated was 5.20 (range = 1-6). The attributes generated in response to the discrete categories were analyzed first (n = 1728 attributes). The list of attributes was narrowed down by identifying exact synonyms (e.g., if "sensitive" was mentioned by three participants, resulting in three attributes, the attribute "sensitive" was included only once in the list of generated attributes). Also, if attributes were in both singular and plural forms, only attributes in the singular form were retained.

In a first step, two of the current authors (i.e., judges) worked with the list of the generated attributes in alphabetic order and without information concerning the discrete category that prompted each attribute comprised in the list. The attributes were grouped, independently by two judges, on the basis of their similarity in meaning (i.e., cluster). Similarity among attributes was defined using a bottom-up approach, i.e., identifying synonyms (e.g., revolutionaries, rebels), as well as a top-down approach, i.e., grouping attributes based on lists of stereotypic traits available in published works (Abele et al., 2016; Carnaghi et al., 2020; Carnaghi et al. 2022; Chasteen et al., 2002; Coladonato et al., 2022; Kite & Deaux, 1987; Kite, et al., 1991; Wright & Canetto, 2009). The two judges compared the clusters of attributes and resolved disagreement through discussion. The procedure resulted in a list of n = 785 attributes, sorted into 77 clusters. Of these 77 clusters, one cluster comprised idiosyncratic responses (e.g., "they really listened to themselves"), namely attributes that could be included in none of the 76 clusters.

In a second step, two additional independent raters evaluated the consistency of the attributes of each cluster. As well, the attributes were analyzed for being either synonymous or semantically associated with each other. Raters were required to spot inconsistencies and to suggest alternative clusters. We computed the inter-rater agreement using Cohen's Kappa index and showed a high level of agreement (1960; see Table 2 for details). Specifically, inconsistencies amounted to 10.19% of the total number of attributes (i.e., both raters spotted n = 55 inconsistencies, and one but not the other rater found n = 12 and n = 13 inconsistencies).

In a third step, the two judges reviewed the inconsistencies. They agreed on n = 24 of the suggested changes by the raters. The judges also agreed on n = 13 inconsistencies but suggested alternative clusters. Reviewing the entire sorting of the attributes into clusters, the judges suggested an additional classification n = 7 attributes into different clusters.

In the fourth step, the entire list of attributes and the changes made by the judges in the previous step were reviewed by the same raters. Raters were also informed of the changes outlined

Table 2

Inter-rater agreement

	Judges – R1	Judges – R2	R1 – R2
Discrete categories			
Agreement	718/785	717/785	760/785
%	91.46	91.34	96.82
K			0.80
z			22.34
p			< .001
Intersectional categories			
Agreement	311/334	300/334	283/334
%	93.11	89.82	84.73
K			0.03
z			0.47
p			.638

in the third step and provided with the same instructions as in the second step. They spotted no inconsistencies.

This iterative process led to the definition of 74 clusters. Specifically, $n = 5$ clusters originally proposed by the judges were dismissed (i.e., "Descriptive", "Fashion", "Naïve", "Non-materialistic", and "Susceptible") and $n = 2$ clusters were added (i.e., "Desperate" and "Stubborn"). The number of generated attributes that fell in a given cluster in reaction to each discrete category was computed (e.g., for the cluster "Agentic", if a participant listed "motivated" and "successful" in reaction to 'Young men', a score of 2 was assigned to "Agentic" for this participant and for this discrete category). The same logic was applied to those attributes ($n = 1650$) generated in response to intersection categories. This process allowed for the identification of novel attributes ($n = 419$) that were not generated for discrete categories and therefore could not be included in the 74 clusters.

We narrowed down the list of novel attributes as described above, and obtained $n = 334$ novel attributes that underwent the same procedures as those outlined in steps 1 to 4. The inter-rater

agreement was computed using Cohen's Kappa index and showed a modest inter-judge agreement (1960; see Table 2 for details). Specifically, inconsistencies amounted to 15.27% of the total number of attributes (i.e., both raters spotted $n = 3$ inconsistencies, and $n = 20$ and $n = 31$ inconsistencies were found by one but not the other rater). Of these, judges agreed on $n = 5$ of the suggested changes by the raters. Moreover, judges agreed on $n = 2$ inconsistencies but suggested alternative clusters than those proposed by the raters.

The attribute-cluster associations stemming from the discrete categories were then compared to those in response to the intersectional categories. A rearrangement of the clusters was suggested by the judges that involved 22 out of 90 clusters. For instance, the attributes included in the cluster "Stigma" and "Inequality" in response to discrete categories and intersectional categories could be rearranged into a more accurate classification: "Generic discrimination" (e.g., violence, oppression), "Victim-oriented discrimination" (e.g., harassed, stigmatized), and "Agent-oriented discrimination" (e.g., homophobic, racist). This procedure led to the organization of the attributes into 90 clusters. Raters learned about the above-mentioned changes made by judges and reviewed the entire sorting of the attributes. No inconsistencies were found.

As a last step, the number of generated attributes that fell in a given cluster in reaction to each discrete and intersectional category was computed.

All materials related to the steps described are available on OSF (https://osf.io/b5u4x).

The final outcome resulted in a frequency table associating frequencies between 90 clusters and 8 categories. Following the procedure outlined by previous research (Ghavami & Peplau, 2013; Preddie & Biernat, 2021), the first 15 clusters were retained, namely those clusters with a higher frequency in terms of association with all the categories (see Table 3). A *Correspondence analysis* was used to examine the relationship between categories (rows) and clusters (columns). This statistical method enables an examination of the associations between the discrete and intersectional age and sexual orientation categories with the attributes that participants listed for each of them.

5.2.2 *Correspondence analysis*

We conducted a Chi-square analysis of the categories by clusters table (Table 3). The observed frequencies deviated strongly from independence, $\chi^2(98) = 1824$, $p < .001$, indicating that the clusters were not equally represented in each category.

We then conducted a correspondence analysis using R (R Core Team, 2021) with FactoMineR

Table 3

Top 15 clusters. Frequency distributions

Clusters / **Categories**	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**	**15.**
Heterosexual men	12	83	24	1	8	7	11	1	30	6	2	3	9	3	14
Gay men	26	6	15	49	0	47	6	14	2	18	7	0	9	19	0
Young men	9	0	27	5	2	12	52	35	1	13	6	2	28	14	1
Elderly men	59	0	5	1	54	0	1	5	18	0	52	48	0	1	19
Young heterosexual men	10	52	28	0	7	6	34	14	14	9	1	4	26	3	8
Elderly heterosexual men	39	33	6	3	34	0	1	2	32	0	16	33	3	0	23
Young gay men	16	3	19	33	3	35	5	31	3	19	11	2	6	33	3
Elderly gay men	29	1	16	36	12	14	3	3	4	34	4	6	6	14	1

Note. 1. Warm, 2. Norm, 3. Agentic, 4. Diversity, 5. Wisdom, 6. Exaggerated, 7. Dynamism, 8. Childish, 9. Family role, 10. Alternative, 11. Not self-sufficient, 12. Low arousal, 13. Enthusiasm, 4. Immoral, 15. Conformist.

(Le et al., 2008) and factoextra packages. We intended to analyze the association between the occurrences of the clusters and categories. The parameters used to interpret the dimensions emerging from the correspondence analysis are the proportion of inertia (i.e., absolute contribution), the amount of a variable's variance explained by a dimension (i.e., cosine square), and the position of the variables in the plot (i.e., coordinates) (see Appendix A).

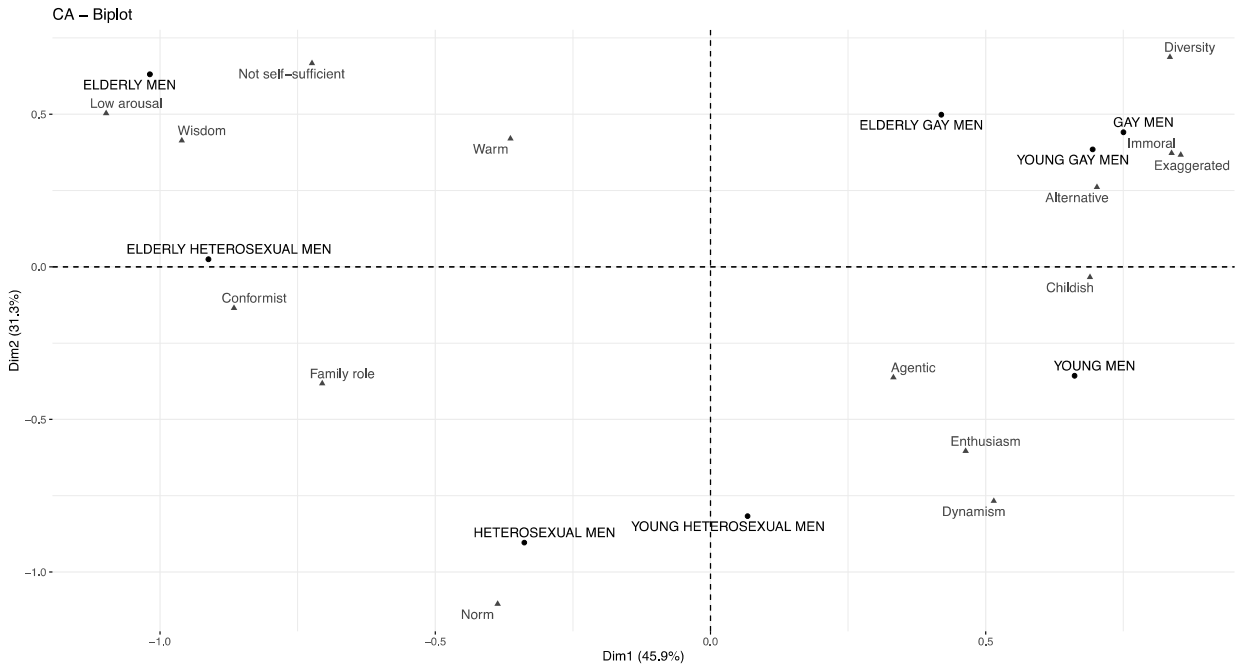
Results concerning the absolute contribution suggested seven dimensions extracted in order of importance, that is, as a decreasing function of the total inertia accounted for (first dimension 45.93%, second 31.29%, third 15.83%, fourth 4.14%, fifth 1.65, sixth 1.02%, and seventh 0.13%). Figure 3 shows the bidimensional space based on the first two dimensions, explaining together 77.2% of the total inertia. The first dimension opposes what can be seen as the social default options, i.e., those categories conceptualized as "normality" (Zarate & Smith, 1990), such as heterosexual and young men (bottom portion of the vertical dimension), and those categories at odds with such defaults, namely elderly and gay men (top portion of the vertical dimension). The second dimension denotes the concept of traditionalism, contrasting categories high in traditionalism (left portion of the horizontal dimension) and correlated clusters, such as "Conformism", "Family role", and "Norm", to categories less associated with traditionalism, such as young men and gay men, and clusters as "Immoral", "Alternative", and "Exaggerated" (right portion of the horizontal dimension).

Turning to the variance explained by a given dimension (i.e., cos^2), 'Elderly men' (cos^2 = .67), 'Elderly heterosexual men' (cos^2 = .92), 'Gay men' (cos^2 = .58), and 'Young gay men' (cos^2 = .62), were mainly accounted for by the first dimension and less so by the second dimension (i.e., cos^2 = .26, cos^2 = .001, cos^2 = .20, cos^2 = .19, respectively). The first dimensions explained 'Young men' more (cos^2 = .34) than the second dimension (cos^2 = .10). In contrast, 'Heterosexual men (cos^2 = .66) and 'Young heterosexual men' (cos^2 = .93) were mainly accounted for by the second rather than the first dimension (cos^2 = .09, cos^2 = .01, respectively). Although in a less polarized fashion, 'Elderly gay men' was less accounted for by the first (cos^2 = .22) than the second dimension (cos^2 = .31).

A first examination of the data involves the sexual orientation angle. As the position of ‘Gay men’, ‘Young gay men’ and ‘Elderly gay men’ shows, these categories inhabit the same area of the bi-dimensional space, suggesting that they shared similar stereotypical attributes. More precisely, ‘Gay men’ and ‘Young gay men’ almost overlapped in terms of positioning, and both were not very distant from ‘Elderly gay men’. Hence, attributes grouped in the “Immoral”, “Exaggerated”, “Alternative”, and “Diversity” clusters defined both ‘Gay men’ and ‘Young gay men’, and somewhat more so than ‘Elderly gay men’. In sharp contrast, ‘Heterosexual men’, ‘Young heterosexual men’, and ‘Elderly heterosexual men’ were spread over different areas of the bi-dimensional space. Whereas

Figure 3

Correspondence plot of Table 3



Note. Rows (i.e., categories) and columns (i.e., clusters) labels projected onto a two-dimensional map.

‘Heterosexual men’ was associated with attributes of the “Norm” cluster, ‘Young heterosexual men’ and ‘Elderly heterosexual men’ were closer to those clusters defining the age categories, namely ‘Young men’ and ‘Elderly men’ respectively.

Alternatively, it is instructive to consider the age angle. Here the two categories 'Elderly men' and 'Elderly heterosexual men' were positioned close to each other in the space. Both were characterized by the "Low arousal", "Wisdom", "Conformist", "Not self-sufficient", and "Warm" clusters. These attributes did not characterize 'Elderly gay men' which was located in a different area, on the right side of the second dimension. Interestingly, 'Young men' is equally distant from 'Young gay men' and 'Young heterosexual men'. Moreover, 'Young men' and 'Young heterosexual men' shared attributes associated with the "Agentic", "Enthusiasm", and "Dynamism" clusters, whereas 'Young men' and 'Young gay men' shared those attributes associated with the "Childish" and "Alternative" clusters.

5.2.3 *Emergent clusters*

Following the procedure outlined by Kunda and colleagues (1990; see also, Ghavami & Peplau, 2013; Preddie & Biernat, 2021), a three-step procedure was used to identify emergent clusters. First, those clusters that pertained to intersectional categories only, and were not defining of their constituents, i.e., discrete categories were considered. Second, the clusters that comprised at least one attribute utilized at least 3 times and by at least 3 participants. Third, we kept those clusters that were used more frequently for a given category intersection than for the remaining category intersections.

Using these criteria, no emergent cluster for 'Young Heterosexual men' and 'Young gay men' was found. There was a single emergent cluster for 'Elderly heterosexual men', namely the "Role models". Only three emergent clusters for 'Elderly gay men': "Not-religious", "Psychologically disturbed", and "Invisibility" were found. Participants used the "Not-religious" cluster more often in

5.3 Discussion

Results showed that 'Heterosexual men', 'Elderly heterosexual men', and 'Young heterosexual men' were all positioned in different areas of the bi-dimensional space. More specifically, the representations of the intersectional categories, that is 'Elderly heterosexual men'

and ‘Young heterosexual men’, were characterized especially by their age category in addition to the heterosexual category. A similar pattern occurred for ‘Young men’ in combination with the sexual orientation categories. In fact, ‘Young heterosexual men’ and ‘Young gay men’ were equally distant from ‘Young men’, and their respective representations were especially based on their sexual orientation category in addition to their age category. In sum, ‘Heterosexual men’ and ‘Young men’, appeared to be loosely correlated with the age categories and sexual orientation categories respectively, thus the intersectional categories stemmed from an additive combination as predicted by the modification model. On the contrary, the representation of ‘Gay men’ largely overlapped that of ‘Young gay men’, and more so than that of ‘Elderly gay men’. Moreover, the representation of ‘Elderly men’ was closer to that of ‘Elderly heterosexual men’ and far away from that of ‘Elderly gay men’. Hence, it appears that age information brought by ‘Young gay men’ was redundant with the contents of the representation of ‘Gay men’, and, at least in part, that the sexual orientation information brought by ‘Elderly heterosexual men’ was redundant with the contents of the representation of ‘Elderly men’. As such, this pattern of results confirmed that when the contents of the to-be-combined categories are positively correlated, their merging follows the prediction of the redundancy model. This pattern of result further confirmed that ‘Elderly gay men’ represented a conflicting category combination, as the contents brought by its constituent categories were at odds with each other, namely they were negatively correlated.

‘Elderly gay men’ was set in the bi-dimensional space closer to ‘Gay men’ than to ‘Elderly men’, indicating that ‘Elderly gay men’ was conceptualized especially in terms of sexual orientation rather than of its age category information. Such a pattern of results confirms that when ‘Gay men’ and ‘Elderly men’ combined, the resulting combination is dominated by the salience of the sexual orientation category, as predicted by the dominance model. Moreover, the analyses of the emergent attributes, suggested that, as for this category intersection, perceivers generated attributes pertaining

to ‘Elderly gay men’ only, and not to its constituents. As such, the emergent attributes model contributed to shaping the atypicality of this category combination, i.e., ‘Elderly gay men’.

6. General Discussion

Drawn on works on category intersections, we intend to reconcile apparently opponent views on the way categories intersect and are cognitively represented. Thus far, theoretical and empirical efforts have framed category intersection either as an additive or as a multiplicative process (Kang & Bodenhausen, 2015; Petsko & Bodenhausen, 2019b). The current line of research addresses such theoretical diatribes by recasting the analyses of category intersection within the modification model for conceptual combination perspective (Kunda et al., 1990; Medin & Shoben, 1988). We argued that distinct sexual orientation categories intersect with specific age categories either in an additive or in a multiplicative fashion depending on the extant correlation between the two categories to be combined.

We showed that the stereotypical contents of ‘Heterosexual men’ are independent from those related to discrete age categories and that the stereotypic contents of ‘Young men’ appear to be loosely overlapping those associated with discrete sexual orientation categories. Hence, and as anticipated by the modification model, when ‘Heterosexual men’ combines with age categories, the stereotypical contents of such categories add together to those brought by the sexual orientation category. In a similar vein, when ‘Young men’ intersects sexual orientation categories, the stereotypical contents of the latter are added to the former. As a result, ‘Young heterosexual men’ appear to be a typical subtype of both young and heterosexual men, and ‘Elderly heterosexual men’ appear to be a typical subtype of both elderly and heterosexual men.

Also, the stereotypical contents of ‘Young gay men’ largely overlap those of ‘Gay men’, and the stereotypical contents of ‘Elderly heterosexual men’ are close to those of ‘Elderly men’. These results are in line with evidence from media analysis, suggesting that gay men are more frequently

depicted than their heterosexual counterparts as young (Fejes, 2000; Rosenfeld, 2009), and from research on the aging of sexual minorities, voicing the heteronormative default within the health care services dedicated to older people (Choi & Meyer, 2016). Such redundancy in terms of stereotypes between the categories in question mapped onto the enhanced typicality of 'Gay men' as young, and the enhanced typicality of 'Elderly men' as heterosexual. Hence, when the to-be-combined age and sexual orientation categories are positively correlated, their combination occurred consistently with the predictions of the redundancy model.

In the case of 'Elderly gay men', the two constituent categories are negatively correlated. In line with the dominance model, stereotypical contents associated with 'Elderly gay men' turn out to be more in line with those of 'Gay men' but at odds with those associated with 'Elderly men'. Such a pattern of results mirrored those issued by the typicality measures as 'Elderly gay men' appeared to be neither typical of young nor of elderly men, but still a subtype of 'Gay men'. The analyses of the emergent attributes likely explain that unique attributes pertaining to this group render 'Elderly gay men' a "deviant" case with respect to 'Elderly men', and an atypical subtype majorly qualified by its sexual orientation category than its age category, as predicted by the dominance model.

In sum, we claim that emergent attributes, stemming from category intersections whose constituents are at odds with each other, make such intersections less "visible" when processing the constituents. This theoretical assertion is further corroborated by studies that relied on age or race and sexual orientation intersections. While perceivers are accurate in categorizing the faces of young gay and straight men, their accuracy is impaired when it comes to older gay and straight men (Tskhay et al., 2016). That is, when atypical members (i.e., older gay men) are processed, their age membership is blurred. In a similar vein, the weapon effect (i.e., faster recognition of weapons when primed with Black men than with White men) is substantially reduced when primes comprise both older Black and White men (Jones & Fazio, 2010), namely when the category 'Black men' (who is prototyped as young) is presented in an atypical manner (i.e., old men). Importantly, the weapon effect was still

found when primes comprised of faces of Black and White children, whose age category is not at odds with their race category (Thiem et al, 2019; Todd et al, 2016).

Taken together, this evidence suggests a new way of looking at the categories' intersections. By using mixed tools and methodologies, results confirm that the additive (i.e., double jeopardy approach) and the multiplicative approach are not mutually exclusive, but rather play a distinct role in the category combination depending on the existing relationship between the combined discrete categories.

CONCLUSIONS

The current research project focused on the intersectional invisibility of older gay men. Specifically, this research explored the stereotypes associated with specific combinations of age (i.e., young and elderly) and sexual orientation (i.e., gay and heterosexual) categories as a key process of the cognitive invisibility of elderly gay men.

Social cognition research has recognized that categories have varying degrees of typicality, with certain exemplars being more representative of the category as a whole than others. In Chapter 1, we found that the heteronormative assumption was stronger within 'Elderly men' than within 'Young men', as well as the young-as-default was stronger within 'Gay men' than within 'Heterosexual men'. Hence, it appears that 'Elderly men' in particular are prototyped as heterosexual, and that 'Gay men' are porotype as young. As a consequence, 'Elderly gay men' are neither typical of 'Elderly men' nor of 'Gay men'. In Chapter 2, the atypicality of the category combination 'Elderly gay men' accounted for their age stereotyping: they were stereotyped as younger and less old compared to the constituent category 'Elderly men'. Moreover, and confirming the cognitive nature of such a pattern of stereotyping, additional atypical members, such as Elderly atheist and athlete men, were stereotyped as younger and less old compared to the constituent category 'Elderly men'. In Chapter 3, we more directly addressed the idea that 'Elderly gay men' constituted an atypical subtype. Specifically, we assessed the overlap between the characteristics generated in reaction to the age and sexual orientation discrete categories and those generated for their intersectional combinations: 'Elderly gay men' was the intersectional category most described by unique characteristics that did not pertain to its constituent categories.

This research presents several limitations. First, in all of the studies described in the three chapters, we relied on experimental samples that included more young (i.e., under 35 years of age) and adult (i.e., between 35 and 65 years of age) individuals than older (i.e., over 65 years of age)

individuals. Additional studies should try and replicate the present findings in a more diverse age sample. In particular, with regard to the category interpretation paradigm used in Chapter 1, previous research has shown that the evaluation of category labels can change over time (Pennebaker & Stone, 2003). In Study 1 and 2 of Chapter 1, the sample consisted mainly of young participants (99.22% and 69.83%, respectively) and adult participants (0.78% and 27.94%, respectively). A more diverse age sample might be useful to test whether the use of specific category labels referring to male sexual orientation is related to specific labels referring to age, and vice versa, across ages. Moreover, in all the studies of Chapter 2, the sample was composed primarily of young participants (48.35%, 86.55%, 45.24%, and 90.29%, respectively) and adult participants (43.96%, 13.45%, 54.76%, and 9.71%, respectively). Finally, even in the studies in Chapter 3, the sample comprised mainly young participants (84.08%, 83.33%, and 92.50%, respectively) and adults (14.65%, 15.84%, and 7.50%, respectively). It is unclear whether participants of different ages share the same cultural stereotypes investigated in both Chapters 2 and 3. Prior research suggested that compared to young individuals, adult and elderly individuals have a more multifaceted representation of their age group (e.g., Brewer & Lui, 1984; Hummert, 1993). Future research can rely on an age-diverse sample to test whether the stereotyping of the intersected categories under scrutiny differs across age classes.

Also, across all studies, the samples were largely comprised of heterosexual female participants (n = 694 female participants, ca. 61.90%). Given that heterosexual women, compared to heterosexual men, report less stereotypical and more positive attitudes towards gay men, a more gender-balanced sample would have allowed for a more accurate estimate of the general population's young bias in the representation of gay men and heterosexual bias in the representation of older men (Sakalli & Ugurlu, 2003).

As noted in the procedure section of all studies, we relied on masculine grammatical gender to specify that the categories under consideration referred to men. Although this grammatical marker

conveys information concerning the (masculine) gender of the categories under consideration, future studies carried out in gender-unfair linguistic contexts might more explicitly specify gender information.

Finally, and especially with regard to Chapters 2 and 3, we investigated perceivers' cultural stereotypes rather than perceivers' endorsement of such stereotypes. Although the two processes have been found to be connected (Crandall & Eshleman, 2003), future research can address the extent to which the cultural representations of age and sexual orientation category intersections are endorsed at the individual level of analyses. Further investigation of this process could provide an additional explanation for the invisibility of elderly gay men. Several studies have shown that people tend to endorse stereotypes about outgroups to maintain the status quo (Jost, 2001; Jost & Burgess, 2000). Hence, we might expect that the more people endorse the stereotypes of 'Elderly gay men' as invisible and psychologically disturbed (i.e., unique stereotypes specific to this intersectional category, see Chapter 3) the more they are prone to deny the unique discrimination of such a group (Bettinsoli et al., 2022). Relatedly, as stereotyping is highly dependent on the cultural environment, caution is recommended in generalizing these results to other cultural and linguistic contexts (Fiske & Cuddy, 2006; Gordijn et al., 2001). Italy is scored higher on sexual prejudice compared to other EU countries (ILGA-Europe, 2023), and differently from other EU countries, no health services have been set up to address the unique need of elderly gay men (Cronin & King, 2010). Hence, attributes used to describe the discrete categories of age and sexual orientation as well as their combinations could be strongly constrained by cultural factors.

A second aim of this research was to explore how perceivers' amount of contact with individuals belonging to age and sexual orientation categories influenced their understanding of discrete age and sexual orientation categories (Chapter 1), as well as the categories that arise from the intersection of age and sexual orientation (Chapter 2). The results of these chapters seem to suggest that there is no apparent association between participants' amount of contact and how the

categories of age and sexual orientation are cognitively represented or how their combinations are stereotyped. However, and in line with the reasoning outlined above, we reasoned that both the category interpretation paradigm used in Chapter 1 and the stereotyping measure adopted in Chapter 2 investigated a cultural view of the categories under analysis, while the items concerning participants' amount of contact reffered to participants' own conctact with the target groups. Future studies could overcome this limitation by assessing both the personal endorsment of the age sterootyping and the personal level of intergroup contact.

The current research can be seen as a scientific continuation of Iannello's exhibition cited in Chapter 3, and likewise Ianello's work has practical implications. The consensual age stereotypes of old gay men can enact the invisibility of that group when, for instance, planning policies aimed at older individuals. In fact, the unique needs of old gay men have frequently been left unaddressed as in the case of retirement communities that have only recently become LGBT+ inclusive (Cronin & King, 2010). In addition, socially representing this age segment of the gay male population as "young" may reinforce the belief on the part of older gay men that looking and acting young is necessary to be accepted in the gay community (Grant, 2010; Schope, 2005; Wight et al., 2015).

At the practical level, the current results could inform media professionals about the risk of portraying elderly men as exclusively heterosexual, making old gay men "invisible", and of the need to adopt more sexual orientation-diverse representations of elderly men. The present findings could then inform media workers about the need to update the portrayal of older men as exclusively heterosexual or of gay men as exclusively young. Likely, more diverse representations of the groups in question may help counteract the invisibility of elderly gay men. Fuerthermore, elderly gay men may experience a failure in matching the stereotypical implications associated with their sexual orientation. As a result, they might either stress their attempts to look like young gay men or anticipate the ageism within the gay community (Wahler & Gabbay, 1997). Both forms of coping may foster elderly gay men's minority stress (Wight et al., 2015). Hence, our results might inform practitioners

about the unique form of discrimination experienced by elderly gay men to gain a better understaning of their clients' psychological issues and well-being.

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APPENDIX

APPENDIX A. Correspondence parameters (Chapter 3, Study 3)

	Dim 1 (inertia% = 45.93)			Dim 2 (inertia% = 31.29)			Dim 3 (inertia% = 15.83)			Dim 4 (inertia% = 4.14)		
Categories	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**
Heterosexual men	-0.338	2.923	0.092	-0.904	30.625	0.661	-0.536	21.330	0.233	0.067	1.261	0.004
Gay men	0.750	14.646	0.584	0.441	7.429	0.202	-0.350	9.256	0.127	0.115	3.794	0.014
Young men	0.661	10.811	0.341	-0.357	4.626	0.099	0.845	51.200	0.556	-0.027	0.196	0.001
Elderly men	-1.019	32.568	0.665	0.631	18.349	0.255	0.323	9.513	0.067	0.039	0.529	0.001
Young heterosexual men	0.067	0.117	0.006	-0.817	25.263	0.935	0.148	1.633	0.031	-0.088	2.219	0.011
Elderly heterosexual men	-0.912	22.341	0.925	0.025	0.024	0.001	-0.118	1.082	0.015	0.021	0.126	0.000
Young gay men	0.694	12.775	0.620	0.385	5.759	0.190	-0.097	0.730	0.012	0.296	25.773	0.113
Elderly gay men	0.419	3.819	0.222	0.498	7.924	0.314	-0.289	5.258	0.105	-0.523	66.103	0.346
Clusters	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**	**Coord**	**Contr**	**Cos²**
Warm	-0.363	3.152	0.403	0.420	6.191	0.539	-0.024	0.039	0.002	-0.113	3.370	0.039
Norm	-0.387	3.177	0.086	-1.105	38.062	0.700	-0.600	22.187	0.206	0.073	1.243	0.003
Agentic	0.332	1.846	0.421	-0.362	3.223	0.501	0.057	0.159	0.013	-0.079	1.161	0.024
Diversity	0.835	10.644	0.472	0.687	10.590	0.320	-0.521	12.031	0.184	-0.129	2.819	0.011
Wisdom	-0.960	13.213	0.812	0.414	3.602	0.151	0.166	1.151	0.024	-0.109	1.903	0.011
Exaggerated	0.854	10.453	0.638	0.367	2.830	0.118	-0.335	4.666	0.098	0.343	18.716	0.103
Dynamism	0.515	3.572	0.161	-0.767	11.664	0.359	0.867	29.398	0.457	-0.127	2.430	0.010
Childish	0.689	5.957	0.508	-0.034	0.021	0.001	0.555	11.211	0.329	0.337	15.755	0.121
Family role	-0.705	6.177	0.634	-0.382	2.665	0.186	-0.314	3.555	0.126	0.052	0.372	0.003
Alternative	0.702	5.824	0.530	0.261	1.184	0.073	-0.221	1.667	0.052	-0.527	36.486	0.299
Not self-sufficient	-0.724	6.194	0.428	0.667	7.724	0.364	0.357	4.381	0.104	0.204	5.472	0.034
Low arousal	-1.098	14.100	0.784	0.503	4.344	0.164	0.260	2.298	0.044	-0.010	0.013	0.000
Enthusiasm	0.464	2.231	0.249	-0.604	5.562	0.423	0.477	6.841	0.263	-0.150	2.587	0.026
Immoral	0.838	7.287	0.700	0.373	2.116	0.139	-0.083	0.206	0.007	0.233	6.267	0.054
Conformist	-0.866	6.172	0.903	-0.135	0.221	0.022	-0.094	0.211	0.011	0.124	1.408	0.019