

Too Old to Be a Diversity Hire: Choice Bundling Shown to Increase Gender-Diverse Hiring Decisions Fails to Increase Age Diversity

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Past research has shown that people are more likely to make the decision to hire candidates whose gender would increase group diversity when making multiple hiring choices in a bundle (i.e., when selecting multiple team members simultaneously) compared to making choices in isolation (i.e., when selecting a single team member). However, it is unclear if this bundling effect extends to age diversity and the selection of older candidates, as older workers are often the target of socially acceptable negative stereotypes and bias in recruitment, leaving them unemployed for longer than their younger counterparts. Across five preregistered experiments (total $N = 4,096$), we tested if the positive effect of bundling on diversity of selections extends to older candidates in hiring decisions. We found evidence of bias against older job candidates in hiring decisions but found inconsistent effects of choice bundling on the selection of older candidates across experiments. An effect of bundling was found in two of five experiments, with no meta-analytic effect found across the five studies. Making older candidates more competitive and introducing a diversity statement aimed at increasing their selection both significantly increased older candidate selections, but failed to activate the bundling effect. We discuss the theoretical implications for choice bundling interventions and for age as a diversity characteristic to support the design of interventions that meet the challenges of an aging workforce.

Public Significance Statement

This research demonstrates that a theoretically driven behavioral intervention proposed to increase diversity largely failed to increase age diversity via the selection of older candidates. In the context of hiring, explicit diversity statements that make clear the company aim to increase age diversity via the representation of older workers are effective in increasing selections, but these statements do not activate the diversity benefits of bundling decisions, and may even overpower them. More generally, behavioral interventions aimed at increasing choice diversity may depend on the target characteristic being neither too undesirable nor desirable to the selector. Overall, this highlights the contextual nature of behavioral choice interventions, and suggests that interventions designed to increase diversity cannot be expected to work uniformly across different diversity characteristics or in combination with other interventions.

Keywords: hiring decisions, aging, diversity, decision making

Diversity, equity, and inclusion (DEI) represents one of the most challenging management topics for companies as they seek to attract top talent and remove barriers that have led to underrepresentation of key groups. Historically, DEI practices were shaped by legal and other equitable concerns over discrimination and bias in employment

decisions (Kelly & Dobbin, 1998). Increasingly, these practices are being developed with the aim of enhancing performance. The broadly held “business case for diversity” suggests that more diverse workforces outperform organizations with less diversity (Van Knippenberg et al., 2020), with diversity leading to greater

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innovation and better decision making (Cox & Blake, 1991). This has prompted an ever-increasing number of experimental research studies that can be used by organizational leaders to increase diversity.

Experimental research on diversity has been largely dedicated to helping companies attract more gender and racially diverse groups of employees. Specific research areas include diversity statements and impression management directed toward applicants (e.g., Avery & McKay, 2006; Rau & Hyland, 2003; Windscheid et al., 2016), diversity and bias training initiatives to address existing prejudices (e.g., E. H. Chang, Milkman, Gromet, et al., 2019; Devine & Ash, 2022), and adjustments to recruitment processes to increase representation of women and people of color (e.g., Bohnet et al., 2016; Feng et al., 2020). While companies are still grappling with existing gender and race inequalities, an aging population (World Health Organization [WHO], 2021) represents a new and distinctive diversity challenge. Older workers currently face barriers in all aspects of job opportunity, including recruitment, training, and promotion (K. Harris et al., 2018). Refusing to hire or advance someone based on their age is a violation of labor laws around the world, and yet age discrimination in hiring and selection decisions remains widespread (WHO, 2021). This has left an experienced, and much needed workforce vulnerable to discrimination, with 34% of European workers reporting experiences of age prejudice (compared to 25% for gender and 17% race or ethnicity; Abrams et al., 2011). Compared to gender and race, age has received comparatively little scholarly attention (North, 2019). A Google Scholar search (November 2022) found 143,000 results for “gender diversity,” 118,000 results for “racial diversity,” and only 19,100 results for “age diversity.” Building on the current body of experimental findings for gender and race, can we expect similar research-based interventions to help increase age diversity?

In the current research, we investigated if a choice bundling intervention shown to increase the selection of women in technology roles (E. H. Chang et al., 2020) would increase the selection of older candidates in the same roles. Hiring and selection decisions are particularly susceptible to age stereotyping and bias because prior to a candidate joining the organization, their qualities and role performance cannot be evaluated (Beier et al., 2022). Choice bundling interventions are especially promising for overcoming bias in hiring processes as they do not rely on changing negative attitudes or stereotypes toward particular groups. However, it is unclear if these interventions can be successful in reducing hiring prejudices and increasing diversity on the basis of characteristics such as age, where there is less diversity awareness and stronger negative group stereotypes.

Age Diversity in the Workplace

The need for organizations to effectively build and manage workforce diversity has come into sharp focus in recent decades. Socioeconomic trends, including advances in women’s and civil rights, economic and technological developments, and an aging population, have led to a more global workplace that encompasses a greater variety of categorical differences (e.g., gender, race/ethnicity, age, etc.), cultural backgrounds and experiences (Roberson et al., 2017). Organizations have also looked to capitalize on the “business case for diversity,” which suggests that there is value in these differences at a group level because the different knowledge, skills, and experiences across categories contribute to varied viewpoints

leading to better solutions and performance (Cox & Blake, 1991; Milliken & Martins, 1996). Team diversity in hiring and selection is therefore highly desirable (Jaffé et al., 2019), and there is a strong demand for organizational practices that help managers achieve this (Dobbin & Kalev, 2013). An aging demographic provides greater opportunities to adopt practices that increase the age diversity of workforces (Boehm & Kunze, 2015). Yet, while most large organizations make active efforts to increase gender and racial diversity, it is not clear that age diversity is recognized and valued by organizations in the same way.

There are a number of known barriers that can prevent organizations hiring for age diversity. Age diversity in the workplace has been labeled the “last diversity frontier,” due to routine and socially acceptable age-related biases toward older workers (Mercer, 2019). Older workers are more likely to be out of work than younger workers, and find it harder to get back into employment (UK Office for National Statistics, 2021; US Bureau of Labor Statistics, 2021), with the link between age and successful hiring decisions increasingly negative for applicants over the age of 50 (Wanberg et al., 2016). The first known barrier is that age diversity has not been actively managed or fostered by organizations in the same way as traditionally underrepresented categories of gender and racial diversity (Akinola et al., 2019; Kunze et al., 2011), and has received comparatively little scholarly attention (North, 2019). This lack of organizational and scholarly focus may reflect a lack of awareness of age diversity issues and the potential value of age-diverse teams. Although age diversity has substantial potential to enhance organizational performance through diversity in knowledge, skills, perspectives, and social connections (Lee et al., 2018; Li et al., 2021), it has not received the same investment in research and training as gender or race. Second, there are clear age-based norms that develop around career trajectories, including when and what positions should be achieved by a given age (Lawrence, 1988) and when these positions should be ceded to younger generations (North & Fiske, 2013, 2016). Older candidates who are seen to violate these norms by not adequately progressing their careers, switching careers or not “stepping aside” after a period of time can be subject to critical appraisal from potential hirers (Martin et al., 2019; North, 2019; Shore et al., 2003). Finally, each job role carries age “prototypicality,” with certain jobs considered more suitable for younger (rather than older) candidates based on prevalent stereotypes (Perry & Finkelstein, 1999). In particular, jobs that require the use of technology are seen to be more prototypical of younger workers (Reeves et al., 2021), which may influence hiring decisions. Taken together, these issues help explain why increasing age diversity via the recruitment of older candidates might not be a priority for recruiters when selecting candidates.

Converging evidence of stereotype-driven bias against older candidates in contemporary hiring has been demonstrated using a range of research methods, including surveys of hiring managers (Lössbroek et al., 2021), curriculum vitae (CV) field experiments (Carlsson & Eriksson, 2019; Neumark et al., 2019), and simulated hiring decision experiments (Gioaba & Krings, 2017; Kaufmann et al., 2016; Kleissner & Jahn, 2021). This evidence largely suggests that severe negative stereotypes lead to lower chances of success for older candidates. For example, older candidates are (falsely) believed to be less motivated and more resistant to change (Ng & Feldman, 2012). Although older workers are stereotypically believed to have positive traits also, such as being warm, cautious,

and polite, these traits are often associated with lower job competence (Abrams et al., 2016; Cuddy et al., 2005). Poorer performance is often expected of older candidates even though age is largely unrelated to job performance and positively associated with organizational citizenship behaviors (Ng & Feldman, 2008). At a societal level, age-based norms can lead to the expectation that older workers should “make way” for younger generations (North & Fiske, 2012, 2016). This is particularly relevant to hiring decisions because older candidates from outside an organization are often seen to violate this societal expectation to “make way” (North, 2019). Connected to this is the belief that selecting older candidates will deliver a lower return on investment, as “retirement” may shorten the candidate’s tenure. Yet, this too is false, due to lower quitting rates among older workers compared to their younger counterparts (Posthuma & Campion, 2009). Given the barriers to age diversity and the strength of negative stereotypes and bias against older candidates, there is particular interest in research-based interventions that successfully facilitate the selection of more age-diverse candidates.

Approaches to Increasing Diversity in Hiring Decisions

Overcoming bias against job candidates and improving workplace diversity has centered around two distinct intervention approaches, diversity training and decision processes. Diversity training is the most common category of intervention for reducing bias and increasing organizational diversity (Paluck et al., 2021). Training interventions are rooted in psychological theories that posit that in order to increase diversity, it is necessary to change the attitudes that shape the intentions and selections of decision makers in their evaluation of underrepresented groups (Ajzen, 1991; E. H. Chang, Milkman, Gromet, et al., 2019). These theories conclude that in the absence of personal, individuating information about others, people categorize them into social groups and rely on stereotypes to draw group-based generalizations (Devine & Ash, 2022). By making people aware of their personal attitudes and beliefs, diversity training aims to alter these attitudes and stereotypes (Bezrukova et al., 2016). Based on this, significant time and expense has been invested in diversity training programs, although limited success in changing stereotyped attitudes and behaviors has been found (Forscher et al., 2019; Lai et al., 2016; Noon, 2018). When the training is effective in changing attitudes, this can often be short term (e.g., E. H. Chang, Milkman, Gromet, et al., 2019), without consistent effects on behaviors (Bezrukova et al., 2016). This disconnect between self-reported attitudes to diversity and prejudiced behaviors raises questions about the value of diversity training interventions (Forscher et al., 2019; Paluck et al., 2021), and highlights the need for training to be complemented by more systemic interventions that can influence behavioral decision making. Thus, decision sciences provide an alternative approach to reduce bias in hiring decisions. Instead of targeting attitudes, this approach seeks to deliberately change hiring procedures to facilitate the selection of more diverse candidates, effectively altering the choice architecture available to decision makers. Some of these interventions aim to reduce reliance on stereotypical social categorization by giving more opportunity for reflection and divergent thought. For example, when asked to shortlist candidates for a male-dominant role, participants instructed to extend their list add a greater proportion of female candidates compared to their initial list (Lucas et al., 2021). A growing literature also shows the potential for choice architecture interventions that make candidate

differences more visible to increase diversity (e.g., Bohnet et al., 2016; E. H. Chang et al., 2020; L. W. Chang & Cikara, 2018; Feng et al., 2020). Rather than aiming to reduce the negative outcomes of social categorization (stereotypes), these studies aim to leverage the salience of these categorizations to increase selection diversity. For example, Feng et al. (2020) found that hirers select more gender-diverse teams when candidates are presented in a list sorted into men and women (to increase the salience of gender), compared to when the same men and women candidates are presented in a randomly ordered list. Similarly, E. H. Chang et al. (2020) found that when hiring decisions are made for one role in isolation, participants favor the most experienced candidate (a White male). However, when a bundle of hiring decisions are made for a team, the gender diversity of the team becomes more salient and participants select more women. In both examples, choices are constructed to lead hirers to consider the accumulated outcome of multiple decisions on social categorization (selecting a gender-diverse team).

The successful application of choice bundling to increase gender diversity in hiring decisions suggests that bundling may have the potential to also increase age diversity in hiring decisions. The effect of choice bundling on choice diversity is already a well-established phenomenon in consumer and financial decisions. Simonson (1990), first showed that students offered snacks each week over 3 weeks were more likely to choose the same snack each time than students whose snack choices were bundled for all 3 weeks at once. Since then, diversification for bundled choices has been shown in a range of contexts and categories, such as grocery purchases (Simonson & Winer, 1992), children’s candy preferences (Read & Loewenstein, 1995), musical playlists (Ratner et al., 1999), and financial decisions (Benartzi & Thaler, 2001). The effect of choice bundling on diversity follows the maxim that it is “not wise to place all our eggs into one basket” (Read & Loewenstein, 1995), with a “bundle” of multiple choices made simultaneously highlighting the opportunity to make more diverse selections that can protect from uncertainty and help to mitigate risk. Bundling makes us consider the outcome as the product of a group of decisions (e.g., “What do I want to eat now?,” “What might I want to eat later?,” “If I eat the same snack twice, will I want it again a third time?”) compared to decisions in isolation (“What do I want to eat now?”). Thus, choice bundling might lead to more decision inhibition by forcing the decision maker to consider the broader, accumulated outcome(s) of multiple decisions (e.g., health, social, or hedonic; Ashe & Wilson, 2020; Read et al., 1999). These principles suggest that choice bundling should consistently increase diversity across contexts, including in hiring decisions via social categorization processes (as demonstrated by E. H. Chang et al., 2020).

To date, choice architecture interventions that make social categorizations more salient in hiring decisions have mainly focused on women and racial minorities. It remains unclear if similar interventions can successfully increase diversity for other characteristics such as age, which have not traditionally been the focus of diversity awareness initiatives (Akinola et al., 2019). The effectiveness of leveraging social categorization to increase selection diversity via choice interventions may depend on this awareness, as well as the desirability or absence of negative stereotypes about the relevant category. For example, Feng et al. (2020) found that a choice intervention designed to increase selection of women candidates was stronger among recruiters with weaker gender stereotypes. Thus, it is not known if decision sciences approaches that draw attention to

social categorizations are effective at increasing selection diversity independently of held stereotypes, or if they are only effective in the absence of strong prejudices. Here we evaluate if choice architecture changes on their own can increase the selection rate of a group (older workers) in a context where they are especially undesirable due to negative stereotypes. Although both women and older workers can be the target of negative and harmful stereotypes, especially in specific industries (i.e., technology), important workplace attitude ratings including liking/respect and likelihood to hire are lower for older men compared to younger men and women (Martin et al., 2019). Additionally, individuals who are committed to diversity and equality on the basis of gender, do not necessarily extend this commitment to the characteristic of “age” (Martin & North, 2021). Despite being harmful and false, negative stereotypes about older workers are widespread and are often viewed as socially acceptable (Swift et al., 2017). In the present studies, we test whether a choice architecture intervention shown to increase gender diversity of candidates selected by presenting multiple roles simultaneously in a bundle also shows positive diversity effects for older job candidates.

The Present Studies

In the present studies, we aim to test the assumption that choice bundling increases diversity, by evaluating these findings in a hiring context using the diversity characteristic of age. Choice bundling is especially promising for increasing the selection of older candidates because unlike training interventions, it does not aim to change deeply held beliefs and negative stereotypes about older workers. Theoretically, choice bundling for multiple hiring decisions should lead participants to give greater consideration to accumulated outcomes (the team) and make a greater proportion of older candidate selections than hiring in isolation. However, the intervention may not be as effective for older candidates as it was for women due to the strength of negative stereotypes against older workers and technology (Ng & Feldman, 2012). Older workers might also be expected by hirers to carry a longer period of relevant experience commensurate with their age, and despite the need for greater up/reskilling of older workers in technology roles, it is unclear how older workers with comparable relevant experience to younger candidates will be viewed by selectors (Alcover et al., 2021; North, 2019). Furthermore, replicating experimental effects remains a challenge, even for direct replications. The failure rate of exact replications in social sciences is estimated to be as high as 50%, with effect sizes usually smaller than those of the published studies (Camerer et al., 2018; Klein et al., 2018; Stanley et al., 2021). This has led to increasing interest in the need for constructive replicability in organizational sciences (Byington & Felps, 2017; Köhler & Cortina, 2021), where the vast majority of articles in prominent journals do not use any open science practices (Tenney et al., 2021). Extending the bundling effect on gender diversity (E. H. Chang et al., 2020) to older candidates, an increasingly relevant diversity characteristic, will provide converging support for bundled choices to increase diversity across contexts and a useful intervention in practice.

In five preregistered experiments, we undertook a well-powered evaluation of the effect of decision bundling on the selection rates of older candidates in technology roles. In Study 1, we conceptually replicated the study of E. H. Chang et al. (2020, Study 3A) that participants tasked with hiring for multiple positions at once in a

“bundle” focused more on diversity and chose a greater proportion of women candidates than participants tasked with hiring for a single position in isolation, substituting women candidates for older male candidates. In four further experiments, we extended our replication and investigated two moderators expected to make older candidates more desirable and unlock the effect of bundling. We investigated the effect of bundling when older candidates were the second best or the equal best candidates (Studies 2–5), and tested how increasing the salience and desirability of older candidates would interact with choice bundling (Study 5).

Study 1

In Study 1, we tested the effect of bundling hiring decisions that was observed on the selection of women (E. H. Chang et al., 2020, Study 3A) with older candidates. We hypothesized that participants hiring multiple candidates at once (bundled choice) would choose a higher proportion of older candidates compared to those hiring for a single position in isolation. We expected this difference to be explained by an additional focus on age diversity when making multiple selections in a bundle compared to a single choice in isolation.

Method

Transparency and Openness

The hypotheses, materials, and the analytical approach for all studies were preregistered, and the anonymized copies of these preregistrations, study data, and supplementary materials have all been made available via the Open Science Framework (https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702).

All research described in this article was approved based on requirements set out by the University of Essex Ethics Committee (ETH1920-0779).

Participants

We recruited 501 participants from the United Kingdom through Prolific, an online participant recruitment platform. As per our preregistration, we excluded data from participants who did not reside in the United Kingdom ($n = 4$) and those who had mistakenly selected more than one candidate per role ($n = 2$). Our analytical sample was 495 participants (gender; 65% women, 34% men, 1% other gender identity; $M_{\text{age}} = 38$, $SD = 12$). The sample size for the study replicated E. H. Chang et al. (2020, Study 3A) and provided 80% power to detect a small effect size of $w = 0.10$ (G*Power 3.1; Faul et al., 2007). Participants were paid £0.30 to undertake the 3-min study (hourly rate equivalent of £6.00).

Materials and Procedure

Participants imagined that their job involved making hiring decisions for a technology company that was looking to fill five different roles for a technology team: product manager, software engineer, marketing analyst, user experience designer, and sales representative.¹

¹ Participants were required to complete the study on a PC or laptop and to successfully answer three attention questions to ensure that they understood the purpose of the study (hiring decisions), the type of company (tech company), and the number of roles being hired for (five).

Participants were randomly assigned to either the bundled choice condition or the isolated choice condition. Participants were presented with five job descriptions for each role on the team. In the bundled choice condition, participants were told they would be hiring an applicant for each of the five roles. Participants in the isolated choice condition were told they would be hiring for one of the roles only. Participants in the bundled choice condition made five hiring decisions at once but only four involved an older candidate, with one filler decision to conceal the study focus on age diversity. Participants in the isolated choice condition made just one hiring decision for one of the four same roles involving an older candidate. To balance the number of hiring decisions made across experimental conditions, we randomly assigned four times as many participants to the isolated choice condition as the bundled choice condition (this left 406 participants in the isolated condition for 406 hiring decisions, and 89 participants in the bundled condition for 356 decisions). Those in the bundled choice made four times as many decisions as their counterparts in the isolated choice condition. This is consistent with the original studies by E. H. Chang et al. (2020), who ruled out cognitive load or fatigue as explanations for the bundling diversity effects before balancing their experimental conditions in this way.

For each job role, participants could select one of three relevant (fictional) candidates. Participants in the bundled choice condition were shown the three candidates for each of the five roles simultaneously in a set and participants in the isolated choice condition were shown the three candidates for a single role only (these materials can be viewed in the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702). Each candidate was presented with their photo, years of relevant experience and the company they worked for. The age of the candidates was manipulated using photos taken from the Park Aging Mind Laboratory Face Database (Minear & Park, 2004). Participants were shown two younger candidates (22–34 years, $M_{\text{age}} = 25$) and an older candidate (61–67 years, $M_{\text{age}} = 64$). Replicating the materials from E. H. Chang et al. (2020, Study 3A), the experience of the candidates ranged from 0 to 5 years, with the older candidates always having a moderate amount of experience relative to other candidates, neither the least nor the most experienced of the three. For each job, candidates were presented in a fixed order: (a) younger most experienced, (b) older moderately experienced, and (c) younger least experienced. The only exception was the filler role of marketing analyst, which included three younger men and was shown in the bundled choice condition only, to obscure the focus on age diversity.

Participants also reported how much they considered age diversity in their hiring decision on a 1–7 scale ranging from 1 (*not at all*) to 7 (*extremely*). Finally, participants completed demographic questions (gender, employment status, education, personal income, and age), before being fully debriefed.

Results

Across both conditions, participants selected the most experienced younger candidate in 78% of hiring decisions. Participants selected older candidates in just 9% of hiring decisions, less often than the least experienced younger candidate (13%) who had the same or fewer years of experience. Figure 1 shows that, as hypothesized, participants selected more older candidates in the bundled choice condition (11.8%) than the isolated choice condition

(6.6%).² A binary logistic regression with standard errors clustered by participant revealed a small, statistically significant effect of choice bundling, $\chi^2 = 4.58$, $SE = 0.202$, $p = .032$, $w = 0.07$, 95% confidence interval (CI): [1.03, 1.83]. This trend was consistent across all four of the jobs tested (see the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702). However, sensitivity analysis in G*Power (Faul et al., 2007) suggested the sample size only provided 49% power to detect an effect size of $w = 0.07$ at $\alpha = .05$.

As expected, participants in the bundled choice condition reported that they focused more on age diversity when making their hiring decisions than participants in the isolated choice condition ($M_{\text{bundled}} = 3.42$, $SD = 1.92$, $M_{\text{isolated}} = 2.97$, $SD = 1.90$), $t(493) = 2.03$, $p = .043$, $d = 0.24$. Overall, participants who focused more on diversity were more likely to select an older candidate, $OR = 1.25$, $SE = 0.104$, $p = .008$. To test whether the effect of the choice condition on participants' hiring decisions for those aged 40+ was mediated by this extra focus on diversity (as found in E. H. Chang et al., 2020), we ran a structural equation model in STATA (see Rijnhart et al., 2019) with clustered standard errors by participant. This analysis showed the effect of choice bundling was not explained by an increased focus on diversity, $b_{\text{indirect effect}} = 0.03$, $SE = 0.016$, $p = .087$, 95% CI [−0.004, 0.059], $b_{\text{direct effect}} = 0.09$, $SE = 0.043$, $p = .045$.

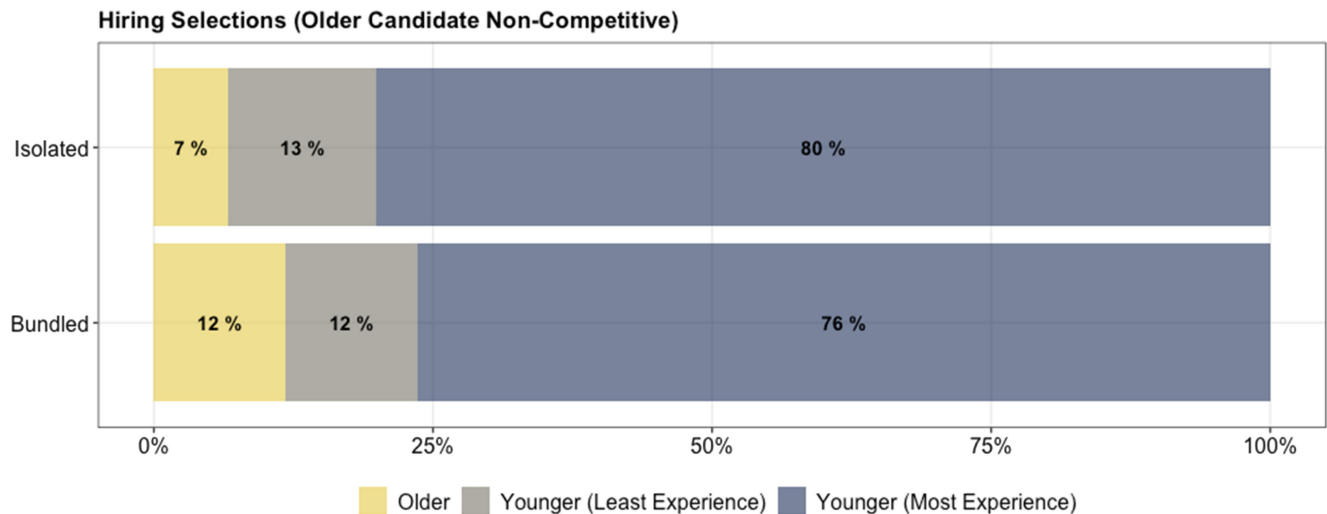
Discussion

Generally, we found lower hiring rates for older candidates compared to women candidates in the original study by E. H. Chang et al. (2020) (Study 3A; 21.1% bundled choice vs. 15.3% isolated choice compared to Study 1 older workers 11.8% bundled vs. 8.8% isolated). However, our findings successfully replicated the original findings, with participants tasked with hiring multiple candidates for multiple positions in a bundle choosing a higher proportion of older candidates than participants tasked with hiring for a single position in isolation. The size of this effect was small and was not explained by an increased focus on age diversity in the bundled condition. Participants may have chosen older candidates in small numbers simply because, based on the hiring task design, they were not the best choice: an alternative, younger candidate was more experienced. The low selection rate of older candidates observed hints at discrimination based on past findings, and the bundling effect might be greater if older candidates were positioned as a more desirable choice. Thus, we sought to raise the competitiveness of older candidates by “evening the playing field” of candidate experience.

Study 2

In Study 2, we aimed to test the robustness of our findings in a replication and extend our approach to a situation where older candidates were more competitive. In Study 1, older candidates were hired almost half as often as the women candidates in the original study by E. H. Chang et al. (2020). While the low selection rates of older candidates suggest a level of bias against older candidates

² Exploratory analysis showed a significant interaction effect between the choice condition and participants' age, such that choice bundling only increased the selection of older workers for participants aged 40+ years. Full data and results available in the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702.

Figure 1*Proportion of Candidate Selections in Bundled and Isolated Choice Conditions*

Note. In Experiment 1, the proportion of older candidates selected in the bundled condition ($n_{\text{participants}} = 89$, $n_{\text{selections}} = 356$) was higher than in the isolated condition ($n_{\text{participants}} = 406$, $n_{\text{selections}} = 406$). See the online article for the color version of this figure.

(compared to younger women in the original study), older candidates (like women candidates in the original study procedure) were not the most experienced candidates, potentially limiting the size of the bundling effect. To make older candidates more desirable to hirers and measure any discrimination, it would therefore be important to “level the playing field” between older and younger candidates. In Study 2, we sought to make older candidates more attractive to potential hirers and quantify bias or age discrimination against older candidates in hiring decisions. Ageism encompasses negative stereotypes, prejudices, and discriminatory actions directed toward people based on their age (Nelson, 2007). Age discrimination is the behavioral component of ageism as measured by refusal to hire older workers or the use of age as a proxy in making these hiring decisions (Stypinska & Turek, 2017). To achieve this, we wanted to make older candidates equally experienced as the most experienced younger candidates, to (a) remove any flooring effects that might have attenuated the effect of bundling on the selection of older candidates in Study 1 and (b) measure bias against older candidates. As in Study 1, we hypothesized that participants hiring candidates in a bundle would choose a higher proportion of older candidates compared to those hiring for a single position in isolation, and that this difference would be explained by an additional focus on age diversity in a bundled choice condition.

Method

Participants

We recruited 514 participants from the United Kingdom through Prolific. As per our preregistration, we excluded participants not residing in the United Kingdom ($n = 10$) and one who had mistakenly selected more than one candidate per role ($n = 1$). Our analytical sample had 503 participants (gender; 67% women, 32% men, 1% other gender identity; $M_{\text{age}} = 37$, $SD = 13$). Participants were paid £0.45 to undertake the four-and-a-half-minute study (hourly rate equivalent of £6.00).

Materials and Procedure

The manipulation of the choice condition was the same as Study 1, and again we randomly assigned four times as many participants to the isolated choice condition as the bundled choice condition.³ In addition, participants completed two hiring tasks within-subjects: One where the older candidates were not competitive and one where they were. The first hiring task was exactly the same as in Study 1, and the second task was a close replication with more competitive older candidates.

In the second hiring task, participants read about a new hiring situation for five different roles in an IT team: project manager, software engineer, systems analyst, user experience designer, and account manager. For each job role, participants were again presented with three new, relevant candidates and their task was to select one for the job. The three candidates were each presented with new photos (younger candidates: 19–28 years, $M_{\text{age}} = 22$ and older candidates: 62–72 years, $M_{\text{age}} = 68$; Minear & Park, 2004), and their relevant years of experience. This time, the older candidates were presented as one of the two most experienced of the three candidates, making them competitive. Again, the bundled condition included a fifth, filler role (systems analyst), for which the candidates were all younger. After participants made their hiring selections for both teams, they reported how much they considered age diversity in their hiring decisions as in Study 1 and answered some sociodemographic questions.

³ We included an additional condition in Study 2 and subsequent studies. This was a sequential choice condition, in which participants selected candidates for the entire team, role by role in a fixed order. Results showed a similar pattern to the bundled condition. Full data and results are available in the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702.

Results

In the task where older candidates had a moderate amount of experience, participants selected the most experienced (younger) candidate in 81% of decisions. Participants selected older candidates in 6% of decisions, less often than the younger candidates with the same or fewer years of experience (13%). When older candidates were competitive, and held the equal most experience, participants selected them more often than the third candidate with the least amount of experience (28% vs. 6%), but at a much lower rate than the equally experienced younger counterpart (66%). We ran a binary logistic regression with standard errors clustered by participant, including both the participant choice condition (bundled vs. isolated) and the within-participant hiring task (older candidate noncompetitive vs. competitive), which showed an overall model effect that was statistically significant, $\chi^2 = 117.54$, $p < .001$. Participants chose older candidates slightly more often in the bundled choice condition than in the isolated condition (18.3% vs. 16.2%); however, this difference was not statistically significant, $OR = 0.97$, $SE = 0.15$, $p = .888$. Participants selected older candidates more often when they were competitive compared to when they were not competitive (28.4% vs. 6.1%; $OR = 7.07$, $SE = 1.66$, $p < .001$). However, participants showed a clear preference toward experienced younger candidates, even when selecting against an equally experienced older candidate (65.7% vs. 28.4%). We found that the effect of choice bundling was null in both tasks, whether older candidates had less or equal experience, with the two factors not interacting, $OR = 0.77$, $SE = 0.26$, $p = .434$.

Consistent with the null effect of choice bundling on the selection of older candidates, participants in the bundled choice condition did not report that age diversity was more salient in their mind when making their hiring decisions compared to participants in the isolated choice condition ($M_{\text{bundled}} = 3.87$, $SD = 1.67$, $M_{\text{isolated}} = 3.71$, $SD = 1.85$), $t(597) = 1.09$, $p = .278$, $d = 0.09$. Overall, participants who focused more on diversity were, however, more likely to select an older candidate, $OR = 1.21$, $SE = 0.059$, $p < .001$.

Discussion

In the competitive hiring task, when the older candidates had the equal most experience, they were selected in greater proportion than the noncompetitive hiring task, where they had only a moderate amount of experience. When the older candidates had the equal most experience, participants showed bias toward hiring equally experienced younger candidates. Choice bundling did not remedy this bias or increase the proportion of older candidates selected. Thus, while making older candidates more desirable did increase their selection, this did not vary by choice condition. We did not find evidence to support our Study 1 findings that making hiring decisions in a bundle increases the selection of older candidates compared to making decisions in isolation.

Study 3

In Study 3, we replicated Study 2 with two methodological improvements. First, a change of display from the original experimental paradigm from E. H. Chang et al. (2020), such that in the bundled choice condition, the participants did not have to scroll up or down to review all the candidates and could view them all together on screen. We hoped that this change might make the age diversity of their selections more salient to participants. Second, we randomized the order of

the two hiring tasks (competitive vs. noncompetitive older candidates) to rule out the possibility that completing the task with noncompetitive older candidates might affect the selection of older candidates in the competitive task. We again tested our hypothesis that participants hiring candidates in a bundle would choose a higher proportion of older candidates compared to those hiring for a single position in isolation, and that this difference would be explained by an additional focus on age diversity in a bundled choice condition.

Method

Participants

For this study, we chose a sample size of 735 participants to achieve 90% power to detect a choice bundling effect based on the proportion of older candidates hired that we observed in Study 1, χ^2 effect size of $w = 0.07$ (G*Power 3.1; Faul et al., 2007). The number of participants chosen was a conservative estimate to identify the effect in the noncompetitive, hiring task. Using a second task provided more statistical power.

We recruited 736 participants from the United Kingdom through Prolific, but 735 completed the study. Participants from prior studies were ineligible. We excluded participants not residing in the United Kingdom ($n = 1$). Our analytical sample had 735 participants (gender; 64% women, 35% men, 1% other gender identity; $M_{\text{age}} = 35$, $SD = 14$). Participants were paid £0.45 to undertake the 5-min study (hourly rate equivalent of £6.00).

Materials and Procedure

The materials and procedure were the same as Study 2, except for two elements. In Studies 1 and 2, we used the same drag-and-drop selection method as in E. H. Chang et al. (2020), but that meant that participants had to scroll down to see some candidates in the bundled condition. To reinforce the bundled perception, in this study, we used a “single click selection” for each candidate so that participants could see all candidates at once without needing to scroll down (see the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702). We also counterbalanced the order of the hiring tasks (older candidate noncompetitive vs. competitive).

Results

We used the same binary logistic regression analysis as Study 2 to predict the hiring of an older candidate from the choice condition and hiring task (standard errors clustered by participant), finding an overall statistically significant model effect, $\chi^2 = 142.42$, $p < .001$. Participants in the bundled choice condition chose older candidates slightly more often than in the isolated condition (17.1% vs. 16.2%), but this difference was not statistically significant, $OR = 1.02$, $SE = 0.076$, $p = .782$. Participants selected older candidates more often when they were competitive compared to when they were not competitive (26.9% vs. 6.4%; $OR = 5.74$, $SE = 1.13$, $p < .001$), but this did not vary between bundled and isolated choice conditions, $OR = 1.12$, $SE = 0.32$, $p = .672$. Consistent with Study 2, participants were more than twice as likely to select younger candidates than older candidates with an equal amount of experience (67.6% vs. 26.9%). Participants who focused more on diversity were more likely to select an older candidate, $OR = 1.06$, $SE = 0.033$, $p = .004$, but this focus on diversity did not differ between the bundled choice

and isolated choice conditions ($M_{\text{bundled}} = 3.79$, $SD = 1.90$, $M_{\text{isolated}} = 3.60$, $SD = 1.85$), $t(733) = 1.09$, $p = .274$, $d = 0.10$.

Discussion

Studies 1–3 provide contrasting evidence. Participants consistently selected younger candidates much more often than older candidates, even when the older candidates were equally experienced, but choice bundling only led participants to think more about age diversity and hire a greater proportion of older candidates in Study 1. One reason for the lack of a consistent bundling effect could have been due to the presence of the fifth, “filler” role in the bundled choice condition. The fifth “filler” role, included three younger male candidates, including a person of color who may have been selected by participants to increase (racial/ethnic) diversity, possibly at the expense of age diversity. This feature of the bundled condition replicates the study design of E. H. Chang et al. (2020) and was chosen to reduce demand effects by obscuring our focus on age diversity. The data seem to support the possibility that in the bundling condition, participants increased their team diversity by selecting the person of color as participants selected the younger Black male candidate five times as often as older White candidates with similar relative experience (noncompetitive hiring task; Studies 1–3: 36% vs. 7%; see the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702). Alternatively, it is possible that the choice bundling diversity effect is so small that it cannot be consistently found. Even with 90% power to identify an effect, one has a 10% chance of not identifying it.

Study 4

In Study 4, we aimed to test the effect of bundling hiring decisions on age diversity, without the potential confound of having a person of color in the filler task of the bundled choice condition. Perceiving diversity along one dimension (e.g., race) can lead people to falsely perceive more diversity on other dimensions (e.g., gender; Daniels et al., 2017). There is evidence that diversity can become curtailed once a social norm has been achieved, for example, hiring less women or minorities to a board once a certain threshold is reached (E. H. Chang, Milkman, Chugh, & Akinola, 2019). When assembling diverse teams, more salient attributes of diversity (e.g., gender, ethnicity) can reduce selection based on other aspects of diversity (e.g., personality traits inferred from facial information; Jaffé et al., 2022), with the mere presence of a higher status minority decreasing the likelihood of more minority members being hired (Hur & Lin, 2022). Thus, if race is a more salient diversity attribute than age, the presence of candidates of color in the choice bundling conditions of Studies 1–3 may have drawn participants’ diversity intentions away from age. We again set out to test our hypothesis that hiring candidates in a bundle would lead participants to select a higher proportion of older candidates than hiring for a single position in isolation and that this difference would be explained by an additional focus on age diversity when making selections in a bundle.

Method

Participants

We powered the study in the same way as Study 3, but the total number of participants was slightly higher because of the additional job role in the isolated choice condition (all younger White candidates control role). We recruited 885 participants from the United Kingdom

through Prolific (gender; 60% women, 39% men, 1% other gender identity; $M_{\text{age}} = 34$, $SD = 12$). Participants from prior studies were ineligible. Participants were paid £0.65 to undertake the six-and-a-half-minute study (hourly rate equivalent of £6.00).

Materials and Procedure

The materials and procedure were the same as Study 3; however, we replaced the candidates of color for the fifth “filler” role in each task with a younger White candidate and presented this role to participants in both the bundled and the isolated choice conditions. Thus, “filler” roles became control roles that included only younger White male candidates, with a level of experience designed to mirror the relative experience of older and younger candidates in the other roles (see the supplementary materials on the OSF page: https://osf.io/ztuyv/?view_only=21a24da39d0a488b88e1b74856446702). We then counterbalanced the presentation order of candidates, to rule out any possibility that the preference for younger candidates shown in Studies 1–3 was due to their prime presentation position as candidates. For each team hiring task (older noncompetitive or older competitive) participants were presented older candidates first (followed by the most experienced younger candidate) or second (following the most experienced younger candidate).

Results

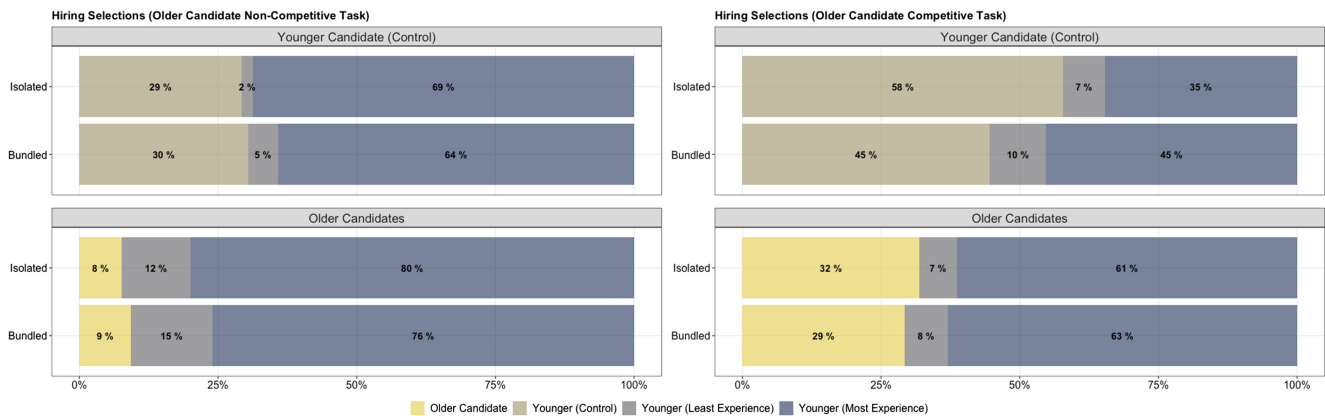
Selection results for the control role (Figure 2), where a younger candidate matched the relative experience of older candidates in other roles, provided further evidence of the preference for younger candidates over older ones. We used a chi-square test to examine the proportional hiring differences between younger control candidates and older candidates. We found participants were more than three times as likely to select the younger control candidate than older candidates when both were not the most experienced (noncompetitive), 29.9% versus 8.5%, $\chi^2(1, 623) = 139.32$, $p < .001$, $w = 0.47$. When older candidates were the equal most experienced (competitive), the younger control candidate was selected around one and a half times more often than their older counterparts (46.7% vs. 30.5%), $\chi^2(1, 623) = 60.31$, $p < .001$, $w = 0.33$. Consistent with Studies 2 and 3, for roles where both a younger and older candidate with an equal amount of relevant experience were available, participants were twice as likely to select the younger candidates (62.2% vs. 30.5%).

We used the same binary logistic regression analysis as Studies 2 and 3, and found the overall model was statistically significant, $\chi^2 = 160.58$, $p < .001$. Contrary to our hypothesis, participants did not select older candidates more often in the bundled choice condition compared to the isolated choice condition (19.3% vs. 19.7%), $OR = 0.94$, $SE = 0.06$, $p = .357$, 95% CI [0.82, 1.07]. Once again, participants selected older candidates more often when they were competitive compared to noncompetitive (30.5% vs. 8.5%; $OR = 4.75$, $SE = 0.59$, $p < .001$), but this did not vary between bundled and isolated choice conditions, $OR = 1.40$, $SE = 0.35$, $p = .171$. We next added the presentation order of candidates as a factor to our model and found that participants did not select a greater number of older candidates when they were presented in prime position (leftmost of the three candidates), compared to when they came second, $OR = 0.84$, $SE = 0.10$, $p = .125$.

Consistent with the statistically null effect of bundling on the selection of older candidates, participants in the bundled choice condition did not report age diversity was more salient when making

Figure 2

Proportion of Candidate Selections in Bundled and Isolated Choice Conditions for Roles With Older Candidates (Four Roles) or Younger Candidates (One Role, Control)



Note. Study 4 showed that participants were much more likely to select younger “control” candidates compared to older candidates (three times as likely in the noncompetitive condition, left panel and one and a half times more often in the competitive condition, right panel). This difference was not influenced by the bundling condition, and there was no difference in the proportion of older candidates selected in the bundled ($n_{\text{participants}} = 148$, $n_{\text{experimental_selections}} = 1,184$, $n_{\text{control_selections}} = 296$) and isolated choice conditions ($n_{\text{participants}} = 737$, $n_{\text{experimental_selections}} = 1,180$, $n_{\text{control_selections}} = 294$). See the online article for the color version of this figure.

their hiring decision than those in the isolated choice condition ($M_{\text{bundled}} = 3.59$, $SD = 1.77$, $M_{\text{isolated}} = 3.52$, $SD = 1.84$), $t(736) = 0.42$, $p = .677$, $d = 0.04$.

Discussion

Across four well-powered experiments, only one showed evidence that making hiring decisions in a bundle increases the selection of older candidates compared to decisions made in isolation. Although choice bundling did not increase age diversity, it has in the past increased gender diversity via the selection of women (in a task where women were not the most experienced candidates; E. H. Chang et al., 2020). We assumed that the failure of choice bundling to lead to more age diversity via the selection of older candidates might be due to the relevant experience they require to be competitive with similarly experienced younger candidates. In Studies 2–4, we introduced a new task, where older candidates were more competitive, having an equal number of years relevant experience as the most experienced younger candidate. We expected this to make older candidates more desirable to potential hirers and increase the choice bundling effect. However, older candidates were selected significantly less often than their younger counterparts and choice bundling did not increase their selection. The failure to replicate the effect of choice bundling to increase gender diversity (even when women were not competitive candidates; E. H. Chang et al., 2020) when applied to age diversity suggests that there exist barriers to the selection of older men, which are not present for the selection of younger women. The null effect of bundling might be because age diversity via representation of older workers is not as salient or as valued a diversity characteristic in the context of workplace hiring as gender diversity and the representation of women.

Study 5

One explanation for choice bundling not being as effective in increasing age diversity as gender diversity is that age diversity is

not as recognized, valued, or sought-after as gender diversity. If this is the case, increasing the salience and value of age diversity via an explicit diversity statement focusing on older workers should activate the benefits of bundling. However, according to E. H. Chang et al. (2020, Study 3B), the introduction of a diversity statement would be expected to have the opposite effect, reducing or nullify the effect of bundling by overpowering it. E. H. Chang et al. (2020; Study 3B), found that when participants read a statement stating that a company valued diversity, the positive effect of bundling was attenuated due to the increased focus on diversity across both bundled and isolated choice conditions. In other words, choice bundling works by increasing the hirers’ focus on diversity, but when hirers making isolated choices also have their focus on diversity raised, this nullifies the benefit of choice bundling. In Study 5, we sought to test these competing hypotheses by manipulating the desirability of older candidates with a diversity statement prior to participants making their selections.

Assuming that for bundling to be effective in increasing diversity, the diversity characteristic needs to be recognized and valued, we hypothesize that participants given a diversity statement, would select a higher proportion of older candidates when selecting in bundle compared to a single position in isolation. However, based on the overpowering effect found by E. H. Chang et al. (2020, Study 3B), we would hypothesize that a diversity statement that raises the value and focus of age diversity via the hiring of older candidates would remove the effect of bundling, leading to equal or fewer older candidates being selected in a bundle (vs. an isolated hiring decision).

Method

Participants

We powered the study in the same way as Study 4, to achieve 90% power to detect a choice bundling effect based on the proportion of older candidates hired that we observed in Study 1, χ^2 effect size of $w = 0.07$; (G*Power 3.1; Faul et al., 2007). However, in Study 5 we doubled the total number of participants to be able to detect the

same-sized effects in either a control or diversity-seeking statement condition. We recruited participants who had not taken part in Studies 1–4, and who had professional experience making hiring decisions. Overall, we recruited 1,768 participants from the United Kingdom through Prolific (gender; 54% men, 45% women, 1% other gender identity; $M_{\text{age}} = 42$, $SD = 11$). Participants were paid £0.65 to undertake the 5-min study (hourly rate equivalent of £7.80).

Materials Development

To develop a diversity statement that was effective in increasing the salience and desirability of older candidates, we ran two pilot studies ($N = 301$ and $N = 197$) with Prolific participants from the United Kingdom who had experience of recruitment (gender; 51% women, 48% men, 1% other gender identity; $M_{\text{age}} = 41$, $SD = 13$). Because we expected that it would be harder to highlight the value of age diversity compared to gender diversity, we assessed the effect of a diversity statement on both the desirability of older (vs. younger) candidates and women (vs. men) candidates. In both pilot studies, participants were assigned to either a diversity-seeking condition or a control group. Participants in the diversity-seeking condition were asked to read a diversity statement before selecting who it would be better to hire on the basis of gender and age (assuming candidates had the same skills and experience) on a 1–7 scale (e.g., 1 = *younger candidates* to 7 = *older candidates*, with 4 = *no difference*). The statement tested in our first pilot study, “The company strongly values diversity and is committed to achieving diversity within its teams, including gender, race/ethnicity, and age diversity” increased the value of women candidates (vs. men), but did not increase the value of older candidates (vs. younger; Table 1). In the second pilot study, we used a more explicit diversity statement, emphasizing the need for older talent to increase age diversity: “The company strongly values diversity and is committed to achieving diversity within its teams. To achieve this, the company seeks to increase representation of women, older and Non-White employees.” As shown in Table 1, we found that this new statement successfully increased the value of both women candidates (vs. men) and older candidates (vs. younger).

Materials and Procedure

The materials and procedure were the same as Study 4, with two important changes. First, participants were divided into either a

“diversity-seeking” or control condition. In the diversity-seeking condition, participants read the company statement from the second pilot, “...the company seeks to increase representation of women, older and Non-White employees.” Participants in the control condition did not read any additional statement. Second, we replaced the younger White candidates for the fifth “control” role in each task with a younger White woman. Thus, these roles included a younger White female candidate with a level of experience designed to mirror the relative experience of older and younger candidates in the other roles. As in Experiments 1–4, the presentation order of candidates and team hiring tasks were counterbalanced. After completing the task, participants were asked to rate how important the candidate’s relevant experience and contribution to age/gender diversity was to their selections on a sliding scale from 0 (*not at all important*) to 7 (*extremely important*) with a check box for “not applicable.”

Manipulation Check of the Diversity Statement on Selection of Older Candidates

We used a two-way analysis of variance to confirm that participants consideration of age diversity in the diversity-seeking condition ($M = 3.41$, $SD = 2.01$) was higher than in the control group ($M = 1.94$, $SD = 1.95$), $F(1, 1470) = 110.79$, $p < .001$, $\eta_p^2 = .07$. Furthermore, participants in the choice bundling condition also considered age diversity more in their hiring decisions ($M = 3.00$, $SD = 1.95$) compared to those in the isolated choice condition ($M = 2.60$, $SD = 2.14$), $F(1, 1470) = 9.76$, $p = .002$, $\eta_p^2 = .01$. There was no significant interaction between statement (vs. control) conditions and the choice bundling (vs. isolated) conditions, $F(1, 1470) = 2.30$, $p = .129$, $\eta_p^2 = .00$.

Results

We tested the two competing hypotheses that the diversity statement would either “activate” the choice bundling effect (i.e., increase the selection of older candidates in the bundling condition vs. the isolated choice condition) or “overpower” it (i.e., resulting in equal or fewer older candidates being selected in the bundling condition vs. the isolated choice condition). We tested these hypotheses using a binary logistic regression analysis to predict the selection of older candidates from diversity-seeking versus control and bundled versus isolated choice conditions, finding that the overall model was

Table 1
Effect of a Diversity Statement on Participants’ Perception of the Value of Hiring an Older (vs. a Younger) Candidate or a Woman (vs. a Man)

Category	Control		Diversity statement		Effect of the statement: <i>t</i> test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Pilot Study 1					
General diversity statement					
Preference for men (1) versus women (7)	4.02	0.46	4.41	0.86	<i>t</i> (299) = 4.89, <i>p</i> < .001, <i>d</i> = 0.56
Preference for younger (1) versus older (7)	3.75	0.95	3.92	0.92	<i>t</i> (299) = 1.55, <i>p</i> = .065, <i>d</i> = 0.18
Pilot Study 2					
Explicit diversity statement					
Preference for men (1) versus women (7)	3.97	0.50	4.61	1.19	<i>t</i> (195) = 4.83, <i>p</i> < .001, <i>d</i> = 0.69
Preference for younger (1) versus older (7)	3.80	0.89	4.44	0.89	<i>t</i> (195) = 3.94, <i>p</i> < .001, <i>d</i> = 0.56

Note. Effects for two pilot studies where the statements used referred to either (a) “gender/age diversity” ($n = 301$) or (b) “women/older candidate representation” ($n = 197$).

statistically significant, $\chi^2 = 443.56$, $p < .001$. The effectiveness of the diversity statement was reflected in a significantly higher selection rate for older candidates compared to the control (35% vs. 17%), $OR = 3.03$, $SE = 0.29$, $p < .001$, 95% CI [2.52, 3.64]. Overall, participants did not select older candidates more often in the bundled choice condition compared to the isolated choice condition, but as shown in Figure 3, the choice condition interacted with the diversity statement $OR = 0.94$, $SE = 0.47$, $p = .576$, 95% CI [0.85, 1.03] and $OR = 1.43$, $SE = 0.22$, $p = .019$, 95% CI [1.06, 1.93]. This interaction was consistent with the “overpowering” effect of the diversity statement on choice bundling and inconsistent with an “activating” account. That is, after reading the diversity-seeking statement, participants selected fewer older candidates in the bundled choice condition than the isolated choice condition (33% vs. 36%). In the control, where no statement was presented, participants selected slightly more older candidates in the bundled choice condition than the isolated choice condition (19% vs. 16%). Rather than activate the bundling effect to increase the proportion of older candidates selected, we found that the diversity statement “overpowered” any potential bundling effect. Thus, although choice bundling did not have a main effect on the selection of older candidates, there was a significant interaction that led to fewer selections of older candidates in the diversity-seeking condition (vs. isolated choice) compared to greater selections of older candidates in the no statement (control) condition (vs. isolated choice).

As in Experiments 2–4, the effect of choice bundling did not vary across hiring tasks, as a function of the competitiveness of the older candidate, $OR = 1.25$, $SE = 0.37$, $p = .446$. Consistent with Experiments 2–4, participants selected older candidates more often when they were competitive compared to noncompetitive, 38% versus 14%; $OR = 4.60$, $SE = 0.63$, $p < .001$. When older candidates were competitive, the diversity-seeking statement raised the selection of older candidates across both choice conditions from 27% to 49% and reduced the selection of the equally experienced younger candidates from 66% to 44%, $\chi^2(2, 2348) = 130.36$, $p < .001$. Thus, the diversity statement effectively removed bias against the selection of older candidates, giving them a better chance of being selected than equally experienced younger candidates.

We next set out to explore if this pattern of results was the same for the “control” role in which participants had the opportunity to hire a woman. First, we did a manipulation check to confirm that the diversity statement increased the consideration of gender diversity in decisions where women were present, such that this consideration was significantly higher for those in the diversity-seeking condition who read the statement ($M = 3.74$, $SD = 2.17$) compared to the control group ($M = 2.26$, $SD = 2.10$), $F(1, 585) = 70.55$, $p < .001$, $\eta_p^2 = .11$. However, choice bundling did not significantly increase consideration of gender diversity in hiring decisions between the bundled choice condition ($M = 3.10$, $SD = 2.25$) and the isolated choice condition ($M = 2.91$, $SD = 2.27$), $F(1, 585) = 1.19$, $p = .275$, $\eta_p^2 = .00$. We next used a binary logistic regression analysis to test if choice bundling and the diversity statement increased the selection of women candidates. The overall model was statistically significant ($\chi^2 = 59.97$, $p < .001$) and showed that choice bundling (vs. isolated decisions) had an overall positive main effect on the selection rate of women (69% vs. 57%), $OR = 1.27$, $SE = 0.09$, $p = .001$, 95% CI [1.10, 1.46]. The diversity-seeking statement also resulted in a significantly higher selection rate of women candidates compared to the control (71% vs. 55%), $OR = 2.22$, $SE = 0.40$, $p < .001$, 95% CI [1.56, 3.17]. Finally, the effect of bundling on the selection of women was consistent both with and without the diversity statement, and regardless of whether the women candidates were competitive or noncompetitive candidates in their level of experience, $OR = 1.19$, $SE = 0.27$, $p = .441$, 95% CI [0.76, 1.86] and $OR = 1.05$, $SE = 0.42$, $p = .885$, 95% CI [0.49, 2.28].

Discussion

Presenting participants with an explicit statement that the company is seeking to increase age diversity through hiring older adults led them to hire a greater proportion of older adults, but this did not “activate” the effect of choice bundling. In fact, the statement led participants to hire fewer older candidates in the choice bundling condition compared to hiring in isolation. This is consistent with an “overpowering” hypothesis that the effect of choice bundling on diversity can be nullified and even reversed when participants

Figure 3

Proportion of Candidate Selections in Bundled and Isolated Choice Conditions in Control and Diversity Seeking Conditions



Note. Study 5 showed that across two hiring tasks participants were slightly more likely to select an older candidate in the bundled (vs. isolated choice) choice condition when diversity statement was present (control, $n_{\text{bundled}} = 146$, $n_{\text{bundled_selections}} = 1,168$, $n_{\text{isolated}} = 592$, $n_{\text{isolated_selections}} = 1,184$). Yet, participants were more likely to select older candidates in an isolated choice (vs. bundled choice) when given a statement that the company was looking to increase diversity through hiring older candidates ($n_{\text{bundled}} = 146$, $n_{\text{bundled_selections}} = 1,164$, $n_{\text{isolated}} = 588$, $n_{\text{isolated_selections}} = 1,176$). See the online article for the color version of this figure.

have their attention drawn to diversity aims. We did not find any “overpowering” effect on the selection of women candidates, with both the diversity statement and choice bundling effective at increasing the gender diversity of selections. However, given the relative scarcity of women in our study, this suggests the potential for explicit diversity-seeking statements to “overpower” the effects of choice bundling on selections may depend on the proportion of roles in which underrepresented candidates are available for selection, with hirers effectively capitalizing more on limited opportunities.

Across five well-powered experiments, only Study 1 and Study 5 showed evidence that making hiring decisions in a bundle might increase the selection of older candidates compared to decisions made in isolation. Given these mixed findings, it is possible that the bundled choice effect exists in the absence of an explicit diversity statement, but is so small that it is elusive. A meta-analysis of our studies, where no diversity-seeking statement is present, provides increased statistical power to discern if the effects found in Study 1 and Study 5 (control condition) were false positives or if our results in Studies 2, 3, and 4 were false negatives.

Meta-Analysis of Studies 1–5

We tested the hypothesis that bundling increased the selection of older candidates in a meta-analysis of the data from Studies 1–5 using the “metan” command in STATA (R. J. Harris et al., 2008) to apply a fixed-effect method (see Goh et al., 2016; Tufanaru et al., 2015) to the precalculated log-odds ratios and their 95% CI. To ensure consistency across conditions, and that even a small effect of choice bundling would be detected, we only included the control condition from Study 5, where no age diversity statement was given to participants. As shown in Figure 4, despite some evidence for the effect of bundling in Studies 1 and 5, the cumulative meta-analytical effect does not support that bundling hiring decisions together increases the selection of older workers compared to making hiring decisions in isolation.

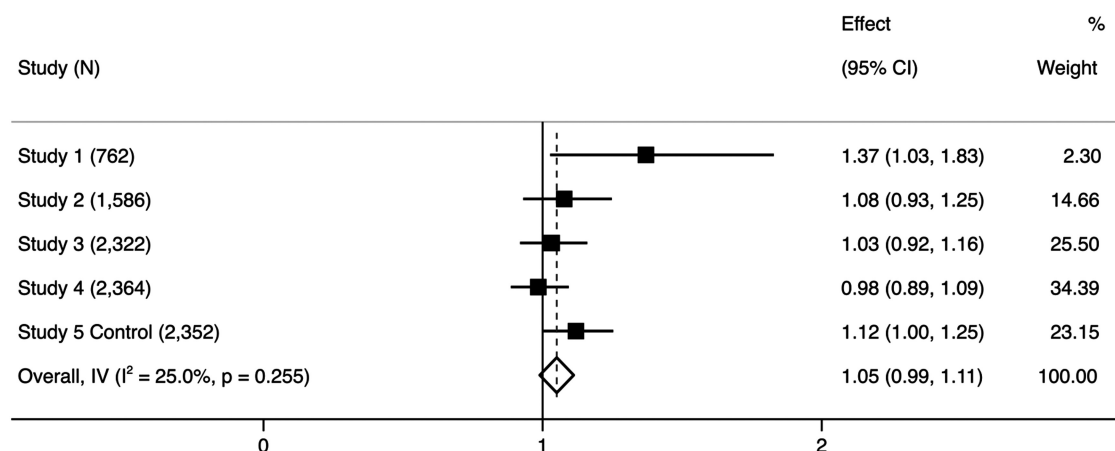
General Discussion

Building on a choice architecture design perspective, we expected that hiring a set of applicants simultaneously in a bundle would increase the salience of age-based social categorizations and lead participants to select more older candidates to create a more age-diverse team, compared to different people hiring for a single candidate in isolation. However, across five preregistered studies, bundling hiring decisions did not consistently increase the age diversity of candidates selected compared to hiring in isolation. We found consistent bias against the selection of older candidates. While including an explicit diversity statement encouraging the selection of older candidates removed this bias, it did not activate the hypothesized effect of choice bundling. This suggests that choice bundling may successfully raise the diversity of selections, but only if the salient diversity characteristic is neither too undesirable nor too desirable.

We extended past work by testing the effect of choice bundling on age diversity via the selection of older candidates. In the first study, we tested only situations where older candidates were neither the most, nor the least experienced candidates. In four subsequent studies, we extended this to also test the effect of bundling when older candidates had the equal most experience, including one study where hirers were told that the company was specifically seeking to increase age diversity via the selection of older candidates. Across these contexts, we found that choice bundling was unable to consistently raise the selection rate of older applicants, both when older applicants were not the most experienced candidates (Studies 1–5), and when they were one of the two most experienced candidates for the job (Studies 2–5). When choice bundling was paired with an explicit diversity statement encouraging the selection of older adults, the statement was effective at raising the selection rates of older candidates and removing bias against them, but it did not activate the effect of bundling. Rather, consistent with past results (E. H. Chang et al., 2020), the diversity statement

Figure 4

Forest Plot of the Effect of Bundling Hiring Decisions on the Selection of Older Candidates in Studies 1–5 Showing No Statistically Significant Effect Overall



Note. The squares show the OR effect in each study, the error bars show the confidence intervals for each study, weight (%) represents the influence of each study on the pooled result (based on sample size and confidence interval), and the diamond represents the pooled result across the five studies. CI = confidence interval; IV = inverse-variance.

“overpowered” any potential bundling effect, leading to fewer older candidates being selected in bundled choice decisions compared to those made in isolation (Study 5). Finally, bundling hiring decisions did not consistently elicit a stronger focus on age diversity than isolated hiring decisions. In four out of five studies, choice bundling elicited the same (moderate) amount of diversity focus for hirers as making decisions in isolation. Thus, while choice bundling selection decisions has led to more diverse selections benefitting women by raising the focus on gender diversity, this did not replicate for age diversity to increase the selection of older candidates.

The failure of choice bundling to increase age-diverse hiring choices reveals the potential limitations of bundling interventions. Although achieving diversity in hiring and selection decisions has been shown to have a high level of desirability (Jaffé et al., 2019), the undesirability of older candidates in our studies suggests deeply rooted negative attitudes toward older workers. Although choice interventions have successfully increased gender diversity by making candidate differences more salient (e.g., Bohnet et al., 2016; E. H. Chang et al., 2020; L. W. Chang & Cikara, 2018; Feng et al., 2020), our results suggest that this success may have been contingent on the diversity outcome (greater gender diversity) being salient and desirable—but not too desirable. In Studies 2–4, we tried to increase the desirability of older candidates by raising their experience to be one of the two most experienced candidates. However, this failed to activate the benefits of choice bundling for age diversity. In our Study 5 pilot studies, we found that an explicit company aim to “increase gender diversity” was tacitly understood by hirers as a preference for women (over men) candidates, yet the aim to “increase age diversity” was not interpreted as a preference for older (over younger) candidates. This is consistent with management practices, with organizational diversity initiatives more focused on gender (52%) and race (49%) compared to age (18%; Akinola et al., 2019), and compliments past findings that people do not endorse age equity to the same extent as gender or racial equity (Martin & North, 2021). Thus, “age diversity” and the challenges faced by older candidates are not equivalent to “gender diversity” and the challenges faced by women candidates. Making older candidates more salient and desirable using an explicit company statement aimed at increasing their selection was effective in removing the bias against them. However, the statement effectively overpowered any potential bundling effect, such that fewer older candidates were chosen in the choice bundling condition than the isolated choice condition when the statement was present. This is consistent with prior results from E. H. Chang et al. (2020) who also found that an explicit diversity statement reversed the effect of choice bundling on the selection of women candidates. In both cases, diversity statements can be seen to have created an edict or “rule” for hirers, thus removing the potential for more divergence or diversity that comes from making multiple decisions in a bundle. An analogy for this result might be that if you are hosting a party, and buying snacks for your guests, you may make a variety of selections (e.g., crisps, chocolates, fruits). If you are limited to choosing only one snack type, you may follow your preference (e.g., chocolates). However, if you are limited to choosing only one snack, and the party guests have asked for crisps, you are likely to select crisps. Past work shows that choice bundling consistently leads to greater diversity in selections across a number of domains, such as food (Read & Loewenstein, 1995; Simonson, 1990; Simonson & Winer, 1992), music (Ratner et al., 1999) and financial investments

(Benartzi & Thaler, 2001). However, our results suggest boundary conditions for this effect. Specifically, the effect of choice bundling on selection diversity for a particular characteristic or option is contingent on that characteristic or option not being so undesirable that it is the target of negative selection bias, nor so desirable that it overpowers other options.

The failure to replicate the choice bundling effects of gender for age diversity also suggests that choice architecture interventions that make social categorizations more salient may only be effective when there exists prior training and education that has effectively shaped the implicit attitudes toward the social group being evaluated. Two distinct intervention approaches have been pursued to help overcome bias and improve workplace diversity, diversity training and altering decision processes via the choice architecture. As a choice architecture intervention, the failure of bundling to increase age-diverse hiring choices raises questions about the extent that choice architecture alone can be successful without changes to individual attitudes and beliefs. For example, it may be that the success of choice bundling and similar interventions to increase representation of women rests on the prior work that has been done to raise awareness and redress negative attitudes toward women in technology (Williams & Ceci, 2015). Cognitively, when looking at a group of people, accurate diversity impressions about race and gender are formed quickly (Phillips et al., 2018), and individuals who strongly believe in the value of diversity are more likely to assemble a team that is objectively diverse (Jaffé et al., 2022). However, it is unknown if similar impressions are formed for age diversity or if the value of age diversity without a specific prompt is sufficient for hirers to assemble an age-diverse team via selection of older candidates. Thus, greater awareness and training that reduces negative attitudes toward older candidates and increases the salience and awareness of the benefits of age diversity might help lay the foundation for the future success of choice bundling interventions.

Our findings showed that choice bundling was not as effective at increasing age diversity as an explicit diversity statement from the hiring company, and was actually counterproductive when paired with such a statement. Yet, these findings do not necessarily mean that all choice architecture interventions seeking to make candidate age differences more salient will fail. Nor does it mean that all choice architecture interventions that make social categories more salient will fail when paired with an explicit diversity statement or objective. Decisions are guided by how the (informational) environment is structured, with judgments and decisions not simply happening “in the mind” of the decision maker (Latour, 2007; Vallee-Tourangeau, 2023). Thus, momentary interventions to choice architecture need to be put into perspective against the longer-term societal structures that shape our behaviors. More research is needed to understand how effective different decision-making architectures could be used to benefit older candidates, and the consequences of pairing or stacking these alongside other interventions. For example, partitioning candidates based on gender, nationality, and university can increase diversity of selection, encouraging hirers not to draw exclusively from one group (Feng et al., 2020). Our findings cannot dismiss that this intervention might be successful for increasing age diversity, nor that it will be successful even when paired with an explicit statement encouraging selection of older candidates. Different types of choice architecture interventions that do not rely on salient categories may also be expected increase age diversity in selections. For example, post hoc feedback that draws participant

attention to a lack of age diversity in their decisions before allowing them the opportunity to expand or update their decisions may also increase diversity of selections, with feedback prompting deeper reflection (e.g., Lucas et al., 2021) or regret (e.g., Mogilner et al., 2013). Given the strong evidence we found for the effectiveness of an explicit diversity statement to remove bias against older candidates (Study 5), this could be easily leveraged as an initial intervention or “nudge” to increase age diversity. Overall, our findings suggest that both attitudes and the way the environment is structured are important to decision making and hence, multiple approaches and combinations may need to be leveraged to reduce age discrimination in hiring practices and achieve greater age diversity in underrepresented industries.

Limitations

This study closely followed an existing experimental paradigm using similar participant stimuli, and some elements of this paradigm may have influenced participants’ hiring decisions. Firstly, the photos used were not “normed” to balance candidate qualities other than age that might influence hiring decisions. Past work has shown that attractiveness (Jawahar & Mattsson, 2005) and impressions of health and fitness (Kaufmann et al., 2016) can influence candidate opportunities. Although this may have placed older candidates at a disadvantage compared to younger candidates, changes in perceived fitness and attractiveness cannot be fully dissociated from age, as such changes occur as a natural part of aging. Similarly, the age of the older candidates in our photos ranged from 61 to 72. Although there is no “default retirement age” in the United Kingdom, older adults become eligible for state pensions at 66 years of age (UK Department for Work and Pensions, 2023), which may leave recruiters to believe that “retirement” will shorten a candidate’s tenure. Although, this “shorter tenure stereotype” has been largely refuted (Posthuma & Campion, 2009), it may have contributed to the lower selection of older candidates. Importantly, the photos used were identical between experimental conditions and are therefore unlikely to have influenced the effects of choice bundling on age diversity. Another potential limitation of the paradigm is that participants in the bundled choice condition made five times as many selections as those in the isolated choice condition, and therefore fatigue or depletion might have influenced results. However, we did not observe participant fatigue in hiring patterns, with the proportion of suboptimal (least experienced) candidates selected consistent across conditions. This concern was also addressed in the original study by E. H. Chang et al. (2020), who successfully ruled out any fatigue effect on hiring decisions by conducting a study using unrelated object selection decisions (e.g., preferred pen in a set of three) in the isolated choice condition. Finally, this study relied on the context of a technology company, where negative stereotypes against older workers can be particularly strong (Ng & Feldman, 2012) and younger candidates often considered more suitable for job roles (Perry & Finkelstein, 1999). It is possible that choice bundling may increase age-diverse selections in another context in which older candidates are more prototypical (e.g., academic roles; Reeves et al., 2021).

These findings draw on data from participants recruited online via Prolific, in some cases with past workplace hiring experience (Study 5). Our data suggest that people with hiring experience and those without follow similar decision patterns. Yet, it is

possible that professional recruiters would be more aware of discrimination laws and less likely to demonstrate bias against the recruitment of older candidates. We did not find consistent differences between participants’ preferences, based on their age or gender.⁴ We expect our results to generalize to recruitment decisions where there is (or is not) an explicit diversity hiring goal made available to hirers, where limited individuating information is available about candidates, where it is possible to infer the age and gender of the candidate application, and where an older male candidate has less or similar relevant experience to younger alternatives. We suggest that it might be possible to replicate these effects along the lines of other diversity characteristics and contexts that carry strong negative stereotypes.

Future Directions

Overall, our findings are consistent with the growing literature showing bias and discrimination against older job candidates in hiring decisions (Lössbroek et al., 2021). The characteristic of age has received comparatively little research attention compared to gender and race (North, 2019) and our results demonstrate the need for greater understanding of age as a distinct diversity characteristic. Theoretically, our failure to replicate the results from E. H. Chang et al. (2020) raises questions about “desirable diversity” in choice bundling outcomes. Examining hiring decisions using an intersectional approach, rather than considering gender or age alone, may shed further light on the conditions under which individual characteristics become more problematic or desirable to hirers (Di Stasio & Larsen, 2020). Individuals often fit into multiple social categories, and it is not clear that the results found for “older White men” will work in the same way for say, “older White women”. There is some evidence that older women are the subject of greater discrimination (Duncan & Loretto, 2004), specifically when their CVs indicate that they are nearing retirement age (Neumark et al., 2019) or when engaging in self-promotion during job interviews (Krings et al., 2023). However, there is other evidence that suggests older women who have switched careers are more attractive candidates relative to older men (Martin et al., 2019), whereas young women and men are judged similarly. Experiments that explicitly test the differences between outcomes of older men and women candidates and other categorical intersections may help establish the boundary conditions for when interventions may or may not be effective. Behavioral interventions designed to improve gender or racial diversity cannot be assumed to be effective for age diversity. Research promoting novel interventions and conceptual replications that manipulate differences in age as distinct from other visible diversity characteristics may help inform interventions that increase age diversity specifically. However, increasing the attractiveness of diversity for a stigmatized group (like age) might require a two pronged approach: education that targets attitudes by raising awareness of false or negative stereotypes, and employing the right combination of choice architecture changes to help decision makers adopt the desired behaviors.

⁴ Exploratory analysis showed no significant difference in selection of older candidates based on participant gender. Full data and results are available in the supplementary materials on the OSF page: https://osf.io/ztyuv/?view_only=21a24da39d0a488b88e1b74856446702.

Implications and Conclusion

Hiring a candidate for a job is a complex task, and although there are many varied factors that might influence who gets hired, our findings suggest that candidate age remains one of these factors. An increasing number of generations can now be found in the workforce as a result of an aging population (Boehm & Kunze, 2015). Like other forms of diversity, age diversity can improve performance (Lee et al., 2018; Li et al., 2021; Van Knippenberg et al., 2020). Yet prejudice against older candidates continues to be an influential factor in hiring choices and a barrier to achieving workplace age diversity (Baert, 2018; Bezrukova et al., 2012). Those in the information technology industry can be particularly disadvantaged given the strength and nature of negative stereotypes directed toward older workers, for example, that they are not as creative or capable of learning new (technology) skills (Abrams et al., 2016). This bias against the selection of older candidates points to a potential hazard in fulfilling the economic need for up/reskilling workers as technologies evolve (Alcover et al., 2021). Specifically, there is a common societal expectation that older workers should “step aside” to provide resources and opportunities for younger generations (North & Fiske, 2013, 2016). Older candidates who “switch” careers, and thus have equal or less relevant experience compared to younger candidates, like those presented in our experiments, violate this expectation and can be appraised more critically (Martin et al., 2019; North, 2019). Thus, older candidates may require significantly greater experience with these new skills than younger candidates to compete. To prevent this bias from undermining the representation of reskilled older workers in the labor market, companies may need to promote greater awareness about the benefits of age diversity in the workplace and explicitly demonstrate their motivation to hire older workers.

In summary, although past research on choice bundling suggests that bundling leads to greater selection diversity, we find that in the context of hiring decisions, bundled hiring does not increase age diversity through the selection of more older candidates, and may even attenuate this diversity when recruiting older candidates is an explicit company goal. This suggests that the effect of choice bundling on diversity may be contingent on the relative desirability of the diversity characteristic being sought. Specifically, in the case of age diversity, choice bundling may not operate independently of held expectations and group-level stereotypes existing against older workers. We conclude that the efficacy of bundling choices to increase diversity in real-world scenarios is likely to vary based on the context and attitudes toward the diversity characteristic considered.

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