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Age wording in job advertisements sustains age inequality through selection and partially through attraction processes

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ABSTRACT

This research examines whether words used to describe ideal candidates in job advertisements are more strongly associated with younger workers (under 30), older workers (50 and over), or equally with both age groups. We first identified such associations, then conducted experiments to test how age-typed and age-shared descriptors in job advertisements influence candidate attraction and selection. Across two studies, participants aged 18 to 75 evaluated job advertisements that stereotypically aligned with younger workers, older workers, or both equally. We hypothesized an *age-matched attraction effect*, predicting that participants would find job advertisements with descriptors reflecting their own age group more appealing. This was supported for older participants in Study 2, who were more likely to apply to the advertisement with older descriptors. We also hypothesized an *age-matched selection effect* that participants would match resumes containing younger, older, or age-shared descriptors to corresponding job advertisements in a fictitious hiring scenario. A selection bias was confirmed for advertisements with younger and older descriptors, but not for the advertisement with age-shared descriptors, where candidates were equally preferred. The findings suggest that age-typed wording in job advertisements can sustain inequality in hiring by reinforcing selection biases and reducing attraction among older workers, but only on the objective measure.

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Ageism; age stereotypes; selection/hiring decisions; job advertisements; recruitment processes

Introduction

Age discrimination refers to unfair treatment of others based on their age and is a barrier to employment disadvantaging older workers (Cadiz et al., 2017; Finkelstein, 2015; Posthuma et al., 2012; Zacher & Steinvik, 2015). Despite directives banning age discrimination in employment (e.g., Council Directive 2000/78/EC in the US), managers report being more open to hiring younger than older workers (CMI, 2023). Conversely, a growing literature uncovers how age discrimination also disadvantages younger workers, suggesting that age discrimination presents a considerable recruitment and selection obstacle for workers across the lifespan (Fasbender, 2016). It is crucial to understand how age discrimination can arise within recruitment and selection processes to provide individuals of all ages with fair access to employment.

An established psychological framework employed to understand recruitment and selection processes is the Attraction-Selection-Attrition (ASA) model (Schneider, 1987; Schneider et al., 1995). According to the ASA framework, psychological processes underpinning attraction and selection are governed by a match in the personal characteristics of potential employees and those of the organization (please note the current study does not focus on attrition processes). Individuals find organizations attractive depending on a perceived congruence between their own characteristics and those of the organization. Correspondingly, organizations positively evaluate prospective employees if there is a match between the applicants' characteristics and those of the organization. Thus congruence, or "fit" processes are key within the attraction and selection aspects of the ASA framework, although they are left undefined (Schneider et al., 1995).

To extend understanding of attraction and selection processes (Schneider, 1987; Schneider et al., 1995) and how they may contribute to age discrimination, we incorporate insights from social categorization and the age stereotype literature (Cadiz et al., 2022; Cuddy & Fiske, 2002; Finkelstein et al., 2013; Turner & Oakes, 1989). Social categorization refers how we view others based on their social group membership and how we identify the groups we belong to (Turner & Oakes, 1989). Category-based psychological processing employs

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cognitive heuristics known as stereotypes (Fiske & Neuberg, 1990). Stereotypes are widely held, over simplified mental representations of a social group and its members (Cuddy & Fiske, 2002). They contain traits and characteristics that are attributed to individuals based on their group membership, correspondingly, group membership can be inferred from observable or inferred stereotypical traits and characteristics. We maintain that the perceived congruency of these traits and characteristics can contribute to attraction and selection outcomes through social categorization processes because they can infer relevant social group membership. To advance theory, we apply social categorization to the ASA framework by introducing a group-based perspective on the congruence process. This offers an additional insight that the process of matching by individual or organizational characteristics can occur via matches based on social group membership facilitated by stereotypes. We argue that because stereotypes are automatic, functional, implicit cognitive processes that underpin discriminatory behaviour (Fiske & Neuberg, 1990), it is vital to consider their role in framing attraction and selection.

Age stereotypes have a varied impact across different types of personnel decision-making, including interviews, selection, award recommendations and performance evaluations (Avolio & Barrett, 1987; Finkelstein et al., 1995; Perry et al., 1996). The present study extends proposed developments of the ASA put forward by Cadiz and colleagues (2022), who argue that age stereotypes in job advertisements can influence attraction and selection resulting in age-based exclusion and discrimination. Specifically, when job advertisements include age stereotypes to describe the job, the working environment, or the ideal candidate, they have the potential to deter applicants of other age groups due to perceived incongruence. In the context of selection, they argue that when there is little information (such as in the case of a resume), recruiters are more likely to rely on age-stereotypes to make congruence-based hiring decisions (Fiske & Neuberg, 1990). Across the two experiments, we extend and test these assumptions empirically. We contend that age stereotypes in job advertisements will influence attraction and how appealing jobs are perceived to be by job seekers. They will also affect the selection decisions of recruiters in relation to age stereotyped resumes.

Research focused on age stereotypes within recruitment and selection materials identifies their nature, but there is limited research on their influence. Age stereotyped words used to describe applicants' character (traits, skills or qualities) within their resumes can lead to discrimination towards workers viewed as relatively older, even when the characteristics are evaluated as equally positive to those of younger workers' (Abrams et al., 2016; Kleissner & Jahn, 2021). Furthermore, meta-age stereotypes (i.e., beliefs about the stereotypes that others hold about their own age group, Vorauer et al., 1998) within job advertisements can reduce attraction and intention to apply to the job role (Koçak et al., 2024; Koçak et al., 2023; Koçak et al., 2022). In addition, the degree to which decision-makers harbour negative age stereotypes has a detrimental on older job applicants' hireability (Zaniboni et al., 2019). Despite this rich foundation, there are gaps in our understanding. First, it remains unclear whether age stereotypes are perceived in naturally occurring recruitment materials. If they are, it is also unclear which words are stereotypically associated with younger versus older workers, and whether some words are perceived as age-neutral or shared across age groups. Second, it is unclear whether age stereotypes in recruitment materials are perceived as targeting – and effectively attracting – workers of particular age groups. Finally, in the context of selection processes, it remains unknown whether positive age stereotypes in job advertisements serve as implicit cues that guide decision-makers to favour age-congruent applicant resumes.

To test our ideas, we conducted a pilot study and two experiments. The pilot study identified descriptors, such as traits, characteristics, skills or qualities, used to describe ideal candidates from published job advertisements and examined whether these descriptors were perceived as typical of younger workers, older workers, or shared equally across age groups (*age-shared*). Age-stereotyped and age-shared descriptors were then incorporated into experimental materials, including job advertisements and applicant resumes.

Using experimental vignette designs (Aguinis & Bradley, 2014), we test a within-subject *age-matched attraction effect*, whereby participants will find job advertisements featuring age-stereotyped descriptors to be more appealing, when they correspond with their age group. We hypothesized that participants, acting as job seekers, would implicitly recognize descriptors as age cues in the advertisements and be drawn to those aligned with their own age group, consistent with the attraction component of the ASA framework (Schneider et al., 1995; Schneider et al., 1997). Thus, younger participants would be more attracted to the "young" job advertisement, which describes the ideal candidate with descriptors evaluated to be typical of younger workers and older participants would be more attracted to the "older" job advertisement, which describes the ideal candidate with descriptors evaluated to be typical of older workers.

Because decisions involving stereotypes can vary depending on the subjectivity of an outcome measure (Biernat & Manis, 1994), we employed both a subjective measure of attraction (perceived job appeal; Gaucher et al., 2011 in Study 1 and Study 2) and an objective measure (job choice ranking; Study 2). In Study 2, we also assessed perceived person – organization and person – role fit, aligning with the congruence aspect of the ASA model (Schneider et al., 1995, perceived fit; Gaucher et al., 2011).

We additionally tested for an *age-matched selection effect* reflecting implicit categorization in selection processes. Here, participants acted as decision-makers and were expected to match resumes containing age-stereotyped descriptors with the corresponding, age-congruent job advertisements (Studies 1 and 2).

These studies offer three theoretical contributions. First, we extend the ASA framework (Schneider, 1987; Schneider etal., 1997) by showing that perceived congruence between individuals and organizations can include group-level characteristics – specifically, age stereotypes. This links ASA theory with social categorization and age stereotype research (Cadiz et al., 2022; Finkelstein et al., 2013; Turner & Oakes, 1997) and clarifies when and for whom age-based congruence influences attraction. Second, we provide novel evidence that age stereotypes in job advertisements influence not only job seekers' attraction and behavioural intentions (Koçak et al., 2024; Koçak, Derous, et al., 2023; Koçak, Rooman, et al., 2022) but also decision-makers' selection behaviours. Finally, we contribute to the occupational lifespan and age stereotype literature by demonstrating age-specific responses to workplace age cues (Fasbender & Klehe, 2019; Finkelstein et al., 2020; Koçak et al., 2024; Koçak, Derous, et al., 2023; Koçak, Rooman, et al., 2022; von Hippel et al., 2013).

Theoretical background and hypotheses development

Social categorization is a psychological process arising from the broader Social Identity Theory (SIT: Tajfel & Turner, 1986). Social identity theory posits that in addition to personal identities, individuals also form a sense-of-self via social identities determined by the social groups to which they belong. Social categorization is the process of allocating others and the self into social groups, with age, race and gender considered primary categories (Turner, et al., 1994; Turner & Oakes, 1989). Within a few seconds of encountering a stimulus (e.g., a person, job advertisement or resume), explicit and implicit cues are used to facilitate categorization along these primary dimensions (Brewer, 1988). This is a functional process that helps us deal efficiently with overwhelming quantities of incoming social information but can be reductionist, leading to the use of stereotypes (Bernstein et al., 2007; Turner & Oakes, 1989). Age stereotypes are the social categorization processes we employ to compliment the ASA framework to explore age discrimination in attraction and selection processes.

The ASA framework (Schneider, 1987; Schneider et al., 1995) integrates both individual and organizational theories to explain how organizations use recruitment, selection and retention procedures to attract, hire and retain people with attributes that match the characteristics of the organization and its existing members. The communication of characteristics between job seekers, candidates and organizations operate on both explicit and implicit levels (Schneider, 1987; Schneider et al., 1995). Over time, ASA processes shape organizational culture and workforce demographics. While congruence can create a positive work environment, ASA also reduces diversity by homogenizing personnel and potentially excluding certain groups.

Both attraction and selection stages of the ASA framework are determined by perceived congruence between personal and organizational characteristics (Schneider, 1987). Although the original theory does not specify these characteristics, individual characteristics typically include personality traits, attitudes, and values (Schneider et al., 1995). Organizational characteristics are communicated implicitly through structures, procedures, and culture (Schneider et al., 1995). This perceived congruence, or "fit" between the individual and the organization, job, or industry, can influence job seekers' attraction to the job expressed through perceptions of job appeal (Gaucher et al., 2011), their intention to apply for the job, or accept a job offer. It can also influence an organization's decision to offer a job candidate a position. However, the ASA framework (Schneider, 1987; Schneider et al., 1995) does not take account of naturally occurring social categorization processes (i.e., the allocation of the self and others to specific social groups). Nor how such processes might affect job appeal or perceptions of fit between personal and organizational characteristics, particularly when characteristics confer stereotypes.

Grounded in SIT (Tajfel & Turner, 1986), we propose that congruence operates not only through personal identity (a match on individual characteristics, as Schneider suggests) but also through group identity (a match on group characteristics or stereotypes). This means that the communication of individual and organizational characteristics is shaped by social categorization and stereotype cues. At the individual level, congruence is influenced when characteristics, such as

personality traits, skills, attitudes, or values align with stereotypes of particular social groups – for example, younger workers are often stereotyped as extraverted, while older workers are seen as conscientious (Finkelstein et al., 2013). At the organizational level, congruence arises when company values reflect characteristics stereotypically associated with certain groups; for instance, a company describing itself as dynamic may primarily attract younger workers (Diekman & Hirnisey, 2007; Kleissner & Jahn, 2020). We further propose that group-based congruence processes take place implicitly. For instance, when an advertisement states that it seeks candidates that are extraverted, this implicitly communicates that a younger worker is more ideally suited to the role and that the company values younger workers. This contention is consistent with ASA reasoning; Schneider and colleagues (1995) also argue that congruence and fit processes take place below the level of consciousness.

Age-stereotypic language in job advertisements

Our first aim was to add to the age stereotype literature by exploring whether descriptors (traits, characteristics or qualities) used in job advertisements are perceived to be attributed to younger or older workers, thus acting as age stereotypes. We expect that any age stereotypic descriptors identified should only be associated with positive age stereotypes, since job advertisements typically describe ideal and desirable traits, characteristics and qualities. However, positive stereotypes about one group can imply negative deficits in other age groups. For example, positive stereotypes of older workers include assumptions that they are more dependable, trustworthy and committed to the job (Posthuma & Campion, 2009), whilst younger workers are viewed as ambitious, energetic, tech-savvy (Finkelstein et al., 2013). These positive characteristics also imply that younger workers are less dependable, trustworthy, and committed, and that older workers lack ambition, energy, or technological skills. Thus, age stereotypes may attract applicants by highlighting positive characteristics of their own group, while deterring others by implying deficits in different age groups.

To identify existing age stereotypes, we adopted a methodology from Gaucher et al. (2011), who found that job advertisements contained a range of masculine and feminine descriptors (i.e., characteristics, traits, skills or qualities associated with gender stereotypes). To add to the age stereotype literature, we use age categorizations that are aligned with how younger and older workers are defined in prior studies; younger workers are those aged 30 and under, older workers are aged 50 and over (Finkelstein et al., 2013). We expect people to be able to ascribe descriptors collected from job advertisements to younger and older workers, and these should broadly reflect known age stereotypes identified by previous research but also has potential to identify new age stereotypes. Our method reflects ecological validity by ensuring descriptors are those reflected in contemporary job advertising materials.

Results from this pilot study were used to create job advertisements and job candidate profiles to explore age-matched attraction and age-matched selection. We expect that participants will be able to infer the age of ideal candidates from the experimental job advertisements. While previous research has used positive age stereotypes in candidate resumes to successfully signal younger or older applicants (Abrams et al., 2016; Kleissner & Jahn, 2021), no studies have yet explored whether job advertisement descriptors can implicitly communicate the ideal candidate's age.

H1a. The job advertisement containing stereotypically younger descriptors will be perceived as targeting younger candidates; the job advertisement containing stereotypically older descriptors will be perceived as targeting older candidates.

Kleissner and Jahn's (2021) include a resume with "age-neutral" traits; this candidate was evaluated as older than the candidate with the "young" resume, but younger than the candidate with the "old" resume. This finding informs our hypotheses regarding the age-shared traits.

H1b. The job advertisement containing age-shared descriptors will be perceived to be targetting candidates who are older than the candidates for the advertisement with stereotypically younger descriptors, but younger than the candidates for advertisement with stereotypically older descriptors.

Age-matched attraction

Our second aim was to examine whether age stereotypes influence attraction to job vacancies by shaping perceived congruence between job seekers and organizations. Extending the ASA model (Schneider, 1987; Schneider et al., 1995), we propose that congruence – and therefore attraction – is also shaped by social categorization processes, where a match occurs based on group characteristics derived from stereotypes. Including stereotypes in recruitment materials can signal key cultural values and the profile of "ideal workers,"

influencing who feels attracted to the role and how appealing the role is perceived to be. For example, emphasizing youth culture may discourage older workers from applying.

When assessing job advertisements, readers often use category-based processing to improve cognitive efficiency (Fiske & Neuberg, 1990). They may interpret descriptors as cues about the desired age of candidates. This process helps assess congruence between the individual and organizational characteristics of the job seeker, the role, and the organization. At the individual level, social categorization prompts people to attribute characteristics based on social group membership, and conversely, imply group membership from contextual cues (Turner & Oakes, 1997). Such cues can include stereotyped words or descriptors (Bartholow & Dickter, 2008; Newton et al., 2011). Therefore, descriptors associated with age stereotypes in job advertisements can create an impression of the preferred age group and the stereotypical characteristics of the ideal candidate. Job seekers then use this information to evaluate the role, and their fit to it, based on their own age group and associated characteristics. This can happen because social categorization applies to the self: individuals define themselves by their social groups and they can internalize the stereotypes of their age group (Swift et al., 2018; Turner & Oakes, 1997).

At the organizational level, age stereotypes in job advertisements have the potential to implicitly communicate a culture and structure of the organization. By advertising for a candidate that possesses characteristics associated with a specific age group, perceivers may interpret that the organizational culture values employees from that age group and that the workforce includes employees from that age group. For instance, when an advertisement states that it seeks candidates that are tech-savvy (an age stereotype of younger workers; Finkelstein et al., 2013), this implicitly suggests that the company values younger workers and that its demographic structure includes younger workers. When the job seeker is also a younger worker this match in social group should enhance attraction and the job seeker would find this job more appealing. Our studies do not aim to separate individual- and organizational-level influences on age-matched attraction, but rather suggest that both levels contribute to the overall process of age-matched attraction.

A few empirical studies support our predictions. The notion of an age-matched attraction effect can be endorsed by findings from gender studies which provide evidence of an overall gender-matched effect. In these studies, both male and female participants reported finding a job advertisement with wording that matched their own gender more attractive. Attraction was operationalized through measures of how appealing the job advertisements were perceived to be (i.e., "I think I could enjoy this job", Gaucher et al., 2011). Women are also more likely to apply for a job that includes feminine descriptors but not masculine descriptors (Born & Taris, 2010). Research exploring the influence of age stereotypes in selection processes demonstrate that age can be inferred from descriptors associated with age stereotypes in resumes (Abrams et al., 2016), suggesting job seekers will be able to interpret ideal age group from age stereotypes in advertisements. Additionally, research demonstrates that organizational culture can be inferred from descriptive language on websites and that this subsequently influences attraction, which is further moderated by fit perceptions (De Goede et al., 2011). Finally, a series of recent studies report that negative age meta-stereotypes in job advertisements reduce attraction (Koçak et al., 2024; Koçak, Derous, et al., 2023; Koçak, Rooman, et al., 2022). Negative meta-stereotypes were featured in job advertisements, which were operationalized as a selection of synonyms reflecting individual personality traits of the HEXACO Personality Inventory (Ashton & Lee, 2009). For example, three words reflecting the agreeableness trait were used to represent negative meta-stereotypes of older workers and older workers evaluated these job advertisements more negatively. To add to this literature, we focus on the influence of age stereotypes derived from descriptors in typical job advertisements, therefore providing a broader, more varied and potentially ecologically relevant selection of stereotypes.

To examine the age-matched attraction effect, participants will review three job advertisements – each containing a different set of descriptors (younger, older, or age-shared). They will then estimate the age group the advertisement is targeting (target age, this is the participants own evaluation and not what they think the recruiters intended target age is) and rate how appealing they find the job (job appeal). We include an age-shared advertisement to provide a neutral and further comparison point (Gaucher et al., 2011; Kleissner & Jahn, 2021).

We hypothesize within-subject effects of job advertisement such that participants will be more attracted to and therefore find job advertisements that include descriptors matching their own age group more appealing.

H2a. Younger participants will find the job advertisement with younger descriptors more appealing than the other job advertisements.

H2b. Older participants will find the job advertisement with older descriptors more appealing than the other job advertisements.

For middle-aged participants, we have no concrete expectations as there are no corresponding stereotyped words for this age group. It could be that they will view the advertisement with the age-shared traits as most appealing, because they are more likely to hold characteristics that belong to both age groups. We explore whether this is the case.

Age-matched selection

The final aim of this research is to explore whether job advertisements featuring age stereotypes also influence candidate selection, thus impacting the behaviour of recruiters as well as job seekers. Following the attraction of congruent candidates, the ASA framework proposes that the homogeneity of organizations is further perpetuated by the selection of congruent candidates (Schneider, 1987; Schneider et al., 1995). Widening understanding of the congruence processes of the ASA to include group characteristics (i.e., stereotypes) and social categorization processes, we propose that selection decisions can be influenced by a group-based match in features of job advertisements and candidate resumes. For example, when there is perceived congruence between characteristics of the job, organization or occupation (as communicated via stereotyped descriptors within the job advertisements) and the implicitly communicated social group of the candidate.

We contend that consistent with social categorization processes that allow job seekers to interpret group characteristics from stereotypes in job advertisements to assess attraction, personnel decision-makers will use stereotypes in advertisements as a framework to match candidates. Stereotypes in job advertisements will signal to recruiters the required characteristics of the role and important characteristics of the organization. Decision-makers will imply the social group of ideal candidates from the stereotypes, and these will be matched with the social groups implied via stereotypes in candidate resumes. It is important to highlight that during selection, the matching process involves two external stimuli (the advertisement and the candidates' resumes), unlike the attraction process which involves one external stimulus (the advertisement) and the self. When job advertisements contain age stereotypes, decision-makers are likely to infer the age of the ideal candidate and age groups that are congruent with valued aspects of the organization's culture and structure. When these are mirrored in a potential candidate's job application or resume, this will increase the likelihood of being selected.

During the selection processes, the assessment of candidates is likely to be subject to social categorization processes (Fiske & Neuberg, 1990; Turner & Oakes, 1989), such that recruiters will automatically make assumptions about candidates based on the information in their resumes. Age stereotyped descriptors within resumes will act as a cue to a job seeker's age group, which once activated will allow the attribution of other related age stereotypes to that applicant. Resume screening is a cognitively demanding task, which increases reliance on stereotypes as a more efficient means of processing information (Fiske & Neuberg, 1990). When assessing novel stimuli such as resumes, category-based judgements often take precedence over more detailed, individuating information. As a result, recruiters are more likely to attend to age-related cues and stereotypes in application materials.

If job advertisements provide a framework for assessing congruence and fit, and that framework includes age-stereotypical descriptors, we expect recruiters to select resumes that match the inferred age of the ideal candidate. Specifically, we contend that an age-matching selection effect will occur where recruiters will be more likely to select resumes that align with the age cues embedded in the job advertisement.

In support of our predictions, prior research demonstrates how implicit age stereotypes within candidate profiles can infer the age of the candidate (Abrams et al., 2016; Kleissner & Jahn, 2019). Candidates whose resumes lacked explicit age information (e.g., chronological age or date of birth) but included descriptors stereotypically associated with younger workers – such as being creative and quick to learn – were perceived as younger than those whose resumes featured traits stereotypically associated with older workers – such as resolving conflicts and showing empathy.

Additional evidence for a group-characteristic matching mechanism comes from a series of experiments in which participants made selection decisions for roles in organizations stereotyped as either younger or older. Younger applicants were preferred for roles in organizations described as "dynamic" (i.e., conveying a youth-oriented stereotype), while older applicants were preferred for roles described as "stable" (Diekman & Hirnisey, 2007). A key difference between these studies and our proposed methods is that the prior work relied on explicit age cues (e.g., stated age), rather than implicit cues via descriptors associated with age stereotypes. However, mediation analysis revealed that the younger applicants were seen as more suitable for the dynamic organization

because they were perceived as more adaptable – a positive stereotype of younger workers. Although this research was not based on the ASA framework, it supports the idea that an age-stereotyped characteristic (adaptability) can align with an organization's age-related image (e.g., dynamic), increasing perceived person – organization fit.

In conclusion, we propose that in addition to using individual personal and organizational characteristics (Schneider et al., 1995), participants would determine a match via the implicit presence of age stereotypes within job advertisement and resumes, creating an age-matched selection effect. To explore this, we hypothetically ask participants who they would hire to each job advertisement that contains younger, older and age-shared traits, and present participants with information about three applicants, which contain a different set of younger, older or age-shared descriptors. These descriptors will be informed by the pilot study. We hypothesize an age-matched selection effect, whereby candidates will be preferred when their profile aligns with the age cues (descriptors) in the job advertisement.

H3a. The younger candidate is more likely to be selected for the job advertisement containing younger stereotyped descriptors.

H3b. The older candidate is more likely to be selected for the job advertisement containing older stereotyped descriptors.

For the age-shared candidate there is no specific age group match, therefore we propose the following research question (RQ).

RQ. Do candidates with age-shared descriptors receive greater preference for the job advertisement containing age-shared descriptors?

Pilot study

A list of descriptors (characteristics, traits and skills) from advertisements posted on job search websites was created to examine perceptions of their associations with age groups. We assumed descriptors associated with older and younger workers would reflect existing age-based workplace stereotypes (Finkelstein et al., 2013; Posthuma & Campion, 2009; Swift et al., 2013). Following the procedure of Gaucher et al. (2011) participants also evaluated how neutral to positive each trait is for the workplace (i.e., perceived valence). Results will be used to establish job advertisements and candidate profiles that contain implicit age cues for Studies 1 and 2.

Method

Participants

In 2017, 78 participants were recruited via Prolific Academic and reimbursed £1.50, additional 15 participants were recruited in exchange for a course credit at a UK university. All 93 participants were British, 48 were male and 45 were female. Participant age ranged from 18 to 72 ($M = 39.47$, $SD = 14.50$ years). The age distribution by decade was as follows: 18–29 years: 32 participants, 30–39 years: 19 participants, 40–49 years: 9 participants, 50–59 years: 25 participants, 60–69 years = 6 participants, 70–79 years: 2 participants. The majority were employed ($n = 62$).

Materials and procedure

Descriptors included characteristics, traits and skills, such as "organised" and "dynamic" which were selected from job search websites (www.totaljobs.com and www.indeed.co.uk). For each website, the first five advertisements for every listed job field were examined, and any characteristics describing ideal candidates were noted. A tally was created so that only recurring characteristics would be used in the pilot questionnaire. Once a saturation point had been met (i.e., no new descriptors were identified) the search was ceased. A total of 95 descriptors were gathered and subsequently tested. To measure the perceived age associated with these descriptors, participants rated each randomly presented descriptor on a 3-point response scale (*typical of a younger worker [aged 30 and under]*, *equally typical of both*, or *typical of an older worker [aged 50 and over])*. Participants also rated the valence of the descriptor on a 5-point Likert scale (1 = *neutral*, 5 = *extremely positive*) to enable us to create profiles for future studies with descriptors that are equally valued. Participants' demographic characteristics were asked, including age, gender and working status. The pilot study and subsequent studies were approved by the first author's university ethics committee 201,614,806,906,714,155.

Results and discussion

A chi-square goodness-of-fit test was conducted to examine whether the characteristics were perceived as typical of a worker aged 30 and under, a worker aged 50 and over, or equally typical of both age groups. If the null hypothesis (that the observed distribution of responses matches the expected – equal distribution of responses across categories E = 31) is rejected, it suggests the observed frequencies deviate significantly, revealing which traits are more likely to be associated

with each response category. Chi-square tests for all 95 descriptors were significant ($p < .001$). This indicates that participants reliably distinguished between response categories, rather than responding at random or equally across categories. When sorted by the frequency of responses for each category, 11 descriptors were assigned to be more typical of workers aged 30 and under, 7 descriptors were assigned to be more typical of workers aged 50 and over, and the remaining 77 descriptors were assigned to be shared equally between age groups.

In line with prior research (Finkelstein et al., 2013; Posthuma & Campion, 2009), participants perceived descriptors such as "IT proficient", "energetic" and "ambitious" as typical of younger workers and "experienced", "loyal" and "stable" as typical of older workers. The study revealed several characteristics and traits that have not been associated with either younger or older workers in the literature before, for instance, descriptors such as "curious" "keen" "willing to participate" were associated with workers under 30, and descriptors such as "management skills" "patience" and "cautious" were associated with workers over 50. Adding to the literature, characteristics such as "intelligent", "happy" "talented", "focused", "honest" were perceived to be shared by both younger and older workers. It is noteworthy that no participants assigned certain descriptors to older workers (i.e., better at IT, creative) and to younger workers (dependable, professional, reliable, knowledgeable, responsible). Table 1 summarizes the most typical descriptors assigned to each group. The results of the chi-square analysis and full list of descriptors are reported in Supplementary Materials Table S1.

Overall, the results support the notion that job advertisements have the potential to include descriptors that reflect age stereotypes and therefore, could be implicit cues to age. The results contribute to the literature on age stereotypes in the workplace by revealing new descriptors associated with younger and older workers and identifying characteristics that could be considered as shared between age groups. The results also provide age-stereotypic descriptors for use in Studies 1 and 2.

Study 1

Study 1 had three aims. First to explore whether descriptors representing younger and older workers act as implicit cues to age when combined and included in job advertisements. We expect job advertisement containing descriptors associated with younger workers will

Table 1. Top traits assigned to be typical of workers aged 30 and under, 50 and over and equally typical of both age groups.

	Descriptors	Aged 30 and under	Equally typical	Aged 50 and over	Evaluation Mean	Chi-Square *p* value
Most representative of workers aged 30 and under	IT proficient*	63	30	0	3.68	.000
	Ambitious*	61	31	1	3.27	.000
	Energetic*	61	31	1	3.22	.000
	Fast learner*	60	32	1	3.96	.000
	Keen*	55	34	4	3.66	.000
	Participate	53	37	3	3.92	.000
	Curious	51	40	2	2.97	.000
	Dynamic	50	41	2	3.12	.000
	Enthusiastic**	50	42	1	3.9	.000
	Entrepreneurial	46	45	2	2.94	.000
Equally typical	Intelligent	1	86	6	3.92	.000
	Happy*	9	83	1	3.28	.000
	Talented*	10	80	3	3.65	.000
	Friendly*	7	78	8	3.87	.000
	Focused*	5	78	10	3.87	.000
	Honest	2	78	13	4.29	.000
	Positive	13	77	3	3.66	.000
	Productive	9	77	7	4.03	.000
	Hardworking	2	77	14	4.32	.000
	Efficient	3	76	14	4.13	.000
	Capable	1	75	17	3.94	.000
Most representative of workers aged 50 and over	Mature	0	14	79	3.48	.000
	Experienced*	2	16	75	3.6	.000
	Loyal*	2	39	52	3.65	.000
	Stable	1	44	48	3.52	.000
	Management*	2	43	48	3.11	.000
	Patient*	2	44	47	3.66	.000
	Cautious	4	43	46	2.4	.000
	Knowledgeable*	0	50	43	4	.000
	Punctual	0	52	41	4.16	.000
	Dependable	0	53	40	4.22	.000
	Disciplined	2	51	40	3.91	.000

Note: * Denotes descriptors used in the job advertisements, ** denotes descriptors used in candidate profiles.

be perceived as targeting younger candidates, whereas the job advertisement containing descriptors associated with older workers will be perceived as targeting older candidates (H1a). We also expect the target age of the job advertisement with age-shared descriptors will be older than the target age of the job advertisement with younger descriptors, but younger than that of the advertisement with older descriptors (H1b).

Second, to test the age-matched attraction effect by exploring whether participants will be more attracted to job advertisements that include descriptors matching their own age group. We hypothesized that younger participants would find the job advertisement with younger descriptors more appealing than the other job advertisements (H2a) and that older participants will find job advertisement with older descriptors more appealing than the other job advertisements (H2b). For middle-aged participants, we explore whether they view the job advertisement with age-shared descriptors as most appealing, because they are more likely to hold characteristics that belong to both age groups.

Finally, to test the age-matched selection effect by exploring whether the younger candidate will be more likely to be selected for the job advertisement containing younger stereotyped descriptors (H3a) and the older candidate will be more likely to be selected for the job advertisement containing older stereotyped descriptors (H3b). We also investigate whether the candidate with age-shared descriptors will be preferred for the job advertisement containing the age-shared descriptors (RQ).

Method

Participants and design

A total of 174 British participants were invited to join a study in 2017 on job advertising messages for course credits at the university in southern UK or a payment of £1.20 via Prolific Academic (6 participants were removed for incomplete data). Participants' ages ranged from 18 to 75 ($M = 40.07$, $SD = 18.55$ years), with the following age distribution by decade: 18–29 years: 70 participants, 30–39 years: 25 participants, 40–49 years: 16 participants, 50–59 years: 14 participants, 60–69 years = 45 participants, 70–79 years: 4 participants. There were 52 males, 107 females, two participants who "*would rather not say*", and 13 non-responses. This study had 70 employed (46 full-time and 24 part-time), six unemployed, 53 students (23 employed and 30 unemployed), 26 retired, one disabled (unable to work), and five *"other"* participants, 13 did not disclose their employment status.

To explore attraction, the study had a mixed design with responses to 3 job advertisement vignettes (defined by the inclusion of younger, age-shared and older worker descriptors) repeated within-subjects. To account for the nested structure, job advertisement is considered at level 1 (within-person), and participate age is considered at level 2 (between-person). To explore selection, the design was cross-sectional, with all participants responding to the same item.

Procedure and materials

Participants were randomly presented with the three job advertisements for an HR officer. For each job advertisement they were also presented with the three job profiles. They then estimated the age of the candidates each advertisement was targeting, rated how appealing they found each job and selected the ideal candidate.

Job advertisements. Each advertisement contained five traits selected from the pilot study so that they represented younger, older or equally shared traits. A one-way repeated measures ANOVA revealed the average valence of the combined traits in each job advertisement was similar $F(2, 184) = 0.379$, $p = .685$, $\eta_p^2 = .004$, so the advertisements could be deemed equally positive. We selected traits that needed minimal context in the advertisement so that only the descriptors changed between advertisements, all other details remained the same, see Table 2. No other implicit or explicit information about age was present.

Candidate profiles. Each candidate profile listed three traits, selected from the pilot study so that they represented younger, older or equally shared traits. These were different from the traits in the job advertisements. A one-way repeated measures ANOVA revealed the combined average valence of traits for each profile did not differ significantly from one another, $F(2, 184) = .006$, $p = .994$, $\eta_p^2 < .001$, see Table 2. No other implicit or explicit information about age was present.

Measures

Target age. Participants reported the age group they believed the advertisements were targeting on a 5-point scale (1 = *20–30 years*, 2 = *31–40 years*, 3 = *41–-50 years*, 4 = *51–60 years*, and 5 = *61–70 years*).

Job appeal. Participants rated their agreement with five items relating to job appeal (adapted from Gaucher et al., 2011, including items such as "I think I could enjoy this job") for each of the three job advertisements. Responses were recorded on a 6-point Likert scale (1 = *strongly disagree*, 6 = *strongly agree*). All five items were averaged to form a composite job appeal score for each

Table 2. Job advertisements and candidate profiles used in Study 1 and 2.

Younger descriptors	Age-shared descriptors	Older descriptors
Job advertisement Job title: HR Officer Job reference number: Job Type: Salary range: Competitive The Wilkes Group is looking for an ambitious HR Officer to join our dynamic and vibrant work environment. The ideal candidate must be a fast learner and be: • IT proficient • Keen • Energetic The job is dependent on suitable references.	Job advertisement Job title: HR Officer Job reference number: Job Type: Salary range: Competitive The Wilkes Group is looking for a talented HR Officer to join our high achieving and collaborative work environment. The ideal candidate must be a friendly and be: • Analytical • Happy • Focused The job is dependent on suitable references.	Job advertisement Job title: HR Officer Job reference number: Job Type: Salary range: Competitive The Wilkes Group is looking for an experienced HR Officer to join our comfortable work environment where employees can work mostly unsupervised. The ideal candidate must be loyal and be: • Able to manage others • Patient • Knowledgeable The job is dependent on suitable references.
$M_{Evaluation} = 3.56$	$M_{Evaluation} = 3.57$	$M_{Evaluation} = 3.60$
Job applicant 1 • Willing to participate in training • Enthusiastic • Open-minded	Job applicant 2 • Proactive • Excellent interpersonal skills • Polite	Job applicant 3 • A good listener • Pays close attention • Self-reliant
$M_{Evaluation} = 3.82$	$M_{Evaluation} = 3.82$	$M_{Evaluation} = 3.82$

of the job advertisements, higher scores indicated higher job appeal. Cronbach's alphas for job appeal the young, age-shared, and older advertisements were .833, .836, and .765, respectively.

Candidate selection. Participants were told "Below are three profiles of potential candidates for the job advertised above. Just a reminder, the job advertisement is looking for someone who is [insert descriptors used in advertisement]. If only one candidate can be chosen, please indicate which candidate you think is best suited for the job." For each job advertisement, participants choose from candidate 1 (younger profile), candidate 2 (age-shared profile) and candidate 3 (older profile).

Finally, the participants provided demographic information, including their age, gender (male "0", female "1"), and employment status (unemployed or not working "0", employed full or part time "1"). Participants were then debriefed on the general aims and expectations of the study.

Analytic strategy

We first tested measurement invariance (MI) of job appeal items across participant age using the item-focused tree (IFT) technique proposed by Guo et al. (2023). MI is violated when differential item functioning (DIF) is detected. The IFT technique can test for DIF induced by multiple covariates as well as continuous covariates, such as age. Following the data preparation outlined in Guo et al. (2023) we tested whether participant age induced uniform or non-uniform DIF using the DIFtree package in R. First, job appeal was recoded into a binary response category with strongly disagree (1) to somewhat disagree (3) and somewhat agree (4) to strongly agree (6) combined to represent two "disagree" and "agree" response categories. Separate logistic regression-based IFT models were fitted for each job advertisement condition, with alpha level set at .05 and the recommended permutation of 200 for one covariate (Berger & Tutz, 2016). Uniform DIF effects were found on job appeal item 3 ("this company would be a good employer"). A split occurred at age 64 when evaluating the age-shared job advertisement, suggesting participants aged over 64 years were significantly more likely to endorse the item (intercept −4.68) than those aged 64 and younger (intercept −1.89), regardless of their overall level of job appeal. The effect size estimation based on the differences among the intercepts suggest a moderate effect. To account for the uniform DIF detected on this item we removed it from subsequent analysis that includes participant age to reduce measurement bias.

To account for the nested data structure of target age and job appeal, we performed multilevel modelling in R. Two-level models were specified. At Level 1 (the within-person level) dummy variables for each job advertisement distinguished between vignettes and were added as fixed effects with models treating the age-shared advertisement as the comparison group. All models specified a random intercept. At Level 2 (the between-person level), the effects of participant age (grand-mean centred before analysis) on target age and job appeal, and the cross-level interactions between job advertisement and participant age for job appeal were fixed.

Model 0 is a baseline model which only specifies grouping at Level-2, this revealed the between-person variances for target age intraclass correlation coefficient ($ICC_{target\ age}$) = .153 and job appeal ($ICC_{job\ appeal}$) = .35. Models were then built sequentially to preserve degrees of freedom. Model I contains Level-1 main effects (job

advertisement dummy coded), Model II adds participant's age at Level 2, Model III adds gender and employment status as covariates. These covariates were added because research in organizational psychology suggests that men and women differ in their perceptions of age group boundaries, such end of youth or when old age begins (Abrams et al., 2009; Barrett & von Rohr, 2008) and their preferences for job characteristics and recruitment messaging (Gaucher et al., 2011), therefore, gender is added as a covariate to ensure any effects of age or job advertisement type are not confounded by gender preferences. Employment status is also controlled for because unemployed and retired individuals often identify old age as starting earlier (Barrett & Montepare, 2015) and people in active employment report feeling younger (Montepare & Lachman, 1989), both might interfere with the perceived target age of job advertisements. In addition, unemployed individuals may rate job advertisements more appealing due to greater urgency or fewer employment alternatives, whereas employed participants might be more selective (Van Hooft & Crossley, 2008).

For job appeal, Models IV includes job advertisement by participant age interactions and the simple slopes are investigated using Preacher et al.'s (2006) interaction calculator for cross-level interactions to test hypotheses H2ab.

To provide additional context for the target age, we also performed chi-square tests of independence as the response scale is categorical. Chi-square tests of independence are performed to explore candidate selection and age-matched selection hypotheses H3ab. Descriptive statistics (*M, SD*, Cronbach alphas) and correlations between variables are shown in Table 3.

Results and discussion

Target age

Unstandardized coefficient estimates for the multilevel models for the target age are presented in Table 4.

Participants perceived target age of applicants applying to the job advertisements did differ according to the descriptors in the expected direction. In line with H1, participants were more likely to perceive the target age of job advertisement containing younger descriptors to be younger in comparison than the job advertisement containing the age-shared descriptors ($\gamma = -0.14$, $p = < .001$), and the job advertisement containing descriptors associated with older workers to be older in comparison to the age-shared job advertisement ($\gamma = 0.57$, $p = < .001$). An additional model (with age-shared and older job advertisement dummy codes) revealed that the perceived target

Table 3. Correlations, means (*M*), standard deviations (*SD*) and Cronbach alpha for variables in Study 1.

	1.	2.	3.	4.	5.	6.	*M*	*SD*	Cronbach alpha
1. Age							40.07	18.55	
2. Gender (male)	.00						1.33	0.47	
3. Employed	−.08	−.10					0.6	0.49	
4. Target Age	.13	.11	−.08				1.5	0.68	
5. Job Appeal (younger job advertisement)	.10	.01	−.13	.03			3.52	1.02	.833
6. Job Appeal (age shared)	.12	−.08	−.01	.04	.36***		3.82	1.02	.836
7. Job Appeal (older job advertisement)	.11	.02	.03	.13	.39***	.31***	3.65	0.97	.765

Table note: Significance levels labelled as *$p < .05$ **$p < .01$ ***$p < .00$. Cronbach alpha for job appeal excludes item 3.

Table 4. Study 1: unstandardised coefficients for the multilevel models on target age.

	Parameter estimates			
	Intercept only	Model 1	Model 2	Model 3
ICC	15.4	29.1	26.7	25.9
−2 Log Likelihood	1099.57	984.48	982.77	904.12
Fixed effects				
Intercept	1.78 (0.04)***	1.64(0.05)***	1.64 (0.05)***	1.68 (0.08)***
Within-person (level 1)				
Young advertisement		−0.14 (0.06)*	−0.14 (0.06)*	−0.17 (0.06)**
Older advertisement		0.57 (0.06)***	0.57 (0.06)***	0.54 (0.06)***
Between-person (level 2)				
Age $_{\text{Grand mean centred}}$			0.01 (0.00)***	0.01 (0.00)**
Gender $_{\text{Male}}$				0.12 (0.08)
Employment status $_{\text{working}}$				−0.11 (0.08)
Random effects				
Within-person residual variance	0.46 (0.29)	0.32 (0.56)	0.32 (0.56)	0.31 (0.56)
Between-person variance	0.08 (0.68)	0.13 (0.36)	0.12 (0.34)	0.11 (0.33)

Table note: Significance levels labelled as *$p < .05$ **$p < .01$ ***$p < .001$. Standard errors are shown in parentheses for fixed effects; standard deviations are shown for random effects.

Table 5. Distribution of observed and expected frequencies for the perceived target age of candidates for Study 1 and 2.

Study 1							
Job advert	20–30 years	31–40 years	41–50 years	51–60 years	61–70 years	Expected	Total
Younger	101	60	11		1	43	173
Age-shared	76	82	14			57	172
Older	18	107	42	4	1	34	172
Study 2							
Younger	74	55	7			45	136
Age-shared	64	63	11			46	138
Older	31	82	24			45	137

age of job advertisement with younger descriptors also significantly differed from the job advertisement with descriptors associated with older workers ($\gamma = -0.71$, $p = < .001$). Model II revealed a significant positive effect of participant age ($\gamma = 0.01$, $p = < .001$). There was no effect of participant gender or employment status. Adding gender and employment didn't change any main effects of job advertisement.

To add context, the frequencies from chi-square tests of independence (see Table 5) reveal that participants tended to view the target age of candidates for the young job advertisement to be aged between 20 and 30. For the age-shared job advertisement the target age of the candidate was 31–40 years, followed by 20–30 years, with a few perceiving the job to target people in their forties. For the older job advertisement, the perceived target was more varied between age categories but dominated by perceptions of targeting people aged 31 to 40, followed by 41 to 50, with a small number of participants perceiving the target age of candidates to be older than 50. The chi-square tests of independence for each job advertisement were significant (young job advertisement, X^2 (3, $N = 173$) = 148.91, $p < .001$; age-shared job advertisement, X^2 (2, $N = 172$) = 49.44, $p < .001$; older job advertisement, X^2 (4, $N = 172$) = 222.01, $p < .001$).

Job appeal

Unstandardized coefficient estimates for the multilevel models for job appeal are presented in Table 6.

The job advertisement with younger descriptors ($\gamma = -0.29$, $p < .001$) and the job advertisement with older descriptors were less appealing ($\gamma = -0.18$, $p = .033$) compared to the job advertisement with age-shared descriptors. An additional model revealed the job advertisement with younger descriptors did not significantly differ from the job advertisement with older descriptors ($\gamma = 0.11$, $p = .167$). There was a main positive effect of participant age ($\gamma = 0.01$, $p < .001$) revealing that with participant age, job advertisements were more appealing. The effects of younger and older job advertisement

Table 6. Study 1: unstandardised coefficients for the multilevel models on job appeal.

	Parameter estimates					
	Intercept only	Model 1	Model 2	Model 3	Model 4	Model 5
ICC	43.9	44.8	44.8	37.8	42.7	42.7
−2 Log Likelihood	1364.11	1356.44	1354.64	1224.67	1371.42	1371.42
Fixed effects						
Intercept	3.66 (0.06)***	3.81 (0.07)***	3.85 (0.03)***	3.83 (0.12)***	3.81 (0.07)***	3.52 (0.07) ***
Within-person (level 1)						
Young advertisement		−0.29 (0.08)***	−0.29 (0.08)***	−0.29 (0.09)***	−0.29 (0.08)***	
Older advertisement		−0.18 (0.08)*	−0.18 (0.08)*	−0.20 (0.09)*	−0.17 (0.08)*	
Older advertisement $_{\text{compared to young}}$						0.11 (0.08)
Between-person (level 2)						
Age $_{\text{Grand mean centred}}$			0.01 (0.00)***	0.01 (0.00)**	0.01 (0.00)***	0.01 (0.00)*
Gender $_{\text{Male}}$				0.08 (0.13)		
Employment status $_{\text{working}}$				−0.02 (0.12)		
Cross-level interactions						
Young advert * Age $_{\text{Grand mean centred}}$					−0.00 (0.01)	
Older advert * Age $_{\text{Grand mean centred}}$					−0.01 (0.01)	
Older advert $_{\text{compared to young}}$ * Age $_{\text{Grand mean centred}}$					−0.01 (0.00)	
Random effects						
Within-person variance	0.58 (0.76)	0.56 (0.75)	0.56 (0.75)	0.57 (0.75)	0.56 (0.75)	
Between-person variance	0.45 (0.67)	0. 45 (0.67)	0.42 (0.65)	0.34 (0.59)	0.42 (0.65)	

Table note: Significance levels labelled as *$p < .05$ **$p < .01$ ***$p < .001$. Standard errors are shown in parentheses for fixed effects; standard deviations are shown for random effects.

and age remained when gender and employment status were included in the model. There was no effect of participant gender or employment status (Model III), so these variables were dropped from subsequent model IV.

In model IV, the cross-level interactions between the job advertisement and participant age were included to test H2ab. The main effects of age, younger and older job advertisement remained significant, but no interaction effects emerged. However, a simple slope analysis was performed on both interactions to explore the age-matched attraction hypotheses to investigate differences in evaluations between job advertisements for participants at one standard deviation below the mean (22), the mean (40) and one standard deviation above the mean (58), and to explore the effects of participant age (22 vs 58) for each job advertisement.

H2a predicted that younger participants (e.g., age 22) would rate the *younger* advertisement as more appealing than the age-shared and older advertisements. However, participants aged 22 rated the *age-shared* advertisement as more appealing than the *younger* one ($\gamma_{22\text{ years/younger job ad}} = -0.37$, $p = .006$), and the *older* one ($\gamma_{22\text{ years/older job ad}} = -0.29$, $p = .004$).

H2b predicted that older participants (e.g., age 58) would rate the *older* advertisement as more appealing than the age-shared and older advertisements. However, participants aged 58 rated the *age-shared* advertisement as more appealing than the *older* one ($\gamma_{58\text{ years/older job ad}} = -0.47$, $p = .028$). There was no difference in when comparing the *age-shared* and the *younger* advertisements ($\gamma_{58\text{ years/younger job ad}} = -0.51$, $p = .08$).

For middle-aged participants, we explored whether they would find the age-shared advertisement more appealing compared to the younger and older advertisements, which was confirmed. Participants aged 40 found the age-shared advertisement more appealing than the younger advertisement ($\gamma_{40\text{ years/younger job ad}} = -0.45$, $p = .037$) and the older advertisement ($\gamma_{40\text{ years/older job ad}} = -0.38$).

The region of significance revealed that the difference between the age-shared and younger advertisement is significant within the region of −12 and 45 years, suggesting the advertisement with age-shared descriptors is only more appealing for participant's aged under 45. For participants aged 45 and older, the effect of the younger advertisement is not significant, suggesting the age-shared and younger advertisement are seen as equally appealing.

The region of significance when comparing the difference between the age-shared and older advertisement is significant inside the region of −5 and 86, suggesting the advertisement with age-shared descriptors is more appealing for in comparison to the job advertisement with older descriptors for participants aged 86 and under.

Simple slopes for the interaction that compares the younger vs older advertisements by participant age confirmed there was no effect of job advertisement for participants aged 22, 40 or 58 ($p > .05$). This means that at all ages, participants viewed the younger and older advertisements as equally appealing.

These findings do not support the age-matched attraction hypothesis for younger and older participants (H2ab). For younger participants, we expected them to find the job advertisement with younger descriptors to be more appealing than the age-shared and older advertisement. They found the age-shared advertisement to be more appealing compared to the job advertisement with younger and older descriptors, which did not differ from each other.

We expected older participants to view the advertisement with older descriptors to be more appealing than the job advertisements with age-shared and younger descriptors, but again the age-shared advertisement was evaluated as more appealing than the older but not younger job advertisement. The region of significance suggests all participants under 86 would find the age-shared advertisement more appealing than the older advertisement.

Effects of participant age within job advertisements.

A significant effect of participant age within the young advertisement could be explored to add support for H2a, with younger vs older participants reporting more job appeal. To support H2b a significant effect of participant age within the older advertisement, with older vs younger participants reporting more job appeal, is needed. However, participants aged 58 viewed all job advertisements to be more appealing in comparison to participants aged 22 ($\gamma_{\text{young job advertisement}} = 0.01$, $p = .02$, $\gamma_{\text{age-shared}} = 0.014$, $p = .001$, $\gamma_{\text{older job advertisement}} = 0.01$, $p = .037$). While this supports the notion of age-matched attraction for the older advertisement, these results suggest a general cohort effect and tendency for participants aged 58 to view all advertisements as more appealing than those aged 22, see Table 7 for means of job appeal by job advertisement and participant age.

Candidate selection

To test the age-matched selection effect, a chi-square test of independence was performed. We expected

Table 7. Study 1: perceptions of job appeal for each job advertisement by participant age.

	Younger job advert	Age-shared	Older job advert
Participants aged 22	3.74[a**, i*]	4.12[b**, i*]	3.83[i*]
Participants aged 40	3.93[a*]	4.38[b*]	3.99
Participants aged 58	4.11[a+]	4.63[b*]	4.16

Table note.
[a]denotes significant difference between younger and age-shared job advert within participant age groups.
[b]denotes significant difference between age-shared and older job advert within participant age groups.
[c]denotes significant differences younger and older job advert within participant age groups.
[i]denotes significant differences between participants aged 22 and 58, within each job advert.
Significance determined at + $p < .08$ *$p < .05$ **$p < .01$ ***$p < .001$.

participants to "match" and be more likely to select the younger and older candidate profile for the younger and older job advertisement, respectively (H3ab). We also investigate whether the age-shared candidate is preferred for the age-shared advertisement (RQ). For the younger and older job advertisement the frequency distribution of candidates selected was significant (younger job advertisement, X^2 (2, $N = 172$) = 51.85, $p < .001$; older job advertisement, X^2 (4, $N = 169$) = 57.03, $p < .001$), but age-shared job advertisement was not (X^2 (2, $N = 167$) = 3.46, $p = .177$). In line with H3a, most participants selected the younger profile for the job advertisement with younger descriptors (59%), followed by the age-shared (25%) and then older profiles (16%). For the older job advertisement, H3b was not confirmed, and the age-matched selection effect was not as strong with participants selecting the age shared (53%) candidate for this role, followed by the older candidate (40%), with the younger candidate profile least preferred (7%). For the age-shared job advertisement the distribution of responses was more even. The age-shared profile was selected most often (40%), and there was no preference between the young and older applicants who were selected next, equally (30% each). Although this pattern of results is in line with the research question, the overall chi-square was not significant, revealing no preference between candidates selected.

Limitations and next steps

In Study 2 we sought to improve our measures to better test an age-matched attraction effect. The measure of appeal does not signal behavioural intentions, nor does it force a choice between job advertisements on offer. Preferences for job advertisements might appear if we ask whether participants would apply for the job, or to rank the job advertisements in order of which they would apply for. According to shifting stereotypes model (Biernat et al., 1991) judgements related to stereotyped individuals, including the self (which younger or older workers may consider themselves), vary when the measure is subjective (e.g., how appealing is this?) versus objective (e.g., rank order the advertisements you would apply for) because the reference group changes. In the latter example participants may be forced to consider their chances of a successful application when compared to other (aged) applicants. This could help distinguish between which advertisements are appealing and which advertisements participants would put time and energy into applying to. Therefore, in Study 2 we invite participants to rank the roles in order of preference.

An important aspect of the proposed age-matched attraction effect based on ASA processes (Schneider, 1987; Schneider et al., 1995) that we did not explore in Study 1 is congruence measured though perceptions of fit. From a theoretical perspective, Schneider and colleagues (1995) point out that although fit is an integral process that attracts individuals to organizations, specific operationalizations or measures of fit are not identified within the framework (Schneider, 1987). However, alongside ASA, there exists a rich literature on person-environment fit (Judge & Ferris, 1992; Kristof, 1996), which matches individuals to different levels of their work environment including the vocation, job, organization, workgroup and supervisor (Kristof-Brown et al., 2005). From these, person-organization fit captures the notion of fit between personal and organizational characteristics cited in the ASA framework (Schneider, 1987). We selected the measure used to demonstrate the gender-matched effect (Gaucher et al., 2011) which reflects person-organization fit. Several studies have shown that organizations attract people who perceive a good fit between their traits and values, with those of the organization (Fruhen et al., 2015; Ghielen et al., 2021; Judge & Cable, 1997; Stevens & Szmerekovsky, 2010).

There is some evidence for the age-matched selection effect, most notably the candidate with the younger descriptors was matched to the younger job advertisement. The effect was less strong for the older job advertisement for which the profile containing the age-shared traits was preferred, but candidates with older traits

were preferred next. The hiring decisions for the age-shared profile were more equal between the candidates, revealing less age-bias. Although we explored whether the candidate with the age-shared traits should be preferred for this job advertisement, it also makes sense that no candidate was overtly preferred as the traits are assumed shared between younger and older workers, making both younger and older workers suitable. In Study 2, we see if these findings replicate.

Study 2

In this study, participants evaluated the same job advertisements used in Study 1 for target age, job appeal and candidate selection, plus two additional variables, a ranked preference of the jobs and perceived fit to the organization. For age-matched attraction, our hypotheses remain the same as Study 1, with the addition that we expect participants to rank the job advertisement that matches their own age first as most preferable, and to perceive more fit to job advertisements with the descriptors that match their own age (H2a (younger) H2b (older)). In Study 1 participants aged 40 did evaluate the job advertisements with age-shared traits as more appealing than the job advertisement with younger and older traits, so we expect middle-aged participants to rank the age-shared advertisement as most preferable and to perceive better fit to it, as they are neither young nor old (H2c). The hypothesized age-matched selection effect for the younger and older job advertisement is the same as in Study 1 (H3ab) but modified for the age-shared advertisement where we expect no preference to emerge as candidates can be deemed equally suitable (H3c).

Method

Participants and design

One hundred and fifty-six participants were recruited via Prolific Academic in 2018 in exchange for £1.50. Eighteen were excluded for failing an attention check, which was added in Study 2 because we increased the length of the survey. Participant's age ranged from 18 to 69 years ($M = 40.20$, SD = 13.80), with the following age distribution by decade: 18–29 years: 59 participants, 30–39 years: 25 participants, 40–49 years: 15 participants, 50–59 years: 13 participants, 60–69 years = 39 participants, 70–79 years: 3 participants. The majority were employed (77 full-time and 18 part-time), 11 unemployed (six seeking working and five not seeking work), 10 students (4 employed and 6 unemployed), 10 retired, nine disabled (not able to work), and three "other" participants.

The design is the same as in Study 1.

Procedure and measures

After seeing each advertisement, participants were asked several questions related to the role.

Target age. As Study 1.

As Study 1, participants indicated the extent to which they agreed or disagreed (1= *Strongly Disagree* and 7= *Strongly Agree*) with six statements related to job appeal, in an omission in Study 1 the sixth item "this job is appealing" was added. Cronbach's alphas for job appeal the young, age-shared, and old advertisements were .888, .895, and .898, respectively.

Participants were instructed to rank the job advertisements in the order of which they would be most likely to apply for.

Participants indicated the extent to which they believed they "fit" into the advertised role and company (Gaucher et al., 2011) using 4 items, including "I could fit well at this company", "My values and this company's values are similar", "I'm similar to the people who work in this career" and "The type of people who would apply for this job are very different from me (reversed),". Answers were given on a 7-point Likert scale, where 1 = *Strongly Disagree* and 7 = *Strongly Agree*. Cronbach's alphas the young, age-shared, and old advertisements were .871, .913, and .912, respectively.

As Study 1.

As Study 1, participants provided demographic information and were debriefed.

Analytic strategy

This study employed the same analytic strategy as Study 1. First, measurement invariance for job appeal and perceived fit was tested using IFT, then multilevel models were used for target age, job appeal and perceived fit to account for the nested structure of the data. Job choice rank is analysed using as Friedman ANOVA chi-square, with participants grouped into three age

Table 8. Correlations, means (*M*), standard deviations (*SD*) and Cronbach alpha for variables in Study 2.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	*M*	*SD*	Cronbach Alpha
1. Age										40.2	13.79	
2. Gender (male)	.05									0.54	0.5	
3. Employed	−.11	−.17								0.73	0.44	
4. Target Age	.03	.01	.10							1.51	0.6	
5. Job Appeal (younger)	.14	.00	.05	.09						4.43	1.15	.888
6. Job Appeal (age shared)	.28**	−.04	.12	−.08	.58***					4.51	1.2	.895
7. Job Appeal (older)	.24**	.02	−.05	−.09	.50***	.56***				4.55	1.27	.898
8. Perceived Fit (younger)	.14	.04	.13	.04	.86***	.56***	.40***			4.18	1.27	.871
9. Perceived Fit (age-shared)	.19*	.02	.11	−.11	.53***	.86***	.52***	.60***		4.35	1.29	.913
10. Perceived fit (older)	.23**	.05	−.03	−.08	.48***	.57***	.87***	.46***	.65***	4.49	1.31	.912

Table note: Significance levels labelled as *$p < .05$ **$p < .01$ ***$p < .001$. Cronbach alpha for job appeal excludes item 5 and for perceived fit excludes item 4.

categories defined in line with Finkelstein et al. (2013), 44 were aged 30 and under ($M = 25.34$, $SD = 3.37$), 47 participants aged 31 to 49 ($M = 38.62$, $SD = 5.26$) and 42 participants aged 50 and over ($M = 57.55$, $SD = 4.66$).

Descriptive statistics (*M, SD*, Cronbach alphas) and correlations between variables are shown in Table 8.

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First, job appeal and perceived fit were recoded with binary response categories with strongly disagree (1) to neither agree nor disagree (4), and somewhat agree (5) to strongly agree (7) combined to represent two "disagree" and "agree" response categories. As per Guo et al. (2023) the "neutral" category (4) could be an implicit way to express negativity and is therefore combined to the negatively valenced option. We then conducted separate logistic regression-based IFT models for each job advertisement condition, with alpha level set at .05 and the recommended permutation of 200 (Berger & Tutz, 2016). Uniform DIF effects were found on one job appeal item (5) and one perceived fit item (3). For job appeal item 5 ("this job looks interesting"), a split occurred at age 38 when evaluating the younger job advertisement. Participants aged 38 years or younger were significantly more likely to endorse the item (intercept −6.78) than those older than 38 (intercept −2.85) regardless of their overall level of job appeal. The effect size estimation based on the differences among the intercepts suggest a small to moderate effect. For perceived fit item 4 ("the type of people who would apply for this job are very different from me"), a split occurred at age 26 for the older job advertisement. Participants aged 26 years or younger were significantly less likely to endorse the item (intercept −4.07), than those older than 26 (intercept −6.72). The effect size estimate calculation revealed this to be a small effect. To account for the uniform DIF detected we excluded job appeal item 5, and perceived fit item 4 from the multilevel models, this will ensure any effects of participant age are robust.

Results and discussion

"

Replicating Study 1, the target age of applicants for the job advertisement containing traits associated with older workers was perceived to be older in comparison to the age-shared job advertisement ($\gamma = 0.33$, $p < .001$) and the job advertisement with traits associated with younger workers ($\gamma = 0.41$, $p < .001$). Model II revealed a significant positive effect of participant age ($\gamma = 0.01$, $p = .006$). There was no effect of participant gender or employment status (Model III), the addition of these variables did not change the main effects. Unlike Study 1, there was no perceived difference in target age between the younger and age-shared advertisement ($\gamma = -0.11$, $p = .096$).

The chi-square distribution of frequencies for target age was significant and therefore, frequencies were not equally distributed between categories (younger job advertisement, X^2 (2, $N = 136$) = 52.6, $p < .001$; age-shared job advertisement, X^2 (2, $N = 138$) = 39.96, $p < .001$; older job advertisement, X^2 (2, $N = 137$) = 43.90, $p < .001$). Overall target age estimates were slightly younger than Study 1 but followed a similar pattern to Study 1, see Table 5 for the frequencies of responses, which are displayed alongside responses for Study 1.

Job appeal

There were no main effects of the younger (vs age-shared) or older job (vs age-shared) advertisement on job appeal and no difference emerged comparing the younger vs older advertisement. There was a main effect of participant age ($\gamma = 0.02$, $p < .001$) revealing that with participant age, job advertisements were more appealing. There was no effect of participant gender or employment status (Model III), and no cross-level interactions between the job advertisement and participant age. As

Table 9. Study 2: perceptions of job appeal and perceived fit for each job advertisement by participant age.

	Younger job advertisement	Age-shared advertisement	Older job advertisement
Job appeal			
Participants aged 22	4.68 [a*]	5.05[i*]	5.04[i**]
Participants aged 40	4.91[a*]	5.49	5.43
Participants aged 58	5.12[a*]	5.93	5.83
Perceived fit			
Participants aged 22	4.45[c**]	4.74[i*]	4.97[i**]
Participants aged 40	4.69[c*]	5.05	5.36
Participants aged 58	4.93[c+]	5.37	5.74

Table note.
[a]denotes significant differences between the younger and age shared advert within participant age groups.
[c]denotes significant differences between the younger and older job advert within participant age groups.
[i]denotes significant differences between participants aged 22 and 58, within each job advert.
Significance determined at + $p < .09$ *$p < .05$ **$p < .01$ ***$p < .001$.

Table 10. Rank frequency and mean rank for each job advertisement.

Job advertisement	1st	2nd	3rd	Mean rank
Younger	24	43	54	2.25
Age-shared	32	50	39	2.06
Older	65	28	28	1.69

Study 1, a simple slope analysis was performed on the interactions. Participant age, at one standard deviation above and below the mean, was consistent with Study 1. The means provided by the analysis are shown in Table 9.

For all aged participants, there was a significant effect of job advertisement, with the age-shared advertisement more appealing than the younger advertisement ($\gamma_{age22} = -0.36$, $p = .03$, $\gamma_{age40} = -0.59$, $p = .04$, $\gamma_{age58} = -0.81$, $p = .04$), but no significant differences between the age-shared vs older job advertisement, or younger vs older job advertisement, revealing them to be equally appealing.

The region of significance states that the difference between the age-shared and younger advertisement is significant inside the region of 12 and 109 years.

Participants aged 58 viewed the age-shared advertisement and the older job advertisement to be more appealing in comparison to participants aged 22 ($\gamma_{age\text{-}shared} = 0.03$, $p < .001$, $\gamma_{older\ job\ advert} = 0.02$, $p = .005$), but there was no age difference for the younger job advertisement ($p = .1$).

Job choice rank

Participants ranked the job advertisements in the order of which they would be most likely to apply to. The Friedman ANOVA chi-square with Kendals W was conducted for each participant age group. In line with the findings for job appeal, for participants aged 30 and under, the chi-square was not significant ($p = .397$, Kw = .024) suggesting no preferences or significant differences in how the job advertisements were ranked. For participants aged 31 to 49, the chi-square was significant (X^2 (2, $N = 42$) = 16.33, $p < .001$, Kw = .194), and revealed the mean rank for the younger advertisement was lowest (least likely to apply for) ($M = 2.33$, $SD = .72$), followed by the age-shared ($M = 2.17$, $SD = .79$) and older advertisements (most likely to apply for) ($M = 1.50$, $SD = .71$). For participants aged 50 and over, the chi-square was marginally significant (X^2 (2, $N = 36$) = 5.72, $p = .057$, Kw = .079) and partially supports the age-matched attraction hypothesis with the younger advertisement ranked least likely to apply for ($M = 2.31$, $SD = .75$), followed by the age-shared ($M = 1.94$, $SD = .75$) and older advertisement (most likely to apply for) ($M = 1.75$, $SD = .87$). The means are provided in Table 10.

Perceived fit

There were no main effects of the younger (vs age-shared) or older (vs age-shared) job advertisement on perceived fit, but a difference emerged when comparing the younger vs older advertisement with better fit emerging for the older advertisement ($\gamma = 0.30$, $p = .002$). There was a main effect of participant age ($\gamma = 0.02$, $p = .01$) revealing that with participant age, perceptions of fit increased. There was no effect of participant gender or employment status (Model III), and inclusion of these covariates didn't change any main effects. There were no cross-level interactions between the job advertisement and participant age (Model IV). Simple slopes analysis was performed on interactions, and the means are displayed in Table 9.

There was no significant effect of job advertisement (younger vs age-shared and older job vs age-shared) on perceived fit for participants aged 22, 40 and 58, revealing participant's perceived similar fit with the younger and age-shared advertisements, and the older and age-shared advertisement. However, when comparing between the younger vs older job advertisement, participants aged 22 and 40 perceived greater fit with the job advertisement with older descriptors ($\gamma_{\text{age 22}} = 0.52$, $p = .01$; $\gamma_{\text{age 40}} = 0.66$, $p = .05$). For participants aged 58, there was no significant difference ($p = .09$). This does not support the age-matched attraction effect. Participants aged 22 perceived greater fit to the job advertisement with older descriptors in comparison to the younger advertisement. Participants aged 40 did not perceive best fit with the age-shared advertisement, they perceived greater fit to the older advertisement in comparison to the younger advertisement. Perceptions of fit for participants aged 58 did not differ by job advertisement.

Participants aged 58 viewed the age-shared advertisement and the older job advertisement to be better fit in comparison to participants aged 22 ($\gamma_{\text{age-shared}} = 0.02$, $p = .002$, $\gamma_{\text{older job advert}} = 0.02$, $p = .005$). No age difference emerged for the younger advertisement ($p = .1$)

Candidate selection

The chi-square test of independence was significant for the young and older job advertisement (young job advertisement, X^2 (2, $N = 132$) = 38.36, $p < .001$; older job advertisement, X^2 (2, $N = 135$) = 67.82, $p < .001$), but not for the age-shared job advertisement, (X^2 (2, $N = 135$) = 2.53, $p = .282$). In line with Study 1, most participants (56%) selected the young profile for the job advertisement with young descriptors, followed by the age-shared (32%) and then older profiles (12%). The age-matched effect was strongest for the older job advertisement, with majority of participants selecting the older candidate (60%) for this role, followed by the age-shared candidate (37%), and the younger candidate least selected (3%). Confirming Study 1, the distribution of responses was not significant for the age-shared advertisement, but the profile with shared traits was selected by 39% of participants, the younger and older candidates were selected by 33% and 28% of participants respectively.

In sum, for target age, the findings were as Study 1, with the older advertisement seen to be targeting relatively older candidates in comparison to the younger and age-shared advertisement, however, unlike Study 1, the target age of younger and age-shared advertisement did not differ. The chi-squared distribution still revealed the distribution of target age responses did vary for each advertisement, and the frequencies looked similar to Study 1.

For job appeal, the main effect of participant age is consistent across studies demonstrating that all advertisements became more appealing with increases in participant age. In Study 1, the age-shared advertisement was evaluated as more appealing compared to the younger and older advertisement, and this effect held for all participant age groups; however, in Study 2, all participant age groups evaluated the job advertisements as equally appealing. Adding to Study 1, the age-matched attraction effect was found for older participations who ranked the older job advertisement as most preferred to apply to and perceived more fit with this job advertisement but only when comparing between younger vs older aged participants within the older job advertisement condition.

General discussion

Despite recognition that age stereotypes can affect the attraction and selection processes (Cadiz et al., 2017, 2022), little research has explored this empirically through the lens of social categorization. We set out to identify positive stereotypes in authentic job advertisements that were associated with younger and older workers and those that were age-shared. By extending the ASA theory (Schneider, 1987) with the incorporation of social categorization processes and stereotypes (Fiske & Neuberg, 1990; Turner & Oakes, 1989, 1997), we also tested if job seekers and decision-makers use age stereotypes as a group characteristic to determine congruence within attraction and selection processes. Below we summarize the findings and their theoretical implications for each prediction.

Age stereotypes in recruitment materials

The pilot study revealed that people do perceive some descriptors used in job advertisements to be associated with younger workers (aged 30 and under) and older workers (aged 50 and over). This finding extends the literature, which identified gendered language in job advertisements (Gaucher et al., 2011) and it is consistent with existing literature on age stereotypes of older workers (e.g., Cuddy & Fiske, 2002; Finkelstein et al., 2013, 2015; Posthuma & Campion, 2009). Adding to the age stereotype literature, there were several descriptors which were perceived to be shared equally between the two age groups, such as intelligent, happy and

focused. These findings provide new insights about which descriptors are shared equally across younger and older workers. Our study also revealed more descriptors associated with younger workers than older workers, which describe younger works as having energy, enthusiasm and being keen, dynamic, and curious, as well as willing to participant in training.

Job advertisements as cue to candidate age

Studies 1 and 2 explored how job advertisements with a collection of descriptors ascribed to younger versus older workers are viewed by participants. Study 1 and Study 2 confirmed the hypothesis H1a that the job advertisement with the younger traits would be perceived to targeting relatively younger candidates compared to the job advertisement with older traits. Study 1 also confirmed hypothesis H1b that the perceived target age of candidates for the job advertisement with age-shared traits would be younger than the perceived target age of candidates for the job advertisements with older traits and older than the perceived target age of candidates for the job advertisements with younger traits. These findings are consistent with previous research that has explored the perceived age of job applicants from resumes containing younger verse older age-stereotype descriptors (Abrams et al., 2016), and younger, older and age-neutral descriptors (Kleissner & Jahn, 2021). In Study 2, the target age of age-shared advertisement was younger than the older advertisement but was not evaluated to be significant older than the job advertisement with younger traits.

The chi-square tests revealed that the target age of candidates for the advertisement with young traits in Study 1 and 2 to be in the twenties confirming it to cue young age. Although, in both studies the target age of candidates for the job advertisement with older traits was perceived as relatively older than the job advertisement with younger and age-shared, the distribution of frequencies from the chi-square tests show it was predominately seen to be targeting candidates in their thirties, rather than those aged 50 and over.

Therefore, although descriptors were chosen from the pilot study, to reflect workers over 50 years old, when presented in the context of a job advertisement they were perceived to be targeting much younger workers. Prior research of age stereotyped job advertisements has not featured an overall judgement of the target age the advertisement (Koçak, Derous, et al., 2023). However, in research focused on age stereotyped resumes, participants have also struggled to view profiles of candidates with stereotyped descriptors of older workers as suitably older. For instance, in Abrams and colleagues' study (2016) the younger profile was estimated to be 32 and the older profile 36.5. In Kleissner and Jahn (2021) participants perceived the candidate with age-neutral descriptors to be 35 years, which was significantly older than the young profile (mean estimated age 30 years) and significantly younger than the old profile (mean estimated age 39 years). Therefore, in line with these studies, our job advertisement elicited an older age cue, but not an age cue matched to being 50 or over.

This could indicate a cognitive and cultural bias and orientation towards youth, meaning that age cues are anchored on the young, and therefore, "older" is relative to these anchors (Miles, 2014). Alternatively, it could evidence a cognitive bias that job seekers are typically considered to be younger or middle-aged (see Drazic & Schermuly, 2024). The context of thinking about the age of job seekers could be lowering the perceiving age of candidates applying for job advertisements with older descriptors.

Age-matched attraction

In Study 1, participants aged 22 viewed the age-shared advertisement as more appealing compared to the younger and older advertisements, which did not differ from each other. In Study 2, participants aged 22 viewed the age-shared advertisement as more appealing compared to the younger, but not older advertisements. Evaluations of job appeal for the younger and older job advertisements did not differ from each other. There was no significant difference in how they ranked the job advertisements. However, they perceived more fit with the older compared to the younger advertisement. Overall, these findings do not support an age-matched attraction effect for younger participants, where we expected the younger advertisement to be more appealing and a better fit.

For older participants (aged 58), the evidence for age matched attraction is mixed. In Study 1, they viewed the age-shared job advertisement more appealing in comparison to the older job advertisement, but there was no difference between the younger and age-shared advertisement or the younger and older advertisement. In Study 2, they viewed the age-shared job advertisement to be more appealing in comparison to the younger job advertisement, but there was no difference between the older and age-shared advertisement, or younger and older advertisements. Thus, the age matched effect for appeal was not supported on this measure. However, in response to the rank measure, older adults were most likely to apply for the older advertisement.

Appeal to the age-shared advertisement is not so surprising, since younger and older participants could

also identify they have these shared traits and characteristics. For older participants, this could also be why their perceived fit between job advertisements did not differ, since over their lifetime they have been associated with younger, age-shared and older descriptors. Overall, for older participants we did not support the age-matched attraction effect when using job appeal and perceived fit as the outcome variables, but it was evident for rank choice. However, when comparing between age-groups, with the older advertisement, participants aged 58 did find it more appealing (Study 1 and Study 2) and better fit compared to participants aged 22, which is in line with notion of age-matched attraction. However, this finding should be considered with caution because it also part of a general main effect of age.

Our hypothesis surrounding middle-aged participants was more exploratory because we did not include corresponding middle-age stereotypes in the job advertisements, but we reasoned they would find the age-shared advertisement more appealing as they might view themselves to have more shared traits. In Study 1, this was supported as participants aged 40 viewed the age-shared job advertisement as more appealing than the younger and older job advertisements. In Study 2, participants aged 40 viewed the age-shared advertisement more appealing than the younger, but not older job advertisement, which did not differ from each other. However, they reported a higher likelihood to apply for the older job, to which they also perceived better fit, but only in comparison to the younger job advertisement. Perceived fit between the age-shared and older job advertisement did not differ. This may not be surprising given that many participants perceived the job advertisement with older traits to be targeting candidates aged 31–40, who are more matched in age to these participants. Future research will need to find a set of descriptors that are more closely associated with older workers or are a stronger cue to targeting older workers to explore this further.

It's important to note that the findings for perceived fit did not coincide with evaluations of job appeal. Participants aged 22 and 40 found the advertisement with age-shared traits as more appealing but perceived better fit with the job advertisement with older traits. We offer two explanations for the unexpected finding that younger participants did not rank the younger advertisement as the most likely to apply for and that they considered themselves a better fit to the older advertisement (when comparing younger vs older advertisement).

First, although designed to target workers aged 50 years and over, the older advertisement was perceived to be targeting middle-aged participants (31–40 years old). Thus, younger participants in the context of being job applicants, who are motivated by developmental opportunities (Carstensen, 2006), may have viewed the content as aspirational, leading a greater degree of perceived fit. Alternatively, this finding could be understood in the context of challenge responses to age stereotypes. In line with the theoretical model of age stereotype responses (Finkelstein et al., 2015), younger, but not older, workers respond to negative age meta-stereotypes in job advertisements with challenge (Koçak, Rooman, et al., 2022). Challenge is a desire to disprove the stereotype and includes feelings of indignation and pride (Finkelstein et al., 2015, 2020). If in Study 2, younger participant construed the positive old age stereotypes in the older advertisement as negative stereotypes of younger workers (i.e., older worker are knowledgeable and patient, which implies negative stereotypes of younger works as being unknowledgeable and impatient), they may have responded with challenge. Indignation may have motivated them not to discount applying for the older advertisement and pride may have fuelled a perception that, in opposition to negative stereotypes, they are a good fit to the older advertisement. Thus, younger participants and therefore, younger workers, might not be attracted to or perceive a good fit with roles and organizations where there is a congruence with their own group characteristics in order to challenge incongruence with outgroup characteristics (Schneider, 1987; Schneider et al., 1995). It could also be that younger participants are not impacted by young age stereotypes (Koçak et al., 2023).

The rank choice, but not job appeal, found that older, but not younger participants were attracted to job advertisements which feature group-level organizational characteristics which closely matched their group (i.e., age-stereotypes). This difference is supported the shifting stereotypes model (Biernat & Manis, 1994) which argues that stereotype effects are revealed to a greater degree in relation to objective rather than subjective measurements. Future studies on age stereotypes should include a range of subjective and objective measures to fully explore effects.

For older participants, our results may seem counter to Koçak et al. (2023). Both ours and Koçak and colleagues' (2023) advertisements included the term "friendly". In our pilot study this was considered an age-shared descriptor, and in Study 1 older participants viewed the age-shared advertisement as more appealing than the older advertisement, and in Study 2 they viewed it as more appealing than the younger advertisement. In Koçak et al. (2023) friendly was related to a negative age meta-stereotype of agreeableness

(older participants think young people think that older workers are less agreeable), which was less appealing. Older participants reported lower intentions to apply to a job role which contained the descriptor "friendly" and other negative age meta-stereotypical descriptors (namely obedient and flexible) in comparison to a job advertisement which contained no negative meta-stereotype descriptors. However, the target age of the job advertisements used by Koçak et al. (2023) are not known. In addition, our advertisements did not use meta-stereotypes, and the objective ranking measure put the job advertisement with older descriptors as the most likely to apply for. Therefore, further research is needed to explore the additive or interactive effects of age-matching, positive and negative stereotype descriptors and meta-stereotypes.

In sum, our findings extend our understanding of the ASA framework (Schneider et al., 1995) and suggest that group characteristics can contribute to perceived congruence between individual and organizational characteristics driving attraction, but this is only captured on the objective measure for older participants, and for middle-aged participants on measures of job appeal.

Age-matched selection

Our studies provided compelling evidence that age stereotypes can provide a framework for an age-matched selection effect. In both studies, the profile with the younger stereotypes was matched to younger job advertisement. In Study 1, the age-matched selection effect was less strong for the older job advertisement; the profile with age shared descriptors was preferred followed by the profile with older descriptors, but Study 2 confirmed a preference for the profile with the older descriptors. In both studies, no candidate was preferred for the job with age shared descriptors; both younger and older candidates were found to be equally suitable. In sum, younger and older candidate profiles were (almost consistently) matched to the corresponding job advertisements, which supports our theory that social categorization operates within ASA processes (Schneider, 1987; Schneider et al., 1995) such that age stereotypes can be used to determine fit between job advertisements and job candidates.

A unique contribution of our work is that it demonstrates both sides of the coin in respect of age stereotypes in job advertisements by exploring the nature of attraction and selection simultaneously. This offers an extension to research which has explored selection and attraction processes independently (Abrams et al., 2016; Kleissner & Jahn, 2021; Koçak et al., 2024; Koçak, Derous, et al., 2023; Koçak, Rooman, et al., 2022). Taken together, the overall hypothesized effects were more consistent for the age matched selection effect than the age matched attraction effect. Results were more reliable when participants were making hiring decisions and matching the age stereotyped profiles of others to the job advertisements (age matched selection) rather than themselves (age matched attraction). Through the lens of social categorization theory (Turner & Oakes, 1989, 1997), this suggests that matching on a group level is more effective when both elements (advertisement and resume) involve the perceptions of others in the case of the age matched selection effect. For the age matched attraction effect, the match involves the perception of a target (the advertisement) and the self. Social categorization can explain this in several ways. First, it could be explained by impression formation theory (Cadiz et al., 2022; Drury et al., 2022; Fiske & Neuberg, 1990), which suggests that stereotypes are employed to a lesser degree when we have more individuating information about others. Therefore, when the match involves the self (rather than a candidate profile), the decision-maker holds maximum individuating information about themselves which would dilute the match effect. Perhaps more importantly, matching the advertisement to oneself involves self-categorization processes (Turner et al., 1994). These would involve the degree to which workers identify with their age group and attribute to themselves the stereotypes of their age group (Swift et al., 2018). In our study, participants may have varied in the degree to which their age contributed to their identity, thus weakening the congruency.

Theoretical implications for the ASA framework

One aim of our research was to test how the introduction of social categorization processes and stereotypes could enhance understanding of the ASA framework in relation to attraction and selection (Schneider et al., 1995). Our findings support the notion that ASA processes of individual and organizational characteristic matching can additionally occur at a group level and that stereotype cues allow inference of the relevant social group information. Our findings suggest that individuals can then judge congruence between the organization and others (or themselves), in relation to matches in social groups. This theoretical extension provides an understanding of the ASA framework in relation to other theories of attraction and selection. Schneider and colleagues (1995), suggest that while the ASA posits similar hypotheses to organizational demography literature (Pfeffer, 1983), the two theories are distinct in respect to the variables used to define homogeneity. ASA theory uses more psychological variables (e.g.,

personality-related trait characteristics of individuals) while the organizational demography literature uses more sociological demographic characteristics, such as age and gender. Our integration of social categorization processes within the ASA framework unites the two literatures by providing a way to understand age (and other social groups) described in organizational demography via psychological processes consistent with personality-related characteristics of individuals within the ASA framework. In tandem with the publication of our research, a recent review of the ASA framework (Van Iddekinge et al., 2025) cites a need to integrate ASA with diversity research. It points out that rather than being influenced by assessed similarities between individuals and organizations, ASA congruence can rely on perceived similarities. Our work provides empirical evidence and theoretical understanding of how congruence based on perceived attributes and stereotypes can arise and contribute to exclusion, thereby having consequences for organizational diversity.

Limitations and future directions

Some methodological limitations of our study should be acknowledged. The older advertisement was only considered relatively older in comparison to the other two advertisements and not considered to be targeting job candidates aged 50 and over, in line with the age associated with the descriptors in the pilot study. There could be scope for future research to test a different combination of descriptors to increase the estimated target age. For instance, mature was the strongest trait indicated for workers aged 50 and over, but it was not used as it was deemed to be a more explicit age-cue. In addition, we didn't explore the perceived age of the candidate profiles used in Study 1 and 2, this could have provided further insights into the age-matched selection effect to ensure that the perceived age of candidates was matched to the perceived target age of the advertisements.

Future studies should seek to replicate our findings for fit by employing measures derived from the more established job-organization fit literature (Kristof-Brown et al., 2005). Our measure, developed by Gaucher et al. (2011), featured items that measured fit to the organization and occupation. Future research should assess these aspects separately to understand if age-stereotypes inform both aspects of perceived fit.

Different results for job appeal across studies could reflect the different scales used for job appeal, for instance, the addition of the mid-point to the scale for Study 2 could have allowed participants to be more ambiguous with their responses. The item focused trees did find uniform DIF on job appeal item 3 (Study 1), job appeal item 5 (Study 2) and perceived fit item 4 (Study 2). These analyses suggest that given the same levels of job appeal and perceived fit, these items are responded to differently by participants above and below the age split of 64, 39 and 26, respectively. In Study 1, participants aged 64 and over were more likely to endorse "this company would be a good employer" than those aged 64 and younger when evaluating the age-shared job advertisement, and participants aged 38 years or younger were significantly more likely to endorse the item "this job looks interesting" when evaluating the job advertisement with younger descriptors. For perceived fit, the split is found on the item to be reversed coded ("the type of people who would apply for this job are very different from me") and suggests that participants aged over 26 were more likely to endorse the item. This is in line with findings from Guo et al. (2023) who also found DIF more likely to occur on items in scales to be reversed coded. DIF was not detected consistently in items across job advertisements, suggesting context-dependence due to the different job advertisements being evaluated and reiterates the need for DIF to be checked when comparing groups by age. The split points across the two studies vary, which differs from Guo et al. (2023) who found breaking points between 45 and 53 on measures of job-related affective wellbeing, organizational citizenship behaviours, work related age-based stereotypes and motivation, and subsequently suggest around 50 as differentiating point.

Further studies could add a-priory power analysis to ensure the sample isn't underpowered and representative across the lifespan. Further efforts could also be made to explore attraction with people who are actively seeking jobs or different employment as these factors could also impact on evaluations of job advertisements (Van Hooft & Crossley, 2008; Fasbender & Klehe, 2019) and are likely to differ significantly from our sample of participants from Prolific.

The mixed results for younger and older participants add to an emerging body of research suggesting age-specific responses to age stereotypes (Finkelstein et al., 2020; Koçak et al., 2024; Koçak et al., 2023; Koçak 2022; Lamont et al., 2021; von Hippel et al., 2019). Future research should strive to explain these differences. Fasbender and Klehe's (2019) theoretical model of job search strategies across the lifespan provides suggestions in relation to future time perspectives (Carstensen, 2006; Lang & Carstensen, 2002). As individuals age they perceive less future time in their lives, thus their future time perspectives become shortened. Fasbender and Klehe (2019) postulate that older

workers limited occupational future time perspective leads them to exercise more self-controlled strategies during job searches. Greater self-control may inhibit older workers from applying for jobs where they lack fit, compared to younger workers who have a greater future time perspective and may feel less inhibited. To disentangle the influences of age-specific differences in job search on a group-characteristic-congruency approach to attraction processes (Schneider et al., 1995), future research should test the effects of positive stereotypes and negative stereotypes on younger and older workers' perceived fit and application intentions whilst considering self-control strategies and future time perspectives.

Our job advertisements were for an "HR officer", which was chosen to be a relatively age-neutral job and industry. We kept the job consistent across studies and only varied the descriptors. However, previous research has found that jobs can be age-typed (e.g., associated with younger or older workers) and this can be a contextual factor that influences age-bias and preferences for younger and older workers. Preferences emerge in selection processes when there is congruence between the candidate age and the age-type job (Perry et al., 1996). Future research could manipulate job role and age-types further, for example, by manipulating managerial levels or exploring jobs in industries where there are age-norms. For example, Postuma and Campion's (2009) suggests that there are views that certain jobs should be held by employees of certain ages, and that age stereotypes are more likely to be applied in instances where these are incongruent or do not match (Perry et al. 1996). They also highlight that age stereotypes are more common in some industries than others. For instance, retail, finance, insurance and technology are considered young industries, which disadvantages older job applicants (Posthuma & Campion, 2009). Future studies could explore further the impact of job tasks and different industries on attraction effects, to see whether these aspects of the role or industry influence attraction and selection processes. It's likely that age-congruence between the job tasks and the candidate, and the industry and the candidate, would enhance attraction and selection effects further (Perry et al. 2006). However, the findings from the current studies suggest that age-shared descriptors could neutralize these effects.

Our studies neglected to examine the combination of social categorization, age stereotypes and ASA process in relation to attrition (Schneider, 1987). Attrition processes relate to turnover, retirement and layoffs. When a lack of fit is perceived, the employer or individual may prompt an exit from the organization. Thus, in line with our theorizing for attraction and selection, age stereotypes may influence these processes if the lack of fit is for group characteristics (also see Cadiz et al., 2022). Prior studies document how the influence of experienced age stereotypes in the workplace encourage turnover intentions (von Hippel et al., 2019). When older (but not younger) workers experienced negative stereotypes in the workplace they were more likely to quit. Future research should explore if this relationship is mediated by lower levels of fit, as ASA theory (Schneider, 1987) would suggest.

Practical implications

Our study results provide practitioners with valuable knowledge regarding the use of positive age stereotyped words in job advertisements and strategies to attract and avoid alienating candidates of particular age groups. Our findings suggest that participants, and therefore, potentially job seekers and workers recognize age stereotypes as a cue to age within job advertisements. Thus, it is important for recruiters to be aware of the positive age stereotypes of different age groups. This information can be sought out via published research (Finkelstein et al., 2013; Posthuma & Campion, 2009)

When advertisements feature positive stereotypes of younger workers, this does not provide an advantage for organizations wishing to attract younger workers because the younger participants did not find these jobs more appealing nor rank them more likely to apply for. Furthermore, although older participants view these advertisements as equally appealing as those with older stereotypes, they rank them least likely to apply for. Interestingly, younger participants and therefore, younger workers may perceive a greater fit to advertisements that contain positive old age stereotypes but are more likely to equally rank job advertisements when applying to them and find the advertisement with shared traits more appealing. Older participants and therefore older job seekers and workers are more likely to apply to job advertisements that contain older stereotypes. However, they are also attracted to job advertisements with age-shared traits. Thus, it is not necessary to use only older stereotypes in job advertisements in order to appeal to older workers, but they do provide an advantage in likelihood of application. To appeal the widest participant pool, our findings suggest that job advertisements with age-shared traits appeal to young, middle-age and older participants. However, in terms of application intentions, advertisements with older stereotyped descriptors

could be attractive to middle-age and older workers, as middle-age and older participants were more likely to be apply to this advertisement. The age-matched selection effects suggest that job advertisements featuring younger or older stereotypes will lead to the hiring of younger or older candidates (respectively) who have resumes which include stereotypes of their age group. However, advertisements that feature age-shared descriptors only do not result in age-selection biases.

In summary, including young age stereotypes in job advertisements via descriptors of ideal candidates has potential to alienate older workers in terms of applying to the role, but does not provide an advantage to attract younger workers. Including age-shared descriptors does a reasonable job appealing to workers of all ages, but the inclusion of older stereotypes has the greatest impact in terms of applications. To overcome limiting the age-diversity of the application pool when a job advertisement may necessitate the inclusion of abilities associated with younger workers (e.g., IT proficiency), one strategy may be to counteract these with age-shared descriptors, or descriptors (characteristics, traits, skills or qualities) stereotypically associated with older workers (which we identify in Table 1, will a full list in Table S1). However, as yet research has not tested the efficacy of this approach. Another strategy to potentially mitigate the effects of young age stereotypes in advertisements could be to focus on other aspects of the organization, policies or job which are appealing to older workers. This includes a positive age-diverse organizational cultures, flexible work arrangements and targeted equal employment opportunity statements (Rau & Adams, 2005, 2013).

Conclusion

Our research set out to investigate the presence of age stereotypes in recruitment materials and their impact. The pilot study revealed that job advertisements do contain age stereotyped words describing ideal characteristics, traits, skills or qualities of job candidates. By integrating the attraction-selection-attrition framework with social categorization and age stereotyping theories, we confirmed that job advertisements containing age stereotypes are a cue to age and can signal who should apply. For younger participants, age-stereotyped descriptors in job advertisements did not seem a relevant dimension to determine which job they would apply for. However, older participants, showed a preference for applying to the job advertisement containing age-stereotyped descriptors that reflected older workers. Both studies revealed age-stereotypes to be a relevant dimension in selection and hiring processes, and this was particularly strong for younger candidates, but could be avoided using age-shared descriptors in job advertisements and candidate resumes.

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Data availability statement

Data will be available on the Open Science Framework and can be viewed here https://osf.io/7n2bc/?view_only=425a86515c8f404d8d54cecd46c6e1f3 they are also available on request from the first author.

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