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THE SUBSIDY TRAP: EXPLAINING THE UNSATISFACTORY EFFECTIVENESS OF HIRING SUBSIDIES FOR THE SENIOR UNEMPLOYED

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The subsidy trap: Explaining the unsatisfactory effectiveness of hiring subsidies for the senior unemployed*

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Abstract

To extend the labour market participation of seniors, numerous countries provide subsidies to incentivise their recruitment or employment. Prior research demonstrates that the effectiveness of such subsidies is rather unsatisfactory, although the reasons for this inadequacy remain unclear. Therefore, we examined negative employer perceptions triggered by eligibility for such subsidies that might explain this disappointing effectiveness. To this end, we set up a vignette experiment in which 292 genuine recruiters assessed fictitious candidates on their hireability and underlying productivity estimations. These candidates differed experimentally in their eligibility for a hiring subsidy targeted at the unemployed aged 58 or over. Our results indicate that the subsidy has a negative effect on their hiring outcomes. This adverse effect is explained by negative perceptions that counteract the financial incentive. Specifically, the subsidised candidates signal lower physical and technological skills along with an augmented difficulty in hiring and labour inspection.

Keywords: Hiring discrimination; Senior workers; Labour market programmes; Hiring subsidy; Signalling effect; Vignettes

JEL classification: J14, J38, J71

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1 Introduction

The ageing population exerts tremendous pressure on living standards and social security systems (Barr, 2006; OECD, 2019; Rouzet et al., 2019; van Ours, 2022; Willmore, 2004). Given the current work and retirement trends, the average number of retirees to be supported by 100 workers is expected to increase from 42 in 2018 to more than 58 in 2050 in the OECD area (OECD, 2019). To counteract this, the OECD (2019) recommended expanding working careers by improving the incentives for working at older ages as well as the ability to do so. However, this strategy seems to be hindered by hiring discrimination, among other things. Indeed, a recent meta-analysis of all worldwide field experiments between 2005 and 2020 revealed that senior job candidates still face age discrimination during the hiring process (Lippens et al., 2023). More concretely, these candidates receive on average 34% fewer positive responses than their younger counterparts.

To encourage employers to recruit (and retain) senior workers, numerous countries provide subsidies to employers who hire (or employ) seniors (OECD, 2019; OECD, 2020). This is because their lower hiring chances might arise from an actual or perceived disparity between the cost of employing senior workers and their productivity (Boockman, 2015; Børing, 2021; Frimmel et al., 2015; Heyma et al., 2016; Van Borm et al., 2021). By lowering the labour costs through subsidies and thereby narrowing this disparity, governments aim to facilitate the hiring (or employment) of seniors (Bell et al., 1999; Fossati & Liechti, 2020; Gerfin et al., 2005; Heyma et al., 2016; Liecthi et al., 2017; OECD, 2019). However, despite the substantial financial investment in these subsidies, their effectiveness on the re-employment opportunities of senior unemployed candidates remains rather unsatisfactory (Boockman, 2015).[1] Specifically, while some studies reported only small positive effects (Ammermüller et al., 2006; Boockmann et al., 2012; Desiere & Cockx, 2022; Eppel et al., 2011), others failed to identify significant differences in the hiring opportunities of senior candidates whose hiring is subsidised (Heyma et al., 2016; Huttunen et al., 2013).

Based on the current literature, it remains unclear why hiring subsidies for the senior unemployed do not have the intended effect. This is because the aforementioned studies merely focused on measuring the subsidy's effectiveness and, in second order, the heterogeneity of this effectiveness. Only the interview study of Heyma and colleagues (2016) among 12 Dutch employers from different sectors suggested some explanations for this disappointing effectiveness. More concretely, most of the interviewed employers indicated that they were not influenced by a hiring subsidy, which they perceived merely as a nice bonus for employees they would have hired

[1] In addition to this direct effect on employment opportunities, peer-reviewed literature also refers to other indirect adverse effects of hiring subsidies such as deadweight costs, early retirement effects, cream-skimming effects, free-rider effects, substitution effects, and displacement effects (Albanese & Cockx, 2019; Bell et al., 1999; Boockman, 2015; Boockmann et al., 2012; Brown, 2015; Brown & Koettl, 2015; Eppel et al., 2011; Martin & Grubb, 2001; Neumark, 2011; OECD, 2019).

anyway. Moreover, a minority shared negative experiences with subsidised employees in the past as a factor influencing their reluctance to use hiring subsidies. However, this study entailed the classic limitations of qualitative research: due to the small sample size and the possible social desirability of the answers given, the results do not offer certainty in terms of external and internal validity. Taken together, the current literature lacks empirical evidence regarding the explanations for the unsatisfactory effectiveness of hiring subsidies for the senior unemployed. Nevertheless, such evidence is necessary to establish efficient adaptations and improve subsidy effectiveness.

According to prior research on the effectiveness of hiring subsidies targeted at other minority groups (i.e. disabled and young candidates), the disappointing results might be explained by a negative signalling effect which counteracts the positive financial stimulus (Baert, 2016; Deuchert & Kauer, 2017; Gatta, 2023). Specifically, signalling theory states that recruiters use particular components of the limited candidate information (e.g. the subsidy) as a signal for the unobserved candidate's productivity to eliminate seemingly less productive candidates (Brown & Koettl, 2015; Connelly et al., 2011; Spence, 1973). This is related to the statistical discrimination theory, which argues that recruiters ascribe their stereotypical perceptions of certain groups (e.g. subsidised candidates) to individual members to estimate their potential productivity (Arrow, 1973; Phelps, 1972). Accordingly, hiring subsidies targeted at the senior unemployed might also result in such counteracting stereotypes.

First, the subsidy could signal negative stereotypes related to labour market programmes in general. For example, it might signal an overall poor quality of hard-to-place candidates as a subsidy is needed to compensate for their reduced human capital and convince employers to hire them (Bell et al., 1999; Bonoli & Hinrichs, 2010; Burtless, 1985; Fossati & Liechti, 2020; Gatta, 2023; Gustafsson et al., 2014; Parsanoglou et al., 2019). Moreover, recruiters could derive specific signals related to hiring candidates participating in labour market programmes, such as lower ease of recruitment and higher fear of labour inspection by the government (Baert, 2016; Brown, 2015; Brown & Koettl, 2015; Burtless, 1985; Dalle et al., 2023; Katz, 1998).

Second, hiring subsidies could strenghten specific signals related to the target group since the subsidy operates as an intermediating signal for disadvantaged target group characteristics (Brown & Koettl, 2015; Burtless, 1985; Fossati & Liechti, 2020; Kluve et al., 2008; Martin & Grubb, 2001). In our case, the hiring subsidy might intensify signals related to older ages and unemployment, two stigmatising characteristics according to previous research (Section 2.3). More concretely, this research revealed that recruiters derive many negative signals from older ages, such as lower levels of physical abilities, technological skills, motivation, and trainability (Dordoni & Argentero, 2015; Van Borm et al., 2021). Similarly, several negative signals which employers infer from unemployment were detected: less motivation, more skill loss, less satisfaction experienced by the candidate's previous employer(s), and more rejections by potential employers (Acemoglu, 1995; Atkinson et al., 1996; Bonoli, 2014; Bonoli & Hinrichs,

2012; Dalle et al., 2023; Oberholzer-Gee, 2008; Van Belle et al., 2018).

Hence, the purpose of this study is to scrutinise the signalling effect of hiring subsidies targeted at senior unemployed candidates to explain their unsatisfactory re-employment opportunities. To achieve this, we conducted a vignette experiment involving 292 genuine recruiters. The participating recruiters were tasked with assessing fictitious job candidates applying for a spurious vacancy. All candidates were unemployed at the time of application but differed in terms of their subsidised hiring based on their age. In addition to scoring the candidates' interview and hiring chances, participants also evaluated 20 productivity-related signals which are theoretically associated with the investigated hiring subsidy as described above.

Through this study, we make two crucial contributions to the limited literature on the effectiveness of subsidies targeted at the senior unemployed in terms of their hiring chances. First, we expand the literature by examining a hiring subsidy targeting an older senior cohort. The existing literature merely considers pre-seniors' subsidies, which apply from the age of 45 (Desiere & Cockx, 2022; Eppel et al., 2011) or 50 years (Ammermüller et al., 2006; Boockman et al., 2012). By contrast, we investigated a hiring subsidy that is only available from the age of 58 years. Second, we went beyond measuring the re-employment opportunities of these subsidised senior unemployed candidates, thereby offering a deeper understanding of the phenomenon. Specifically, we examined the signals that are transmitted by this specific hiring subsidy to elucidate the associated re-employment opportunities.

2 Method

To reveal the signals of a hiring subsidy for the senior unemployed, we set up a vignette experiment. This method is frequently used to study the rationale behind selection decisions (Baert, 2018; Dalle et al., 2023; Derous et al., 2012; Di Stasio, 2014; Kübler et al., 2018; Sterkens et al., 2022; Van Borm et al., 2021). This is because, in contrast to conventional surveys, vignette experiments offer advantages such as diminishing socially desirable responses and enhancing ecological validity (Auspurg et al., 2014). This is attributable to the multidimensional nature of the experiment concealing the primary research objective (i.e. investigating subsidised hiring) and compelling recruiters to make trade-offs between dimensions that resemble real-life hiring decisions. More concretely, in vignette experiments, genuine recruiters evaluate fictitious candidate profiles (i.e. vignettes) for non-existing vacancies. These candidate profiles are represented by specific characteristics (i.e. vignette factors such as age) which vary across a predetermined number of categories (i.e. vignette levels such as 48 and 58 years) (Auspurg & Hinz, 2014; Rossi & Nock, 1982).

2.1 Institutional framework

In this study, we scrutinised the hiring subsidy for the senior unemployed implemented by the Flemish government in Belgium since 2016 (Flanders, 2023).[2, 3] This hiring subsidy is currently available for private companies located in Flanders that hire an unemployed candidate aged 58 or older for at least a half-time employment contract subject to compliance with specified wage limitations. More concretely, the gross wage during a quarter of full-time and continuous employment must not exceed €13,945 during the first three quarters of each year or €18,545 during the fourth quarter. Upon fulfilment of these conditions, the employer becomes eligible for a full exemption from social security contributions for such employees for a maximum of 8 quarters. Employers can obtain this subsidy by entering a reduction code in their multifunctional declaration to the National Social Security Office.

2.2 Vignette design

Given the aforementioned subsidy conditions, we incorporated three fundamental candidate characteristics in our vignette design: their age, unemployment duration, and eligibility for the hiring subsidy. Concerning the candidates' ages, we used 10 levels: 39, 45, 50, 54, 56, 57, 58, 59, 60 and 62 years. The lower limit was selected to ensure candidates could compete in terms of experience (Neumark et al., 2019; Van Borm et al., 2021), while the upper limit was chosen to respect the statutory retirement age (i.e. 65 years at the time of the experiment). Moreover, we integrated more age levels close to the age of 58 years—the critical threshold for candidates to qualify for the subsidy—to distinguish the subsidy effect from a possible exponential age effect. With respect to the candidate's unemployment duration, our vignette design included six levels: less than 3 months, between 3 and 6 months, between 6 and 9 months, between 9 and 12 months, between 12 and 24 months, and more than 24 months. This rather broad set of levels was selected due to the lack of consensus in the literature on the specific threshold at which scarring effects become salient. Specifically, prior research detected scarring effects from 3 months (Van Belle et al., 2018), 6 months (Farber et al., 2019; Kroft et al., 2013), 9 months (Eriksson & Rooth, 2014), and 24 months (Oberholzer-Gee, 2009) of unemployment. Regarding eligibility for the subsidy, we presented additional information for candidates aged 58 or older in which we explicitly clarified that the employer was fully exempted from social security contributions for the first eight quarters. However, it must be noted that we did not integrate this eligibility as an independently varying factor in our vignette design given its one-to-one relationship with the

[2] Before 2016, the organisation of this subsidy was centralised at the federal level; this transitioned to the regional authorities with the Belgian state reform (Social security, 2023). In addition, it must be noted that the terms and amount of this subsidy have changed over the years. For example, the age of eligibility was systematically raised from 50 years under federal regulations to the current 58 years under Flemish regulations.

[3] Flanders is the Dutch-speaking region of Belgium in which more than half of the Belgian population resides (Statbel, 2023).

candidate's age. Furthermore, we incorporated three additional candidate characteristics: gender (male or female), relevant work experience in a similar job (none, about 2 years, about 5 years, or about 10 years), and extracurricular activities (none, volunteer work, practising sports, or engaging in cultural activities). By integrating these characteristics, we replicated real-life hiring decisions and enhanced ecological validity as these characteristics are typically included in a candidate's curriculum vitae (Carlsson et al., 2018; Lahey, 2008; Nuijten et al., 2017; Olian et al., 1988). Moreover, the integration of relevant work experience allowed us to capture a pure age effect as otherwise senior candidates might be preferred because they have more experience than younger candidates (Carlsson & Eriksson, 2019).

Table A.1 in the Appendix summarises the candidate characteristics and the accompanying levels used in our vignette design. The combinations of levels for the five experimentally varying factors resulted in 1,920 unique vignettes (i.e. 2x10x4x6x4), which would require an unrealistically large participant sample as each vignette must be evaluated by multiple participants (Auspurg & Hinz, 2014). Therefore, we established a D-efficient design to select the vignette combinations with the highest statistical power. Specifically, by running Auspurg and Hinz's (2014) and Kuhfeld's (2010) algorithms, we identified 300 unique vignettes with a sufficiently high D-efficiency of 91 (Auspurg & Hinz, 2014). These 300 vignettes were blocked into 75 decks, each with four vignettes, which we randomly assigned to the participating recruiters to support design efficiency and internal validity (Auspurg & Hinz, 2014). Given the number of evaluation criteria (22 statements per vignette; see Subsection 2.2), recruiters were tasked with evaluating only four vignettes to limit biases stemming from fatigue (Auspurg & Hinz, 2014). Furthermore, to limit order effects, we randomised the sequence of the presentation of the four different vignettes within each deck. The effectiveness of this randomisation design was confirmed by the low Spearman and Pearson correlations between candidate dimensions, which are available upon request.

2.3 Data collection

We distributed our online vignette experiment to professional recruiters whose email addresses were sourced from public job listings published on Belgium's largest job site, i.e. the website of the public employment service of Flanders (Delbeke, 2019). This approach enhanced population validity as we ensured that participants possessed professional expertise in selection decisions. It also enhanced ecological validity as the participants were active in the Flemish context in which the investigated hiring subsidy remains available. Between February and March 2023, 292 recruiters completed the survey, generating 1,168 observations as each recruiter evaluated four fictitious candidates.

In the first part of the survey, recruiters were asked to assist in the selection decision of a fictitious company concerning one of the following eight occupations: (i) cleaner of rooms and premises, (ii) shop assistant, (iii)

production worker, (iv) administrative assistant, (v) nurse, (vi) business analyst ICT, (vii) financial analyst, and (viii) marketing manager. These eight jobs were selected to capture variations in two characteristics and enhance the external validity of our experiment. On the one hand, the required educational level (i.e. high or low) was taken into account as prior studies indicated that the subsidy's effect depends on the candidate's distance from the labour market. Specifically, the subsidy is more effective for groups with unfavourable labour market characteristics such as low education (Dubin & Rivers, 1993; Göbel, 2007; Liechti et al., 2017). On the other hand, we incorporated variation in the bottleneck status of the occupations (i.e. yes or no). This is because prior research suggested that a subsidy is more effective during labour shortages, which force employers to be less discerning to avert leaving vacancies unfilled (Liechti, 2019; Parsanoglou et al., 2019). The jobs and their corresponding characteristics and descriptions (Table A.2 in the Appendix) were obtained from the databases of the Flemish public employment service. As we scraped recruiter email addresses from eligible vacancies related to one of those jobs, we were able to present one relevant fictitious vacancy to each recruiter, increasing ecological validity. We did this in such a way that the jobs were presented with equal probability and were randomly assigned to the vignette decks, thereby ensuring the internal validity of our experiment. We also integrated questions to check whether participants had experience with the presented job—which was confirmed—and if they perceived the job characteristics as intended. The latter appeared to be the case for the required educational level but not for the bottleneck status. Therefore, in our analysis (Section 3), we included the recruiters' perceptions of these characteristics using scales from 0 to 10 instead of the predefined binary characteristics.

The recruiters were informed that a colleague had already made a first selection of four suitable candidates based on their education, relevant work experience, and availability. Concerning the latter, we mentioned that this was an urgent vacancy for which candidates would ideally be available immediately, thereby justifying the selection of four unemployed candidates and increasing ecological validity. Their colleague also indicated to have requested additional information from the authorities and made some notes using the HR software.[4] Finally, we explained that additional information was given related to a possible hiring subsidy through the following description: 'Further information is also provided if the candidate gives rise to a recruitment subsidy for older (≥58 years) non-working jobseekers registered with the VDAB in the amount of a full exemption from social security contributions for up to 8 quarters.'

Next, the four candidates were presented on separate pages using tabular information in line with Table A.1 in the Appendix. Guided by these tables, recruiters were asked to evaluate each candidate in response to 22

[4] Similar to the study by Sterkens and colleagues (2021) on burn-out, this description could improve the ecological validity as information regarding the subsidy is usually not depicted on the candidate's curriculum vitae.

statements divided into three groups (Table A.3 in the Appendix) on 11-point Likert scales ranging from 0 ('completely disagree') to 10 ('completely agree'). The first group entailed two statements about the likeability of interviewing and hiring the candidate, measuring the distal and proximal outcomes, respectively (Dalle et al., 2023; Sterkens et al., 2021). These statements were consistent with the ones used in prior studies (Baert et al., 2024; Sterkens et al., 2022; Van Belle et al., 2018). However, we referred more explicitly to the experimental context in which recruiters were asked to advise their fictitious colleague. For example, we included the following statement: 'I advise to invite this candidate for a job interview for the described position.'

The second group of statements concerned the recruiter's perceptions of the candidates' productivity to detect possible evidence of statistical discrimination, as discussed in Section 1.[5] More concretely, we incorporated 12 statements regarding the ageist stereotypes identified in the literature reviews of Dordoni & Argentero (2015) and Van Borm and colleagues (2021). These statements encompassed the following productivity aspects: intellectual abilities, social skills, physical capabilities, technological capabilities, flexibility, creativity, experience, motivation, reliability, accuracy, trainability, and reasonability of wage expectations. Additionally, three statements addressing additional unemployment stigmas were integrated. These statements entailed productivity concerns about skill loss (Acemoglu, 1995; Atkinson et al., 1996; Oberholzer-Gee, 2008), satisfaction by previous employers, and rejections from potential employers (Bonoli & Hinrichs, 2012; Dalle et al., 2023; Oberholzer-Gee, 2008; Van Belle et al., 2018).[6] Finally, we presented two statements on productivity perceptions related to participation in labour market programmes. One statement concerned the administrative ease of recruitment, which is frequently employed as a proxy for recruiters' fear of administrative burden (Baert, 2016; Brown, 2015; Brown & Koettl, 2015; Burtless, 1985; Dalle et al., 2023; Katz, 1998). The other statement concerned the degree of governmental labour inspection, which we treated as another type of administrative burden. Drawing inspiration from the literature, especially Dalle et al. (2023), Van Belle et al. (2018), and Van Borm et al. (2021), but also ensuring a consistent positive formulation, the statements included 'Individuals with such a profile typically have sufficient intellectual capacities to perform well in this job' and 'Individuals with such a profile are typically not often rejected by other employers.'

[5] We created a more logical and appropriate sequence by placing the statements on enforced target group signals first. This is because perceptions may vary depending on different candidate characteristics (e.g. subsidy, age, unemployment duration, and possibly gender and extracurricular activities), whereas perceptions concerning labour market participation normally only change if the candidate is subsidised.

[6] It must be noted that each productivity characteristic was only integrated once, although some unemployment stigmas coincided with the integrated ageist stereotypes. For example, lower motivation is also associated with unemployment (Atkinson et al., 1996; Bonoli, 2014; Bonoli & Hinrichs, 2012; Van Belle et al., 2018) and participation in labour market programmes, such as subsidised employment (Gerfin et al., 2005).

The third group of statements concerned the attitudes towards collaborations with the candidates, allowing us to detect possible evidence of taste-based discrimination. This second main economic theory argues that recruiters discriminate against candidates they—or their clients or employees—dislike (Becker, 1957), which might be the case for subsidised candidates. Therefore, echoing previous research (Baert & De Pauw, 2014; Dalle et al., 2023; Sterkens et al., 2021; Van Borm et al., 2021), we incorporated separate statements for collaborations with each one of these three actors, for example: 'I think I would enjoy collaborating with this candidate.'

In the second part of the survey, recruiters completed a post-experimental questionnaire consisting of five components. First, the recruiters' tendencies towards socially desirable answers were determined using Steenkamp and colleagues' (2010) 20 statements measuring egoistic response tendencies ($\alpha = 0.557$) and moralistic response tendencies ($\alpha = 0.679$) on a 5-point Likert scale.[7] Second, we captured the recruiters' risk-taking behaviour through the evaluation of six statements of the domain-specific risk-taking scale ($\alpha = 0.649$) of Blais and Weber (2006) on a 7-point Likert scale. Third, three personal characteristics were observed: gender (man, woman, or other), age (open question), and the highest level of educational attainment (secondary education at the highest or at least tertiary education). Fourth, four characteristics about each recruiter's current job were requested: how often they were involved in evaluating candidates (less than weekly or at least weekly), how long they were involved in evaluating job candidates (5 years at the highest or more than 5 years), if they had experience with the hiring subsidies for senior candidates (yes or no), and which function best suited their current role (manager, specialist in personnel and career development, employment services agent, management assistant, or general administrative assistant). Fifth, we captured two characteristics related to the organisation in which the recruiter was active at the time of the experiment: the number of employees working for the organisation (less than 50 or at least 50) and the percentage of the workforce aged 50 or older (less than 20% or at least 20%). By requesting these participant characteristics, we were able to describe our sample in terms of population validity (Section 2.4) and implement them in our analysis as control variables or robustness checks (Section 3).

2.4 Data description

The sample's summary statistics, which are presented in the first column of Table 1, reveal that the majority of the participating recruiters were females (66.4%) with tertiary education (88.0%) and an average age of 41 years. This supports the population validity of our results as our sample is comparable with the sample of Belgian recruiters from the European Social Survey (2020), which included mainly females (77.8%) with a tertiary degree (77.8%) and

[7] The rather modest Cronbach's alphas align with the variations reported by Steenkamp and colleagues (2010): between 0.49 and 0.76 for the egoistic response tendency scale and between 0.67 and 0.77 for the moralistic response tendency scale.

an average age of 52 years.[8] Moreover, our participants' considerable tenure in making hiring decisions is underscored by the fact that most of them engaged in selection decisions at least weekly (62.7%) and for more than 5 years (64.4%). In addition, a substantial amount of them had prior experience with the hiring subsidy (37.3%). Furthermore, most of the participants identified themselves as a manager (52.4%), worked in organisations with at least 50 employees (62.0%), and at least 20% of employees were older than 50 (52.7%). Finally, our participants produced scores that slightly surpassed the average values on the risk-taking scale (sample average: 4.16; scale average: 4.00), the egoistic response tendency scale (sample average: 3.45; scale average: 3.00), and the moralistic response tendency scale (sample average: 3.42; scale average: 3.00).

As indicated in the second and third columns of Table 1, candidates with and without the hiring subsidy were evaluated by participants with similar characteristics. The statistically insignificant Chi-square tests and Kruskal–Wallis tests depicted in the fourth column confirm the successful randomisation of the subsidy status across recruiters.

< Table 1 about here >

3 Results

In this section, we delve into the results of our vignette experiment. First, we examined the effect of the hiring subsidy on the re-employment opportunities of senior unemployed candidates (Subsection 3.1). Next, we investigated which signals recruiters infer from this subsidy (Subsection 3.2).

3.1 Effect of the hiring subsidy on selection decisions

We initiated our analysis with a visual examination of the relationship between the candidates' ages and employment outcomes, distinguishing between ages with and without explicit eligibility for the subsidy. As outlined in Figure 1, the associated linear trendlines reveal a consistent diminishing pattern in both interview and hiring chances with increasing age. Notably, the trendlines for ages eligible for the subsidy consistently originate at a lower point than the terminal points of those for ages ineligible for the subsidy. This observation suggests that the hiring subsidy might negatively affect the candidate's interview and hiring chances.

[8] Similar to Sterkens and colleagues (2022), we retrieved Belgian data from the 2020 wave for the following ISCO-08 codes: 1212 (i.e. human resource managers), 2423 (i.e. personnel and career professionals), 3333 (i.e. employment agents and contractors), and 4416 (i.e. personnel clerks).

< Figure 1 about here >

To investigate the significance of the breakpoint between these trendlines on selection chances, we employed a multivariate regression framework. This framework comprised two linear regressions with the subsidy dummy serving as the independent variable and the interview and hiring chances serving as the dependent variables. To enhance the precision of our estimates, we incorporated the other candidate, job, and participant characteristics discussed in Section 2 as control variables.[9] Given that each participant evaluated four candidates, standard errors were clustered at the participant level.

The outcomes of this regression framework are presented in Table 2. The subsidy exerted a discernible negative effect on the likelihood of being invited for an interview (β = −0.352, p = 0.052) and being hired (β = −0.427, p = 0.008). Although prior research demonstrated the overall unsatisfactory effectiveness of hiring subsidies targeted at seniors (Section 1); we are the first to report an explicitly negative demand-side effect. Nevertheless, this is consistent with Burtless (1985), who found a negative effect of hiring subsidies targeted at other disadvantaged groups.

< Table 2 about here >

To fortify the robustness of our findings, we conducted four alternative analyses whose results are presented in Table A.4 in the Appendix. In the first and second robustness checks, we eliminated the top 5% of participants with the highest score on the egoistic response tendency scale (i.e. the 52 participants who scored above 4.29) and the moralistic response tendency scale (i.e. the 64 participants who scored above 4.49). For the third check, we performed ordered logistic regressions instead of linear regressions. These three checks also exhibited similar negative subsidy effects. In the fourth check, we replaced the genuine subsidy dummy with a placebo subsidy dummy stipulating that candidates aged 56 and above would qualify for the subsidy. No significant effect emerged from this placebo subsidy dummy, which indicates that the previously identified negative effect is indeed attributable to the subsidy and not merely a function of age.

3.2 Signals of the hiring subsidy

To elucidate this negative subsidy effect, we scrutinised the signals recruiters inferred from the hiring subsidy.

[9] Although we incorporated the candidates' ages, we believe a linear model is most suitable. Our youngest candidate was aged 39, so we did not expect a quadratic relationship since this age presumably lies around the peak age at which candidates have the highest hiring chance (Carlsson & Eriksson, 2019). We tested a quadratic model anyway and, as expected, found no empirical evidence: the pattern in the residuals did not disappear and the adjusted R^2 barely increased (an increase of 0.001 for the interview chance and <0.001 for the hiring chance).

Therefore, we performed separate regressions for each candidate perception discussed in Subsection 2.3. More concretely, we adjusted our benchmark regression framework from the previous subsection by replacing the dependent variable (i.e. the interview or hiring scale) with one of the 20 candidate perceptions. These perceptions could theoretically be attributed to clusters such as productivity signals (Arrow, 1973) and (dis)taste for collaboration (Becker, 1957). However, our exploratory factor analysis and principal component analysis did not reveal any meaningful distinctive clusters, making an item-level analysis appropriate.

The results presented in Table 3 revealed noteworthy findings concerning the impact of the subsidy on various perceptions.[10] The subsidy seemingly exerted a detrimental effect on participants' perceptions of the candidate's physical skills ($\beta = -0.338$, $p = 0.010$), technological skills ($\beta = -0.276$, $p = 0.048$), the administrative ease of hiring ($\beta = -0.582$, $p < 0.000$), and the degree of labour inspection ($\beta = -0.437$, $p = 0.004$). These results support the theoretical expectations discussed in Subsection 2.3. On the one hand, we found evidence that labour market programmes such as hiring subsidies activate perceptions associated with participation in such programmes. In particular, the recruiters seemed to perceive a diminished ease of hiring and an increased fear of labour inspection with subsidised candidates. Nevertheless, we detected that labour market programmes such as hiring subsidies also enforce stigmas related to their target group. Specifically, we identified that subsidies targeted at the senior unemployed could trigger ageist stereotypes such as having limited physical and technological skills. However, we found no evidence that unemployment stigmas such as skill loss are reinforced by this hiring subsidy. Taken together with the overall adverse subsidy effect (Subsection 3.1), it seems that these negative perceptions exert a more substantial impact than the positive financial stimulus provided by the subsidy.

< Table 3 about here >

Next, we explored the associations between candidate perceptions and their interview and hiring chances.[11] To do this, we integrated the 20 perception variables into our original regression framework. This analysis revealed modest evidence that hiring chances are marginally associated with three of the four perceptions related to the hiring subsidy: technological skills ($\beta = 0.106$, $p = 0.033$), administrative ease of hiring ($\beta = 0.081$, $p = 0.077$), and

[10] Only the results concerning the candidate characteristics are presented in Table 3. The full table, which includes the results for the job and participant characteristics, is available upon request.

[11] We cannot make causal claims about these associations as we did not manipulate the candidate perceptions. Our experimental data was limited to the causal interpretation of the relationship between (i) the hiring subsidy and the interview or hiring chance and (ii) the hiring subsidy and the perceptions. Thus, although we have provided evidence for multiple signals of the hiring subsidy that could possibly explain the negative effects on interview and hiring chances, not all these signals necessarily drive the unfavourable treatment of candidates whose hiring is subsidised as recruiters might not consider these signals when making selection decisions.

labour inspection (β = −0.089, p < 0.082). No association with physical skills (β = 0.034, p = 0.414) was found. In addition, the hiring chances appeared to be associated with other perceptions, such as intellectual skills (β = 0.165, p = 0.005), experience (β = 0.174, p < 0.000), motivation (β = 0.143, p = 0.013), rejection by other employers (β = 0.104, p = 0.003), and employer collaborations (β = 0.267, p = 0.001). Similar results were found in the regression analysis concerning the interview chances.

In ensuring the reliability of our findings, we conducted four robustness checks consistent with the procedures outlined in Subsection 3.1. The results of these robustness checks provide support for the observed effects related to (i) the causal effect of the hiring subsidy on candidate perceptions and (ii) the associations between candidate perceptions and the interview and hiring chances.

4 Conclusion

Although numerous OECD countries invest vast amounts of public funds in subsidies targeted at workforce seniors, their effectiveness is rather unsatisfactory according to prior peer-reviewed research. However, previous research has not explained why these hiring subsidies do not have the intended effect in terms of re-employment. Therefore, we examined the signals that recruiters derive from such a subsidy in Belgium. To do this, we established a state-of-the-art vignette experiment in which genuine recruiters evaluated fictitious job candidates differing in their eligibility for this subsidy. Specifically, each recruiter rated four candidates based on their likelihood of being interviewed and hired and based on 20 theoretically relevant candidate perceptions.

Our research findings support the disappointing effectiveness of these hiring subsidies. Moreover, our results show that subsidised candidates have even lower interview and hiring chances than their non-subsidised counterparts. This unfavourable treatment can be attributed to the negative signals that recruiters derive from the hiring subsidy. On the one hand, the subsidy activates signals linked to participation in labour market programmes, such as reduced administrative ease of hiring and increased labour inspection. On the other hand, the subsidy amplifies signals associated with the subsidy's target group, in this case, the limited physical and technological skills of seniors. Taken together, our research findings indicate that the limited subsidy effect reported by earlier evaluation studies can be explained by the negative signals that counteract the positive financial stimulus of the subsidy.

In addition to its academic relevance, our study has important policy implications as it demonstrates the need for subsidy reform. Prior research suggested increasing the extent of the hiring subsidy to outweigh the negative signals (Boockman, 2015). However, offering higher amounts seems rather dangerous since it could also reinforce negative signals as a higher amount is offered to compensate for seemingly unproductive candidates. Instead, we advocate for proactive measures aimed at the elimination, or at least substantial reduction, of these negative

signals. Particularly, given the recruiters' perceptions that subsidised candidates are more difficult to hire, the convenience of the administrative process could be emphasised since employers only need to indicate the reduction code in their multifunctional declaration to the National Social Security Office. Finally, in light of the unsatisfactory subsidy's effectiveness, policymakers may consider adopting decisive measures such as abolishing this subsidy. For example, to expand working lives, it might be more effective to eliminate incentives for early retirement than providing subsidies to hire the senior unemployed (Boockman, 2015).

Nevertheless, it is important to approach our results critically due to three research limitations. First, our research method implies that recruiters were aware of our research, which might lead to socially desirable responses. To address this, we integrated several measures. These included (i) the incorporation of a social desirability scale to assess the robustness of results when responses from socially desirable recruiters are excluded and (ii) the presentation of multiple realistic candidate characteristics, compelling recruiters to make trade-offs that resemble real hiring decisions and concealing the true research focus. Moreover, prior research indicated that vignette experiment results align closely with actual recruiter behaviour (Hainmueller et al., 2015). Second, recruiters may not genuinely feel the financial impact of the subsidy as our experiment concerned a hypothetical recruitment decision. Consequently, while we can infer that recruiters derive negative signals from the subsidy, it remains uncertain whether these negative signalling effects outweigh the positive financial impact in a real-life context. The limited positive or neutral effects detected in prior studies suggest that the positive financial impact may still prevail, albeit to a restricted extent, or be nullified by negative perceptions. Third, the external validity of our results is restricted to the Flemish hiring subsidy targeted at the senior unemployed aged 58 or older. Different results might be found in other contexts. For example, different age signals may be found based on the subsidy's age restriction, and the results may depend on governmental retirement policies concerning the retirement age and early retirement schemes.

To tackle these limitations, we encourage researchers to explore similar hiring subsidies for senior unemployed candidates in diverse countries to shed light on potential contextual differences. We also advise them to employ different yet complementary research methods, such as field experiments, to overcome social desirability biases and biases due to hypothetical selection decisions. By doing so, a comprehensive understanding of the effectiveness of such subsidies can be achieved. This will not only enhance academic knowledge but also contribute to the design and implementation of more effective labour market programmes.

5 Declarations

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Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

Data availability The anonymised dataset that was generated and analysed during the current study is available from the corresponding author upon reasonable request.

General Data Protection Data processing was organised in line with Ghent University's code of conduct and therefore adheres to General Data Protection Regulation (GDPR) standards.

Informed consent Participants were asked to confirm that they were of age and participating of their own free will. They also gave consent for their personal data to be collected, processed, and anonymously reported. Finally, they were informed about the possibility of stopping the study at any time, retrieving their data, and contacting the researchers.

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Figures

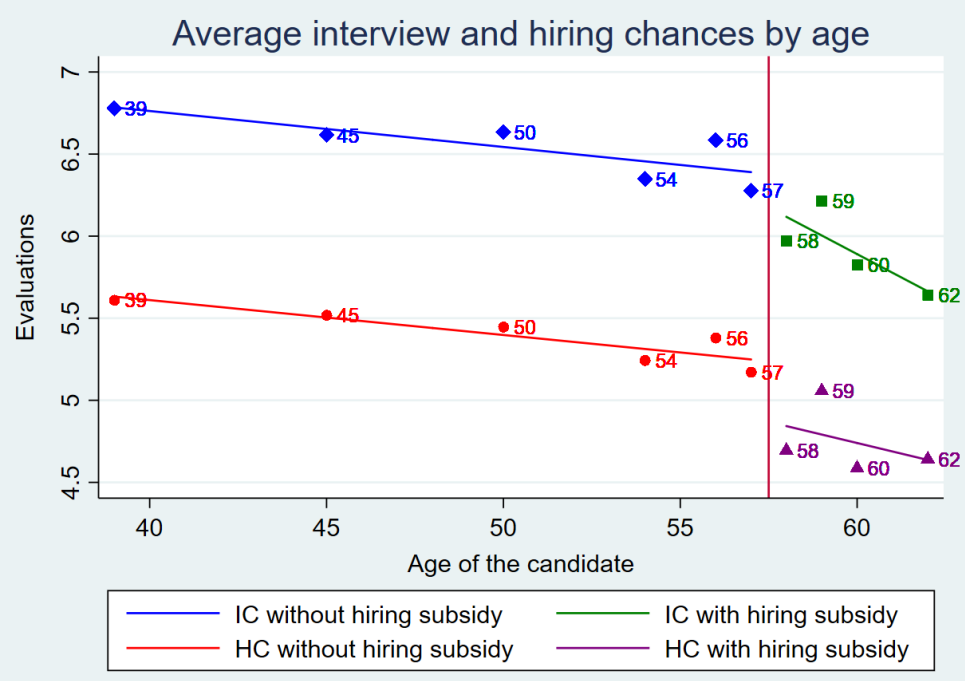

Figure 1 Average interview chance (IC) and hiring chance (HC) by age

Tables

Table 1 Description of participant characteristics by experimental condition

	Mean			Difference
	Full sample [N = 1,168]	Subsample: No hiring subsidy [N = 708]	Subsample: Hiring subsidy [N = 460]	(2) – (3)
	(1)	(2)	(3)	(4)
Male	33.6%	33.9%	33.0%	0.091 (0.762)
Age	41.397	41.185	41.724	0.716 (0.397)
Tertiary education	88.0%	88.6%	87.2%	0.507 (0.476)
At least weekly involved in selection decisions	62.7%	62.4%	63.0%	0.045 (0.832)
More than 5 years of experience in selection decisions	64.4%	64.1%	64.8%	0.053 (0.818)
Job				
Administrative assistant	6.5%	5.5%	8.0%	2.946 (0.086)
Employment agency worker	9.2%	8.9%	9.8%	0.260 (0.610)
HR and career development specialist	27.4%	28.7%	25.4%	1.469 (0.225)
Management assistant	4.5%	4.4%	4.6%	0.023 (0.880)
Manager	52.4%	52.5%	52.2%	0.015 (0.902)
Experience with hiring subsidy	37.3%	37.0%	37.8%	0.083 (0.774)
At least 20% of employees older than 50 in their organisation	52.7%	52.4%	53.3%	< 0.001 (0.987)
At least 50 employees in their organisation	62.0%	62.0%	62.0%	0.080 (0.777)
Risk-taking behaviour (s.)	4.156	4.142	4.178	0.308 (0.579)
Egoistic responde tendencies (s.)	3.446	3.424	3.479	3.372 (0.066)
Moralistic response tendencies (s.)	3.420	3.419	3.422	0.001 (0.982)

Notes. Abbreviation used: s. (scale consisting of multiple items scored from 0 to 10). The independence between the participant characteristic and the experimental condition is tested by a Pearson Chi-square test for indicator variables and by a Kruskal–Wallis test for continuous variables. The resulting X^2 and accompanying p-value are presented in the final column.

Table 2 Linear regression results for outcome variables

	Interview chance	Hiring chance
A. CANDIDATE CHARACTERISTICS		
Hiring subsidy (ref. = No)		
Yes	−0.352† (0.180)	−0.427** (0.160)
Age (con.)	−0.037** (0.013)	−0.030** (0.011)
Gender (ref. = Female)		
Male	−0.038 (0.107)	−0.013 (0.097)
Experience (ref. = None)		
About 2 years	1.965*** (0.172)	1.693*** (0.138)
About 5 years	2.635*** (0.175)	2.358*** (0.155)
About 10 years	3.061*** (0.188)	2.696*** (0.166)
Unemployment period (ref. = Less than 3 months)		
At least 3 but less than 6 months	−0.414† (0.216)	−0.469* (0.194)
At least 6 but less than 9 months	−0.185 (0.196)	−0.356† (0.194)
At least 9 but less than 12 months	−0.568** (0.206)	−0.407* (0.185)
At least 12 but less than 24 months	−1.169*** (0.228)	−1.069*** (0.199)
At least 24 months	−1.417*** (0.226)	−1.295*** (0.208)
Extracurricular activities (ref. = None)		
Volunteering	0.104 (0.163)	0.082 (0.143)
Sports activities	0.187 (0.170)	0.117 (0.151)
Cultural activities	0.145 (0.163)	0.152 (0.147)
B. JOB CHARACTERISTICS		
Bottleneck (con.)	0.162*** (0.037)	0.094** (0.031)
Required educational degree (con.)	−0.112*** (0.032)	−0.079** (0.026)
C. PARTICIPANT CHARACTERISTICS		
Age (ref. = Maximum 41 years)		
At least 42 years	0.088 (0.243)	−0.232 (0.207)
Gender (ref. = Female)		
Male	−0.092 (0.260)	−0.071 (0.226)
Degree (ref. = Maximum secondary education)		
Tertiary education	−0.115 (0.398)	−0.140 (0.351)
Involvement in selection decisions (ref. = Less than weekly)		
At least weekly	−0.434† (0.253)	−0.163 (0.231)
Experience in selection decisions (ref. = Maximum 5 years)		
More than 5 years	0.359 (0.257)	0.318 (0.225)
Job (ref. = Administrative assistant)		
Employment agency worker	0.270 (0.629)	0.423 (0.543)
HR and career development specialist	−0.240 (0.524)	−0.181 (0.443)
Management assistant	−0.087 (0.538)	−0.151 (0.524)
Manager	−0.252 (0.494)	−0.304 (0.440)
Experience with hiring subsidy (ref. = No)		
Yes	0.272 (0.236)	0.390† (0.202)
Employees older than 50 in their organisation (ref. = Less than 20%)		
At least 20%	0.385† (0.218)	0.433* (0.190)
Employees in their organisation (ref. = Less than 50)		
At least 50	0.667** (0.251)	−0.055 (0.225)
Risk-taking behaviour (std. s.)	0.026 (0.133)	0.009 (0.112)

D. PARAMETERS		
Constant	6.268*** (0.918)	5.590*** (0.801)

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), HR (Human Resources), and RMSE (Root-Mean-Square Error). The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Table 3 Linear regression results for perception variables

	Intellectual abilities	Social abilities	Physical abilities	Technological abilities	Flexibility	Creativity
A. CANDIDATE CHARACTERISTICS						
Hiring subsidy (ref. = No)						
Yes	−0.142 (0.122)	−0.062 (0.122)	−0.338* (0.130)	−0.276* (0.139)	−0.054 (0.136)	−0.033 (0.119)
Age (con.)	−0.004 (0.009)	0.001 (0.009)	−0.027** (0.009)	−0.040*** (0.010)	−0.012 (0.009)	−0.023** (0.008)
Gender (ref. = Female)						
Male	0.034 (0.080)	−0.051 (0.075)	0.092 (0.074)	0.092 (0.098)	0.041 (0.082)	−0.089 (0.075)
Experience (ref. = None)						
About 2 years	1.074*** (0.115)	0.517*** (0.105)	0.429*** (0.114)	1.243*** (0.132)	0.525*** (0.116)	0.427*** (0.105)
About 5 years	1.382*** (0.125)	0.654*** (0.112)	0.507*** (0.111)	1.733*** (0.143)	0.710*** (0.119)	0.659*** (0.103)
About 10 years	1.927*** (0.133)	0.890*** (0.116)	0.633*** (0.122)	2.074*** (0.157)	1.053*** (0.124)	0.943*** (0.109)
Unemployment period (ref. = Less than 3 months)						
At least 3 but less than 6 months	−0.328* (0.144)	−0.173 (0.136)	−0.219 (0.147)	−0.396* (0.168)	−0.256† (0.151)	−0.270* (0.133)
At least 6 but less than 9 months	−0.286* (0.144)	−0.290* (0.131)	−0.217 (0.137)	−0.269† (0.160)	−0.271† (0.138)	−0.152 (0.118)
At least 9 but less than 12 months	−0.208 (0.139)	−0.196 (0.139)	−0.254† (0.141)	−0.246 (0.173)	−0.247 (0.151)	−0.021 (0.129)
At least 12 but less than 24 months	−0.397* (0.157)	−0.587*** (0.148)	−0.510*** (0.145)	−0.566** (0.173)	−0.604*** (0.155)	−0.507** (0.148)
At least 24 months	−0.574*** (0.154)	−0.632*** (0.147)	−0.583*** (0.152)	−0.481** (0.174)	−0.688*** (0.180)	−0.576*** (0.147)
Extracurricular activities (ref. = None)						
Volunteering	0.137 (0.117)	0.730*** (0.113)	−0.022 (0.107)	0.246† (0.133)	0.201† (0.114)	0.238* (0.104)
Sports activities	0.058 (0.116)	0.247* (0.105)	0.458*** (0.113)	0.348** (0.131)	0.122 (0.121)	0.175† (0.101)
Cultural activities	0.064 (0.118)	0.478*** (0.114)	0.021 (0.104)	0.276* (0.136)	0.223† (0.115)	0.418*** (0.110)
B. JOB CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
C. PARTICIPANT CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
D. PARAMETERS						
Constant	5.467*** (0.596)	5.359*** (0.582)	7.410*** (0.664)	6.081*** (0.631)	5.775*** (0.619)	6.268*** (0.536)

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). Although job and participant characteristics are included as described in Section 2, only the results for the candidates' characteristics are presented for conciseness. The full table is available upon request. The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Table 3 Linear regression results for perception variables (continued)

	Experience	Motivation	Reliability	Preciseness	Trainability	Reasonability towards salary expectations
A. CANDIDATE CHARACTERISTICS						
Hiring subsidy (ref. = No)						
Yes	0.160 (0.161)	0.197 (0.137)	0.100 (0.134)	0.051 (0.121)	−0.105 (0.133)	0.132 (0.144)
Age (con.)	−0.015 (0.011)	−0.008 (0.010)	0.013 (0.009)	−0.002 (0.009)	−0.063*** (0.010)	−0.020† (0.011)
Gender (ref. = Female)						
Male	−0.012 (0.119)	−0.009 (0.078)	0.003 (0.078)	−0.137† (0.073)	0.002 (0.085)	−0.134 (0.090)
Experience (ref. = None)						
About 2 years	2.401*** (0.168)	0.616*** (0.120)	0.654*** (0.111)	0.778*** (0.102)	0.761*** (0.107)	0.501*** (0.126)
About 5 years	3.733*** (0.178)	0.775*** (0.122)	0.760*** (0.122)	1.010*** (0.109)	1.127*** (0.117)	0.368** (0.127)
About 10 years	4.459*** (0.200)	1.130*** (0.136)	1.067*** (0.126)	1.351*** (0.126)	1.274*** (0.128)	0.427** (0.143)
Unemployment period (ref. = Less than 3 months)						
At least 3 but less than 6 months	−0.470* (0.203)	−0.250 (0.160)	−0.450** (0.148)	−0.465** (0.155)	−0.121 (0.156)	−0.150 (0.159)
At least 6 but less than 9 months	−0.299 (0.185)	−0.219 (0.139)	−0.262* (0.132)	−0.320* (0.126)	−0.135 (0.154)	−0.313† (0.172)
At least 9 but less than 12 months	−0.486* (0.190)	−0.323* (0.155)	−0.281* (0.141)	−0.135 (0.138)	0.072 (0.146)	−0.176 (0.180)
At least 12 but less than 24 months	−0.599** (0.209)	−0.973*** (0.176)	−0.860*** (0.168)	−0.626*** (0.144)	−0.431** (0.160)	−0.262 (0.174)
At least 24 months	−0.777*** (0.208)	−1.008*** (0.181)	−0.916*** (0.170)	−0.554*** (0.149)	−0.562*** (0.155)	−0.221 (0.183)
Extracurricular activities (ref. = None)						
Volunteering	0.121 (0.171)	0.342** (0.120)	0.374** (0.111)	0.128 (0.099)	0.142 (0.120)	0.079 (0.135)
Sports activities	0.076 (0.159)	0.140 (0.126)	0.055 (0.114)	0.066 (0.101)	0.187 (0.121)	−0.150 (0.126)
Cultural activities	0.148 (0.164)	0.350** (0.128)	0.314* (0.121)	0.134 (0.116)	0.172 (0.112)	0.001 (0.130)
B. JOB CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
C. PARTICIPANT CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
D. PARAMETERS						
Constant	4.140*** (0.711)	5.913*** (0.593)	5.066*** (0.623)	5.495*** (0.572)	7.944*** (0.614)	6.106*** (0.721)

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). Although job and participant characteristics are included as described in Section 2, only the results for the candidates' characteristics are presented for conciseness. The full table is available upon request. The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Table 3 Linear regression results for perception variables (continued)

	Skill loss	Satisfaction of previous employers	Rejection of other employers	Administrative ease of hiring	Labour and social inspections	Collaboration with employer
A. CANDIDATE CHARACTERISTICS						
Hiring subsidy (ref. = No)						
Yes	−0.006 (0.136)	0.003 (0.122)	−0.274 (0.167)	−0.582*** (0.162)	−0.437** (0.152)	−0.001 (0.136)
Age (con.)	−0.051*** (0.011)	−0.016† (0.008)	−0.082*** (0.012)	−0.047*** (0.010)	−0.030** (0.010)	−0.022* (0.010)
Gender (ref. = Female)						
Male	0.025 (0.093)	0.044 (0.077)	−0.105 (0.108)	0.137 (0.085)	0.018 (0.077)	−0.077 (0.075)
Experience (ref. = None)						
About 2 years	0.625*** (0.128)	0.427*** (0.105)	0.752*** (0.149)	0.508*** (0.126)	0.209† (0.111)	0.687*** (0.115)
About 5 years	0.806*** (0.135)	0.700*** (0.112)	1.144*** (0.150)	0.377** (0.118)	0.314** (0.107)	0.948*** (0.114)
About 10 years	1.018*** (0.141)	1.017*** (0.126)	1.509*** (0.161)	0.699*** (0.123)	0.424*** (0.104)	1.315*** (0.126)
Unemployment period (ref. = Less than 3 months)						
At least 3 but less than 6 months	−0.101 (0.162)	−0.150 (0.145)	−0.585** (0.187)	−0.249 (0.164)	0.104 (0.143)	−0.241 (0.148)
At least 6 but less than 9 months	−0.272† (0.155)	−0.154 (0.134)	−0.261 (0.193)	−0.412* (0.178)	−0.317* (0.159)	−0.246 (0.154)
At least 9 but less than 12 months	−0.406* (0.159)	−0.247† (0.133)	−0.368† (0.204)	−0.288† (0.170)	−0.239 (0.165)	−0.336* (0.155)
At least 12 but less than 24 months	−0.733*** (0.163)	−0.772*** (0.155)	−0.965*** (0.206)	−0.417* (0.168)	−0.208 (0.150)	−0.783*** (0.158)
At least 24 months	−1.136*** (0.181)	−0.741*** (0.161)	−1.417*** (0.196)	−0.688*** (0.178)	−0.326* (0.147)	−0.976*** (0.171)
Extracurricular activities (ref. = None)						
Volunteering	0.034 (0.137)	0.042 (0.112)	0.111 (0.155)	0.135 (0.119)	0.047 (0.092)	0.282* (0.117)
Sports activities	0.270* (0.128)	0.007 (0.114)	0.316* (0.145)	0.192 (0.130)	0.091 (0.116)	0.234† (0.119)
Cultural activities	0.169 (0.127)	0.189† (0.113)	0.279† (0.151)	0.158 (0.118)	0.174 (0.109)	0.287* (0.125)
B. JOB CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
C. PARTICIPANT CHARACTERISTICS						
Included	Included	Included	Included	Included	Included	Included
D. PARAMETERS						
Constant	7.150*** (0.691)	6.225*** (0.557)	7.661*** (0.866)	8.292*** (0.815)	6.950*** (0.748)	6.209*** (0.685)

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). Although job and participant characteristics are included as described in Section 2, only the results for the candidates' characteristics are presented for conciseness. The full table is available upon request. The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Table 3 Linear regression results for perception variables (continued)

	Collaboration with colleagues	Collaboration with clients
A. CANDIDATE CHARACTERISTICS		
Hiring subsidy (ref. = No)		
Yes	−0.075 (0.130)	0.010 (0.138)
Age (con.)	−0.032** (0.009)	−0.030** (0.010)
Gender (ref. = Female)		
Male	−0.030 (0.073)	0.030 (0.082)
Experience (ref. = None)		
About 2 years	0.739*** (0.117)	0.790*** (0.122)
About 5 years	1.073*** (0.120)	1.099*** (0.123)
About 10 years	1.349*** (0.124)	1.385*** (0.129)
Unemployment period (ref. = Less than 3 months)		
At least 3 but less than 6 months	−0.240 (0.151)	−0.234 (0.150)
At least 6 but less than 9 months	−0.239 (0.155)	−0.310* (0.150)
At least 9 but less than 12 months	−0.326* (0.147)	−0.259† (0.153)
At least 12 but less than 24 months	−0.712*** (0.157)	−0.795*** (0.163)
At least 24 months	−0.950*** (0.166)	−0.877*** (0.166)
Extracurricular activities (ref. = None)		
Volunteering	0.363** (0.108)	0.357** (0.107)
Sports activities	0.218† (0.120)	0.207† (0.122)
Cultural activities	0.301* (0.118)	0.330** (0.122)
B. JOB CHARACTERISTICS		
Included	Included	Included
C. PARTICIPANT CHARACTERISTICS		
Included	Included	Included
D. PARAMETERS		
Constant	6.512*** (0.597)	6.613*** (0.633)

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). Although job and participant characteristics are included as described in Section 2, only the results for the candidates' characteristics are presented for conciseness. The full table is available upon request. The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Appendix

Table A.1 Vignette factors and corresponding levels used in the experiment

Vignette factors	Vignette levels
Gender	{Male, Female}
Age	{39, 45, 50, 54, 56, 57, 58, 59, 60, 62}
Relevant work experience	{None, About 2 years, About 5 years, About 10 years}
Unemployment duration	{Less than 3 months, At least 3 but less than 6 months, At least 6 but less than 9 months, At least 9 but less than 12 months, At least 12 but less than 24 months, At least 24 months}
Extracurricular activities	{None, Volunteering, Sports activities, Cultural activities}
Extra information[a]	{None, Full exemption from social security contributions for up to 8 quarters}

Notes. The factorial product of the vignette levels (i.e. 2x10x4x6x4) resulted in 1,920 possible combinations. Seventy-five sets of four vignettes were drawn from this vignette universe using a D-efficient design (D-efficiency: 96.74; Auspurg & Hinz, 2014) and distributed at random to the recruiters as described in Subsection 3.1.

[a] This was not integrated as an independently varying factor in the vignette design as this has a one-to-one relationship with the candidate's age. Instead, we explicitly presented this for candidates aged 58 or over.

Table A.2 Job characteristics and descriptions

Jobs	Characteristics		Descriptions
	Bottleneck	Higher education	
Cleaner of rooms and premises	Yes	No	This employee is responsible for maintaining and cleaning administrative, commercial, and industrial premises and areas within the company, using a variety of equipment and machinery which he or she also maintains.
Store worker	Yes	No	This employee is responsible for labelling and marking merchandise, filling shelves with goods, and informing customers. In performing his or her duties, one is under the responsibility of a department head.
Production worker	No	No	This employee manually sorts, assembles, and packages various pieces or products. He or she works on a worktop or an automated production line. Additionally, he or she may be employed to supply machines, finish products, label, and check on delivery.
Administrative assistant	No	No	This employee performs administrative and support tasks within the company and provides administrative support to other people. He or she types up notes and reports and enters data using word-processing software. In addition, he or she is involved in written correspondence with customers and suppliers and handles telephone communication.
Nurse	Yes	Yes	This employee provides physical assistance and psychological and social support to sick, injured, elderly or disabled people with the aim of improving, maintaining, or restoring the patient's health. This includes providing general medical care and recognising patients' clinical pictures and reactions to medical treatments. In addition, this employee provides necessary information about the disease and treatment to the patient and his or her family.
Business analyst ICT	Yes	Yes	This employee advises IT and telecoms management about developments and possible new ways of optimising IT and telecoms tools and adapting them to users' needs (choice of software, hardware, network, etc.). He or she guarantees support and technical assistance to the IT or telecoms teams. These services are performed for both the company one works for and the users and customers.
Financial analyst	No	Yes	This employee carries out financial analyses and studies for managers within the organisation (on the market, risks, products, economic restructuring, etc.). He or she may also be employed to carry out merger or acquisition operations and design monitoring and risk analysis tools.
Marketing manager	No	Yes	This employee develops commercial action plans and promotional campaigns. He or she monitors the sales results of the product range, assists the sales team, and coordinates marketing activities around a product. He or she is also responsible for the results. In addition, this employee monitors production and supervises quality.

Notes. The jobs were selected based on the two job characteristics provided by the Flemish public employment service. The job descriptions were retrieved from the Flemish Centre for Student Guidance as described in Subsection 2.3.

Table A.3 Outcome and perception statements

Outcomes and perceptions	Statements
A. Outcomes	
Interview chance	I advise to invite this candidate for a job interview for the described position.
Hiring chance	I advise to hire this candidate for the described position.
B. Perceptions related to statistical-based discrimination	
B.1. Productivity perceptions regarding senior candidates	
Perceived intellectual abilities	Individuals with such a profile typically have sufficient intellectual capacities to perform well in this job.
Perceived social abilities	Individuals with such a profile typically have sufficient social capacities to perform well in this job.
Perceived physical abilities	Individuals with such a profile typically have sufficient physical capacities to perform well in this job.
Perceived technological knowledge and skills	Individuals with such a profile typically have sufficient technological knowledge and skills to perform well in this job.
Perceived flexibility	Individuals with such a profile are typically sufficiently flexible to perform well in this job.
Perceived creativity	Individuals with such a profile are typically sufficiently creative to perform well in this job.
Perceived experience	Individuals with such a profile typically have sufficient experience to perform well in this job.
Perceived motivation	Individuals with such a profile are typically sufficiently motivated to perform well in this job.
Perceived reliability	Individuals with such a profile are typically sufficiently reliable to perform well in this job.
Perceived accuracy	Individuals with such a profile are typically sufficiently accurate to perform well in this job.
Perceived trainability	Individuals with such a profile are typically sufficiently trainable to perform well in this job.
Perceived reasonability towards wage expectations	Individuals with such a profile typically have reasonable wage expectations.
B.2 Productivity perceptions regarding unemployed candidates	
Perceived extent of skill loss	Individuals with such a profile have typically not experienced a recent decline in their general skills.
Perceived satisfaction of previous employers	Previous employers that individuals with such a profile worked for were typically satisfied with their productivity.
Perceived frequency of rejection	Individuals with such a profile are typically not often rejected by other employers.
B.3. Productivity perceptions regarding participants in labour market programmes	
Perceived (administrative) ease of hiring	Hiring individuals with such a profile is typically (administratively) easy.
Perceived extent of labour and social inspections	The employment of individuals with such a profile typically entails limited labour and social inspections by the government.
C. Perceptions related to taste-based discrimination	
Attitude towards collaboration of employer	I think I would enjoy collaborating with this candidate.
Attitude towards collaboration of other employees	I think other employees would enjoy collaborating with this candidate.
Attitude towards collaboration of customers	I think customers would enjoy collaborating with this candidate.

Notes: This table presents the statements regarding selection outcomes and perceptions as they were shown to the participants in the online experiment. The participants evaluated each statement on an 11-point Likert scale ranging from 0 (i.e. 'completely disagree') to 10 ('completely agree').

Table A.4 Robustness checks on linear regression results for outcome variables

	Excluding the top 5% on the ERT scale		Excluding the top 5% on the MRT scale	
	Interview chance (1)	Hiring chance (2)	Interview chance (3)	Hiring chance (4)
A. CANDIDATE CHARACTERISTICS				
Hiring subsidy (ref. = No)				
Yes	−0.331† (0.185)	−0.417* (0.164)	−0.369† (0.188)	−0.453** (0.164)
Age (con.)	−0.035** (0.013)	−0.026* (0.011)	−0.037** (0.013)	−0.031** (0.011)
Gender (ref. = Female)				
Male	−0.059 (0.110)	−0.019 (0.099)	−0.053 (0.112)	−0.017 (0.100)
Experience (ref. = None)				
About 2 years	2.002*** (0.178)	1.739*** (0.142)	2.047*** (0.179)	1.774*** (0.143)
About 5 years	2.666*** (0.179)	2.364*** (0.156)	2.702*** (0.182)	2.430*** (0.161)
About 10 years	3.064*** (0.192)	2.688*** (0.168)	3.173*** (0.192)	2.824*** (0.167)
Unemployment period (ref. = Less than 3 months)				
At least 3 but less than 6 months	−0.530* (0.218)	−0.577** (0.195)	−0.384† (0.221)	−0.491* (0.197)
At least 6 but less than 9 months	−0.270 (0.199)	−0.405* (0.195)	−0.162 (0.203)	−0.346† (0.199)
At least 9 but less than 12 months	−0.638** (0.210)	−0.456* (0.188)	−0.559** (0.213)	−0.416* (0.189)
At least 12 but less than 24 months	−1.269*** (0.238)	−1.145*** (0.201)	−1.146*** (0.236)	−1.078*** (0.204)
At least 24 months	−1.534*** (0.225)	−1.394*** (0.207)	−1.411*** (0.228)	−1.347*** (0.208)
Extracurricular activities (ref. = None)				
Volunteering	0.127 (0.170)	0.105 (0.146)	0.125 (0.170)	0.119 (0.148)
Sports activities	0.265 (0.173)	0.142 (0.152)	0.167 (0.177)	0.107 (0.157)
Cultural activities	0.175 (0.167)	0.185 (0.150)	0.177 (0.169)	0.216 (0.150)
B. JOB CHARACTERISTICS	−0.331† (0.185)	−0.417* (0.164)	−0.369† (0.188)	−0.453** (0.164)
Bottleneck (con.)	0.168*** (0.037)	0.098** (0.031)	0.158*** (0.039)	0.086** (0.030)
Required educational degree (con.)	−0.107** (0.032)	−0.068* (0.026)	−0.112** (0.033)	−0.070** (0.026)
C. PARTICIPANT CHARACTERISTICS				
Age (ref. = Maximum 41 years)				
At least 42 years	0.141 (0.249)	−0.187 (0.207)	−0.008 (0.249)	−0.323 (0.205)
Gender (ref. = Female)				
Male	−0.099 (0.268)	−0.098 (0.232)	−0.094 (0.267)	−0.127 (0.226)
Degree (ref. = Maximum secondary education)				
Tertiary education	−0.234 (0.389)	−0.229 (0.354)	0.010 (0.398)	−0.026 (0.341)
Involvement in selection decisions (ref. = Less than weekly)				
At least weekly	−0.451† (0.262)	−0.232 (0.229)	−0.502† (0.267)	−0.297 (0.225)
Experience in selection decisions (ref. = Maximum 5 years)				
More than 5 years	0.278 (0.262)	0.308 (0.228)	0.453† (0.268)	0.459* (0.226)
Job (ref. = Administrative assistant)				
Employment agency worker	0.236 (0.634)	0.422 (0.544)	0.272 (0.662)	0.369 (0.565)
HR and career development specialist	−0.188 (0.528)	−0.169 (0.439)	−0.264 (0.557)	−0.242 (0.465)
Management assistant	−0.096 (0.532)	−0.172 (0.516)	−0.017 (0.557)	−0.105 (0.533)
Manager	−0.213 (0.496)	−0.256 (0.435)	−0.284 (0.520)	−0.354 (0.460)

Experience with hiring subsidy (ref. = No)				
Yes	0.251 (0.243)	0.323 (0.207)	0.322 (0.245)	0.401† (0.206)
Employees older than 50 in their organisation (ref. = Less than 20%)				
At least 20%	0.262 (0.223)	0.361† (0.194)	0.263 (0.227)	0.299 (0.191)
Employees in their organisation (ref. = Less than 50)				
At least 50	0.752** (0.254)	0.022 (0.221)	0.758** (0.257)	0.091 (0.220)
Risk-taking behaviour (std. s.)	0.016 (0.134)	−0.015 (0.109)	0.022 (0.137)	0.025 (0.114)
D. PARAMETERS				
Constant	6.274*** (0.941)	5.447*** (0.817)	6.061*** (0.948)	5.528*** (0.829)

Notes. Abbreviations used: ERT (Egoistic Response Tendency), MRT (Moralistic Response Tendency), con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.

Table A.4 Robustness checks on linear regression results for outcome variables (continued)

	Orderded logistic regression		Alternative subsidy cut-off at age 56	
	Interview chance (5)	Hiring chance (6)	Interview chance (7)	Hiring chance (8)
A. CANDIDATE CHARACTERISTICS				
Hiring subsidy (ref. = No)				
Yes	−0.298* (0.134)	−0.391** (0.137)	−0.062 (0.228)	−0.148 (0.197)
Age (con.)	−0.024** (0.009)	−0.028** (0.010)	−0.050** (0.016)	−0.041** (0.014)
Gender (ref. = Female)				
Male	−0.052 (0.078)	−0.034 (0.087)	−0.055 (0.106)	−0.033 (0.097)
Experience (ref. = None)				
About 2 years	1.365*** (0.131)	1.383*** (0.122)	1.959*** (0.172)	1.685*** (0.138)
About 5 years	1.838*** (0.136)	1.970*** (0.141)	2.647*** (0.174)	2.369*** (0.155)
About 10 years	2.244*** (0.154)	2.295*** (0.161)	3.057*** (0.188)	2.692*** (0.166)
Unemployment period (ref. = Less than 3 months)				
At least 3 but less than 6 months	−0.362* (0.162)	−0.532** (0.171)	−0.404† (0.217)	−0.457* (0.196)
At least 6 but less than 9 months	−0.272† (0.146)	−0.474** (0.169)	−0.155 (0.199)	−0.317 (0.197)
At least 9 but less than 12 months	−0.533*** (0.152)	−0.489** (0.168)	−0.573** (0.207)	−0.412* (0.186)
At least 12 but less than 24 months	−0.944*** (0.166)	−1.044*** (0.178)	−1.155*** (0.229)	−1.054*** (0.200)
At least 24 months	−1.064*** (0.173)	−1.234*** (0.188)	−1.411*** (0.227)	−1.288*** (0.209)
Extracurricular activities (ref. = None)				
Volunteering	0.131 (0.121)	0.123 (0.125)	0.103 (0.162)	0.079 (0.142)
Sports activities	0.198 (0.123)	0.157 (0.129)	0.187 (0.171)	0.117 (0.152)
Cultural activities	0.186 (0.115)	0.217† (0.125)	0.152 (0.164)	0.161 (0.148)
B. JOB CHARACTERISTICS				
Bottleneck (con.)	0.125*** (0.030)	0.082** (0.026)	0.161*** (0.037)	0.093** (0.031)
Required educational degree (con.)	−0.089** (0.026)	−0.063** (0.023)	−0.112*** (0.032)	−0.080** (0.026)
C. PARTICIPANT CHARACTERISTICS				
Age (ref. = Maximum 41 years)				
At least 42 years	0.079 (0.189)	−0.210 (0.173)	0.078 (0.244)	−0.246 (0.209)
Gender (ref. = Female)				
Male	−0.067 (0.195)	−0.119 (0.189)	−0.090 (0.260)	−0.070 (0.226)
Degree (ref. = Maximum secondary education)				
Tertiary education	−0.028 (0.317)	−0.089 (0.295)	−0.108 (0.398)	−0.131 (0.352)
Involvement in selection decisions (ref. = Less than weekly)				
At least weekly	−0.320 (0.205)	−0.114 (0.202)	−0.438† (0.255)	−0.167 (0.232)
Experience in selection decisions (ref. = Maximum 5 years)				
More than 5 years	0.209 (0.196)	0.248 (0.194)	0.357 (0.259)	0.319 (0.226)
Job (ref. = Administrative assistant)				
Employment agency worker	0.305 (0.511)	0.394 (0.476)	0.294 (0.629)	0.455 (0.540)
HR and career development specialist	−0.103 (0.418)	−0.146 (0.376)	−0.208 (0.526)	−0.143 (0.444)
Management assistant	−0.063 (0.423)	−0.066 (0.450)	−0.056 (0.541)	−0.118 (0.528)
Manager	−0.147 (0.390)	−0.195 (0.376)	−0.217 (0.495)	−0.264 (0.440)

Experience with hiring subsidy (ref. = No)				
Yes	0.218 (0.185)	0.351* (0.175)	0.271 (0.236)	0.387† (0.202)
Employees older than 50 in their organisation (ref. = Less than 20%)				
At least 20%	0.320† (0.166)	0.380* (0.163)	0.382† (0.219)	0.432* (0.191)
Employees in their organisation (ref. = Less than 50)				
At least 50	0.438* (0.193)	−0.150 (0.198)	0.678** (0.251)	−0.042 (0.225)
Risk-taking behaviour (std. s.)	0.052 (0.103)	0.007 (0.097)	0.024 (0.133)	0.005 (0.111)
D. PARAMETERS				
Constant			6.841*** (0.973)	6.102*** (0.810)
Cut-off 1	−3.593 (0.708)	−4.253 (0.691)		
Cut-off 2	−2.760 (0.696)	−3.269 (0.675)		
Cut-off 3	−2.020 (0.692)	−2.469 (0.670)		
Cut-off 4	−1.514 (0.698)	−1.960 (0.671)		
Cut-off 5	−1.147 (0.703)	−1.518 (0.669)		
Cut-off 6	−0.654 (0.704)	−0.203 (0.668)		
Cut-off 7	−0.078 (0.704)	0.422 (0.665)		
Cut-off 8	0.761 (0.709)	1.243 (0.664)		
Cut-off 9	1.667 (0.718)	2.356 (0.672)		
Cut-off 10	2.505 (0.733)	3.504 (0.705)		

Notes. Abbreviations used: con. (continuous variable), ref. (reference category), std. s. (standardised scale consisting of multiple items scored from 0 to 10), and HR (Human Resources). The presented statistics are coefficient estimates and their standard errors are in parentheses. Standard errors are corrected for clustering of the observations at the participant level. Significances are indicated as *** when $p < .001$, ** when $p < .01$, * when $p < .05$, and † when $p < .10$.