

Van Belle, Eva; Caers, Ralf; De Couck, Marijke; Di Stasio, Valentina; Baert, Stijn

**Working Paper**

## The Signal of Applying for a Job under a Vacancy Referral Scheme

IZA Discussion Papers, No. 11577

**Provided in Cooperation with:**

IZA – Institute of Labor Economics

*Suggested Citation:* Van Belle, Eva; Caers, Ralf; De Couck, Marijke; Di Stasio, Valentina; Baert, Stijn (2018) : The Signal of Applying for a Job under a Vacancy Referral Scheme, IZA Discussion Papers, No. 11577, Institute of Labor Economics (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/180595>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

DISCUSSION PAPER SERIES

IZA DP No. 11577

**The Signal of Applying for a Job under a  
Vacancy Referral Scheme**

Eva Van Belle  
Ralf Caers  
Marijke De Couck  
Valentina Di Stasio  
Stijn Baert

JUNE 2018

## DISCUSSION PAPER SERIES

IZA DP No. 11577

# The Signal of Applying for a Job under a Vacancy Referral Scheme

**Eva Van Belle**

*Ghent University*

**Ralf Caers**

*University of Seychelles and KU Leuven*

**Marijke De Couck**

*Vrije Universiteit Brussel*

**Valentina Di Stasio**

*Utrecht University*

**Stijn Baert**

*Ghent University, Research Foundation –  
Flanders, University of Antwerp, Université  
catholique de Louvain, IZA, and IMISCOE*

JUNE 2018

Any opinions expressed in this paper are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but IZA takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The IZA Institute of Labor Economics is an independent economic research institute that conducts research in labor economics and offers evidence-based policy advice on labor market issues. Supported by the Deutsche Post Foundation, IZA runs the world's largest network of economists, whose research aims to provide answers to the global labor market challenges of our time. Our key objective is to build bridges between academic research, policymakers and society.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

## ABSTRACT

---

# The Signal of Applying for a Job under a Vacancy Referral Scheme

Persistent unemployment across OECD countries has led to increasing investments in activation programmes and, as a consequence, rigorous evaluations of the effectiveness of these programmes. The results of these evaluations have been mixed at best. To improve the effectiveness of the activation programmes, it is important to know why we observe these unsatisfactory results. One possible explanation that has been largely underexplored is the signal these programmes send to prospective employers. We investigate this signalling effect in the context of a job-vacancy referral system. To this end, we conduct a state-of-the-art vignette experiment in which HR professionals make hiring decisions concerning fictitious job candidates who apply either under a job-vacancy referral system or directly (without referral). By analysing the experimental data, we provide first causal evidence for a substantial adverse effect of referral on the probability of being hired. In addition, our experimental design allows us to explore whether this effect is heterogeneous by job candidate and recruiter characteristics and what exactly is signalled by the job-vacancy referral. In particular, we find that employers perceive referred candidates as being less motivated than other candidates.

**JEL Classification:** J68, J23, C91

**Keywords:** signalling, activation policies, job referral, policy evaluation, unemployment

**Corresponding author:**

Stijn Baert  
Ghent University  
Sint-Pietersplein 6  
B-9000 Ghent  
Belgium  
E-mail: [Stijn.Baert@UGent.be](mailto:Stijn.Baert@UGent.be)

# **1. Introduction**

In order to alter the trend of persistent unemployment over recent decades, the majority of OECD countries have invested vast amounts of public funds in active labour market policies (ALMPs; Martin, 2014; Martin & Grubb, 2001). These investments have logically resulted in a surge in micro-econometric research evaluating the effectiveness of these policy instruments (Card et al., 2010, 2015; Greenberg et al., 2003; Heckman et al., 1999; Kluve, 2010; Liechti et al., 2017). The results of these evaluations are mixed at best. Overall, the effectiveness of ALMPs in terms of exit out of unemployment depends largely on the type of ALMP, its target group and the time horizon of the evaluation (Card et al., 2010, 2015; Kluve, 2010; Martin & Grubb, 2001). Moreover, the few studies that have taken the costs of these programmes into account indicate that the benefits of ALMPs do not outweigh their costs (Albanese et al., 2016; Card et al., 2015; Crépon et al., 2013; Jespersen et al., 2008). The ALMP central to this study, a job-vacancy referral scheme, exhibits the same mixed effectiveness. While some studies find positive results of this kind of programme with respect to exit out of unemployment (Bollens & Cockx, 2016; Fougère et al., 2009; van den Berg et al., 2014), others find no impact at all (Engström et al., 2012; van den Berg & van der Klaauw, 2006). Moreover, some of the studies that present positive effects of job-vacancy referrals show that the higher job-finding rate as a result of referral goes hand in hand with a lower job quality (van den Berg et al., 2016; van den Berg & Vikström, 2014).

Measuring the effectiveness of these policies in terms of their desired outcomes

is in no doubt important. However, if one aims to reform ALMPs to increase their effectiveness, one needs to go beyond measuring and look at possible explanations for the unsatisfactory effectiveness. One possible explanation documented in the literature is the signal associated with ALMPs. Signalling theory states that when individuals are faced with limited information, they will use particular components of this information to predict unobserved factors (Arrow, 1973; Blanchard & Diamond, 1994; Moscarini, 1977; Spence, 1973; Vishwanath, 1983). In this respect, we can expect a positive as well as a negative signal sent to prospective employers by a job-vacancy referral.<sup>1</sup> On the one hand, candidates applying for a position at the request of a public employment service (PES) have gone through an initial screening process and have been deemed suitable for the position by the PES. In other words, the vacancy referral could be seen as a signal of improved suitability (Bellis et al., 2011). On the other hand, employers could see referred applicants as candidates who do not have the ability to succeed in the labour market on their own and/or only apply to comply with benefit rules (Bonoli & Hinrichs, 2010; Bellis et al., 2011; Ingold & Stuart, 2014). As a consequence, being referred to a vacancy has been theoretically related to lower intellectual and/or social abilities (Bellis et al., 2011; Ingold & Stuart, 2014), lower trainability (Thurow, 1975), negative evaluation by previous employers (Banerjee, 1992; Bikhchandani et al., 1992) and, most commonly cited, lower motivation (Bonoli & Hinrichs, 2010; Ingold & Stuart, 2014).

The existing empirical literature on the signal of ALMPs is limited and mainly

---

<sup>1</sup> Throughout the present article, we assume that employers are aware if a candidate has been referred to a vacancy. As explained in Subsection 2.1, this is a realistic assumption in the case of the referral scheme central to our study.

of a qualitative nature (Bellis et al., 2011; Bonoli & Hinrichs, 2010; Ingold & Stuart, 2014; Liechti et al., 2017). Little or no causal evidence has been presented for signalling as an explanation for the limited effectiveness of these policies. Falk et al. (2005) and Liechti et al. (2017) are notable exceptions. By means of a field experiment, Falk et al. (2005) measure how completing a computer training programme impacts job-finding rates. More concretely, they compare the call-back rates for job candidates with and without this kind of training. They find that completing a computer training programme does not yield higher call-back rates. Liechti et al. (2017) quantify the signalling value of different types of ALMPs, including training programmes and subsidised employment, by means of a factorial survey experiment. They find that employers do take ALMP participation into account when making hiring decisions, but the signalling effect of this participation can be both positive as well as negative, depending on the potential candidate's distance from the labour market.

In this study, we investigate the signalling value of a distinct type of ALMP: a job-vacancy referral. To this aim, we conduct a state-of-the-art vignette experiment with human resource (HR) professionals. We ask these participants to make fictitious hiring decisions concerning job candidates described on vignettes. Half of these candidates are indicated as applying under a job-vacancy referral scheme. Besides being rated in terms of hireability, these fictitious candidates are evaluated on statements related to the five potential signals sent by applying in the context of a referral as listed above (motivation, intellectual abilities, social abilities, trainability, and previous unfavourable evaluation by other employers). The data collected by

means of this experiment allow us to answer three research questions.

**R1:** Does applying for a job under a job-vacancy referral scheme yield lower hiring chances?

**R2:** Is the signalling effect of applying for a job under a vacancy referral scheme heterogeneous by candidate and participant characteristics?

**R3:** Which particular signals are sent by applying for a job under a vacancy referral scheme?

The present study complements the work by Falk et al. (2005) and Liechti et al. (2017) by quantifying the signalling value of a different type of ALMP. In addition, by means of answering R3, we contribute to this literature by being the first to investigate which signal(s) is (are) particularly sent by participation in ALMPs in general and applying under a vacancy referral scheme in particular. This is of particular policy relevance because it shows which prejudices against the unemployed applying for jobs under a job-vacancy referral scheme should be compensated for.

The remainder of the study is structured as follows. Section 2 describes the institutional setting, our experimental design, and the realised data collection. Our research questions are answered in Section 3, where results from analysis of the experimental data are presented. Section 4 concludes, focussing on both the academic and policy implications of our research.



## 2. Experiment

To answer R1, R2, and R3, we conducted a vignette experiment. In this kind of experiment, participants are asked to judge fictitious descriptions (presented on vignettes) that differ on a pre-defined number of variables (the vignette factors), which are randomly assigned a value (the vignette-levels; Auspurg & Hinz, 2014; Jasso, 2006; Rossi & Nock, 1982; Sauer et al., 2011). As a consequence of these design features, correlation between the vignette factors are minimised to a value close to 0 (Rossi & Nock, 1982), a situation which rarely occurs outside an experimental setting. The biggest advantage of vignette experiments is, therefore, that they enable scholars to give a causal interpretation to the measured effects of the included vignette factors on human decisions (Damelang & Abraham, 2016; Wallander, 2009). Moreover, as opposed to field experiments, vignette experiments have the added benefit of creating the opportunity to ask additional questions to unravel the thinking process behind certain decisions and, consequently, to shed light on why we observe certain phenomena.

Vignette experiments have recently been the method of choice for a number of prominent studies in sociology and economics investigating human judgement (Ambuehl & Ockenfels, 2017; Auspurg et al., 2017; Eriksson & Kristensen, 2014; Mathew, 2017; Rivera & Tilcsik, 2016). In particular, this type of experiment has been increasingly used to study dynamics in hiring decisions (Auer et al., 2016; Damelang & Abraham, 2016; Di Stasio, 2014; Di Stasio & Gërkhani, 2015; Liechti et al., 2017; McDonald, 2017; Van Belle et al., 2017; Van Hove & Lievens, 2003).

In this application of the vignette experimentation framework, participants have to judge fictitious candidates with divergent characteristics as vignette factors. As a consequence, these vignette experiments closely mimic real-life hiring situations, where HR professionals also take a number of characteristics into account when making hiring decisions. In our application, we included as a vignette factor whether job candidates applied to this vacancy under a job-vacancy referral system or on their own initiative. Exogenous variation in this factor would be hard to find in observational data.

The next subsections describe the specific institutional framework under study, the design of our vignettes, and the data gathering process. We return to some potential limitations of our experimental design in Section 4.

## **2.1. Institutional Framework**

Our study focusses on a job-vacancy referral scheme implemented by the PES of Flanders, the northern part of Belgium. In essence, this scheme matches open vacancies with jobseekers and, subsequently, forces jobseekers to apply for the vacancies matched to them. There are two types of possible referrals. In the case of a classic referral, a case worker, possibly aided by matching software, matches an open vacancy with an unemployed benefit recipient, who is then obliged to apply for it. In the alternative type of referral, the caseworker invites the unemployed person for a meeting, during which they go over a set of potentially relevant vacancies. If the unemployed person and the caseworker agree that a particular vacancy suits the person's profile, (s)he is obliged to apply. In both cases, non-compliance with the

referral may result in a reduction or loss of benefits. In the context of monitoring this compliance, the PES informs the employer about the referral. This happens at, or soon after, the time of referral.<sup>2</sup> So, in principle, the employer is aware that a candidate is referred by the PES prior to this candidate's actual job application.<sup>3</sup>

Bollens and Cockx (2016) used a timing-of-events approach to investigate the effectiveness of this job-vacancy referral scheme in terms of entry to employment. They found substantial positive treatment effects both during the month of the referral and over the course of the following months. However, the positive total effect of the referral measured by Bollens and Cockx (2016) combines supply-side and demand-side effects of the programme so that it does not rule out a negative signalling effect of this job-vacancy referral scheme. Moreover, at the time of the evaluation performed by Bollens and Cockx (2016), employers were informed about the referral in approximately only 25% of the cases, so that demand-side dynamics might have been less influential then.

## **2.2. Vignette Design**

We asked a sample of HR professionals described in the subsection below to evaluate a set of five vignettes, each describing one potential fictitious candidate for an open vacancy. These job applicants differed in the six vignette factors defined in Table 1. The main factor of interest was the one indicating whether or not candidates were

---

<sup>2</sup> More concretely, this happens automatically via a software program for employers with a profile in the PES database and manually—but very soon after the matching is done—for employers without such a profile.

<sup>3</sup> The information on the referral procedure was given to us by caseworkers of the PES of Flanders. A transcript of this information is available upon request.

referred to the position by the PES.<sup>4</sup> More precisely, and in line with reality, candidate summaries could either mention that the candidate applied for the position directly or was referred by the PES. In the latter case, it was mentioned explicitly that this entailed that the candidate was obliged to apply for this suitable vacancy. Besides this factor, applicants differed in gender (male or female), educational attainment (secondary education certificate or bachelor's degree), previous work experience (two or five years), whether they mentioned social activities (none or volunteering activities), and unemployment duration prior to the application (1 to 36 months). These vignette factors were chosen on the basis of a literature review of drivers of job-application success (Damelang & Abraham, 2016; Di Stasio, 2014; Di Stasio & Gërxhani, 2015; Liechti et al., 2017; Van Belle et al., 2017) and an interview with three HR professionals.<sup>5</sup> In addition, we ran a pilot study with 30 master's students in Economics to test whether our vignettes were perceived as plausible and that no crucial information was omitted.

**< Table 1 about here >**

After fully crossing all vignette levels for the six mentioned factors, we obtained a vignette universe of 1,152 (i.e.  $2 \times 2 \times 2 \times 2 \times 2 \times 36$ ) vignettes. We used a D-efficient randomisation to minimise correlation between the different vignette factors. More concretely, following the algorithm in Auspurg and Hinz (2014), we selected 60 sets of 5 vignettes, allowing us to achieve a D-efficiency of 99.809.<sup>6</sup>

---

<sup>4</sup> As argued in Subsection 2.1, it is highly likely that a Flemish employer is aware that a candidate is referred to a position by the PES so that this is a realistic vignette factor.

<sup>5</sup> Transcripts of these interviews are available upon request.

<sup>6</sup> This design maximises both orthogonality and level balance, thereby enhancing statistical precision (Auspurg & Hinz, 2014). Formally, this approach maximises the D-efficiency, which is given by the following formula:

Each participant was randomly assigned one of these 60 sets. The resulting correlations between our vignette factors can be found in Table A1 (in Appendix A) and show that our randomisation approach was successful.

### 2.3. Data Collection

We conducted our experiment in January 2017 with Flemish recruiters. The experiment was part of a large-scale survey performed with individuals that selected themselves in a database of volunteers for participation in research on human resource management. At the start of this survey, the participants were asked whether they had been actively involved in the hiring process a minimum of five times during the past year. Participants who answered this question in a positive way had a 50% probability of being assigned to our experiment (and a 50% probability of being assigned to the experiment of Van Belle et al. (2017)). In total, 234 recruiters took part in our experiment. Of these respondents, 29 left one or more questions unanswered, leaving us with a total sample of 205 participants. Each participant rated five vignettes, yielding a total of 1,025 at the participant-vignette level.<sup>7</sup>

As a first step, each participant received experimental instructions. They were introduced to their role as a recruiter for a fictitious company supplying building

---


$$D - efficiency = 100 * \frac{1}{n_s * |(X'X)^{-1}|^{\frac{1}{p}}} = 100 * (\frac{1}{n_s} * |X'X|^{\frac{1}{p}}),$$

where  $X$  is the vector of the vignette variables,  $n_s$  indicates the number of vignettes in the sample and  $p$  presents the number of regression coefficients (including the intercept) in the analysis of the experimental data. For more information, we refer to Auspurg and Hinz (2014).

<sup>7</sup> Liechti et al. (2017) argue that the response rate in this type of experiment is of lesser importance as long as each profile is judged by multiple participants. This is the case here, as each profile was judged by an average of 3.417 participants (i.e. 205 [respondents] divided by 60 [sets of profiles]).

materials. In this role, they were responsible for filling an open vacancy for a new counter assistant—we selected this occupation because it is common in a number of industries, thus increasing the probability that participants would be familiar with it. Participants were informed that the successful candidate had to be (i) customer orientated, (ii) service minded, and (iii) commercially orientated. Moreover, the company was looking for someone able to perform administrative tasks in an efficient and reliable way. No specific education or work experience was required. Subsequently, each participant was shown five vignettes (as described in the previous section). It was stressed that all five candidates had passed an initial screening by an administrative staff member. In line with the literature, the applicants' characteristics were presented in a tabulated way. Participants, though aware of participating in an experiment, were not informed of the goal or the topic of the experiment, which was framed in rather general terms.

With this information in hand, participants were asked to reveal, for each candidate, their hiring intentions. They were specifically asked to rate the statements 'The probability that I will invite this candidate for a job interview is high' and 'The probability that I will hire this candidate for the position is high' on a 7-point Likert scale. In the remainder of this article, these scales will be referred to as the 'interview scale' and the 'hiring scale', respectively.

In addition, in view of answering R3, participants were prompted to rate five statements (also on a 7-point Likert scale) linked to the different signals that could be sent by a job-vacancy referral prevalent in the literature and as described in Section 1. So, perceptions concerning the candidates' (i) motivation, (ii) intellectual

abilities, (iii) social abilities, (iv) trainability, and (v) previous unfavourable evaluation by other employers were tested. The statements used can be found in Table A2. We limited the experimental survey to one statement per signal to keep the overall time taken up by the experiment within a reasonable limit (taking into account that each respondent was asked to review multiple profiles).

Finally, in view of answering R2, some personal characteristics of the respondents were surveyed, including their gender, age, nationality, educational attainment, frequency of hiring, and experience with the hiring process.

Panel A of Table 2 presents some summary statistics concerning the participants in our experiment. Participants had an average age of about 43 years, with most being Belgian nationals and having some form of tertiary education. They were slightly more likely to be female than male. A total of 46.8% of the respondents indicated that they recruited someone on at least a weekly basis, while 55.1% indicated having at least ten years' experience as a recruiter.

**< Table 2 about here >**

In columns (2) and (3) of Table 2 the research sample is split by the referral status of the judged job candidate. Column (4) presents the difference between these two columns as well as the results of a t-test to determine whether these differences are statistically significant. Given that each respondent judged five candidate profiles, our data are inherently nested. We control for this by clustering at the participant level. Overall, the information in Panel A of Table 2 allows us to conclude that referral status was successfully randomised over the participants.

### 3. Results

#### 3.1. Does Applying for a Job Under a Job Referral Scheme Yield Lower Hiring Chances?

A first indication of the signalling effect of applying for a job under a job-vacancy referral scheme is given in Figure 1. On the left-hand side, the average rating on the interview and hiring scales by referral status is depicted. It is clear that candidates referred to the vacancy by the PES are both less likely to be invited for an interview ( $p = 0.000$ ) and less likely to be hired ( $p = 0.000$ ) for the position. The average rating on the interview (hiring) scale is 0.657 (0.643) lower for referred candidates than for direct applicants. In other words, given that the standard deviation of the interview (hiring) scale is 1.608 (1.414), being referred to the vacancy decreases the probability of an interview (getting hired) by 40.9% (45.5%) of a standard deviation. The same information can be inferred from Panel B of Table 2.

< Figure 1 about here >

Due to our experimental set-up—the referral dummy is, by design, uncorrelated with any of the other observable candidate characteristics—these effects can be given a causal interpretation. In addition, due to the random allocation of vignette sets to participants, we do not expect any correlation with the participant characteristics. This is also confirmed when we estimate the following econometric model:

$$Y = \alpha + \beta CC + \gamma PC + \delta REF + \varepsilon. \quad (1)$$

In this model, *REF* is the candidate's referral status (1 in case of referral, 0 in case



of direct application);  $CC$  is the vector of the other vignette factors mentioned in Subsection 2.2; and  $PC$  is the vector of participant characteristics mentioned in the same subsection. The dependent variable of this model,  $Y$ , can be either the interview or hiring scale.  $\beta$ ,  $\gamma$ , and  $\delta$  are the (vectors of) parameters associated with  $CC$ ,  $PC$ , and  $REF$  and  $\alpha$  represents the intercept in this equation. Finally, standard error  $\varepsilon$  is corrected for clustering of the observations at the participant level.

The estimation results of this model are reported in column (1) of Table 3 and Table A3, with the interview and hiring scales as respective outcomes. Again, in Panel A of this table, we observe that candidates who are referred to the position by the PES are less likely to be invited for an interview—the related coefficient is substantial in both economic and statistical terms. This clearly indicates that being referred to a position by the PES has a negative signalling effect in respect of employers. This finding corroborates the qualitative evidence on the signalling effect of ALMP participation mentioned in Section 1 (Bellis et al., 2011; Bonoli & Hinrichs, 2010; Ingold & Stuart, 2014). Moreover, the negative signal of a job-vacancy referral could be part of the explanation for the unsatisfactory results of these programmes in terms of employment outcomes. Finally, our finding indicates that the positive effect of the Flemish referral system on employment outcomes, as found in Bollens and Cockx (2016), could be even larger if this adverse signalling effect could be reduced. We return to this point in Section 4.

**< Table 3 about here >**

Concerning the other vignette factors, the estimated coefficients all have the expected signs. While gender has no effect on the likelihood of being invited for an

interview, having a bachelor's degree (as opposed to a secondary-level education) and having five (as opposed to two) years' professional experience clearly enhances one's chances of being invited, as does mentioning volunteering activities.<sup>8</sup> On the other hand, in line with what was found by Van Belle et al. (2017), the longer a candidate has been unemployed prior to the position, the lower her/his chances of being invited for an interview. If we turn to the coefficients related to the participant characteristics (in Panel B of Table 3), we see that female and older recruiters are more lenient in their judgement, while recruiters who are involved in the hiring process at least once a week tend to be stricter.

The corresponding estimation results when adopting the hiring scale as the outcome variable (Table A3, column (1)) are largely in line with the discussed results when using the interview scale as the dependent variable. However, the significant effect of recruiter gender disappears.

### **3.2. Is this Effect Heterogeneous by Candidate and Subject Characteristics?**

To determine whether the signalling effect of the job-vacancy referral depends on other candidate characteristics, we re-estimate equation (1) including interaction terms between the referral dummy and each of the five other vignette factors. After

---

<sup>8</sup> The fact that mentioning volunteering activities appears to have a larger effect on one's hiring chances than having completed a higher education programme or having three years of additional work experience might seem surprising. However, this result is in line with what is found by Baert and Vujic (in press), who show by means of a field experiment that job candidates mentioning volunteering receive one-third more interview invitations. Moreover, multiple studies have shown that volunteering activities appear to have a positive impact on earnings (Day & Devlin, 1997, 1998; Detollenaere et al., 2017; Gozzi et al., 2013; Hackl et al., 2007; Prouteau & Wolff, 2006; Sauer, 2015) and that this volunteer work, when done by ethnic minorities, may even cancel out ethnic discrimination in the labour market (Baert & Vujic, 2016).

including these interactions, the remaining coefficient of the referral dummy should be interpreted as the effect of a referral for a reference candidate, i.e. a male candidate with high school certification and two years' experience who has been unemployed for zero months and did not mention any social activities on his CV. The results of this exercise are reported in column (2) of Table 3 and Table A3. We find that the signalling value of the job-vacancy referral scheme is not moderated by any of the other candidate characteristics. In particular, it is interesting to note that the negative effect of a PES referral does not vary with the length of the unemployment spell. If we observed such an interaction effect, this could have been interpreted as suggestive evidence of employers assuming that the long-term unemployed simply apply via the PES to keep receiving benefits (without being intrinsically motivated to fill the vacancy).

Secondly, in column (3) of Table 3 and Table A3 we present the results of a similar analysis to study whether the effect of the job-vacancy referral is heterogeneous by type of recruiter. More concretely, compared to column (1), interaction terms between referral and the participant characteristics are adopted. In contrast to the candidate characteristics, the observed participant characteristics are not experimentally controlled and can, as a consequence, correlate with unobserved participant traits. Thus, the interaction effects presented in column (3) cannot be given a causal interpretation. However, we find that the effect of being referred to a vacancy is not heterogeneous by any of the participant characteristics.

### **3.3. Which Signals Are Sent by Applying for a Job Under a Job Referral Scheme?**

In this subsection, we explore what exactly is signalled by the job-vacancy referral scheme, thereby examining why applying via a referral decreases one's hiring chances. The right-hand side of Figure 1 (and Panel C of Table 2) gives us a first indication of the empirical importance of the possible signals put forward in the literature and enumerated in Section 1. It is revealed that the candidates who apply for the open vacancy directly, without action by the PES, score better, on average, on all five statements related to these signals than those candidates who have been referred to the vacancy by the PES. So, referred candidates are, indeed, perceived as less motivated, less intellectually gifted, less socially gifted and less trainable, as well as having been rejected more often by other employers. These perceptions are statistically significant (at the 1% level), with the exception of the last one. In terms of economic significance, it is striking that the effect of referral on perceived motivation of the candidate is substantially higher than its effect on the other perception scales.

Finally, we estimate a mediation model, where these five potential signals related to referral are included jointly. This has two important advantages. Firstly, we can estimate the prominence of each signal independently. This is important as the signals potentially correlate with each other.<sup>9</sup> Secondly, in addition to looking at the impact of the referral on the signals, the model takes the importance of the signals in terms of invitation (or hiring) probability into account as well. This enables us to

---

<sup>9</sup> Indeed, these correlations range from  $r = 0.135$  (between perceived social abilities and perceived evaluation by other employers) to  $r = 0.632$  (between perceived social abilities and trainability).

look at what part of the total effect of the referral on hiring is explained by each signal. The estimated model consists of the following system of equations (in line with Hayes (2013) and Van Belle et al. (2017)):

$$M_i = \alpha_i + \beta_i CC + \gamma_i PC + \delta_i REF + \varepsilon_i; \quad (2)$$

$$Y = \alpha' + \beta' CC + \gamma' PC + \delta' REF + \theta M + \varepsilon'. \quad (3)$$

In this system,  $CC$ ,  $PC$ ,  $REF$ , and  $Y$  are the same variables as those defined in the context of equation (1). In addition,  $M$  is the vector of mediators capturing perceived motivation, intellectual abilities, social abilities, trainability, and evaluation by other employers, respectively.  $\beta_i$ ,  $\gamma_i$ , and  $\delta_i$  are the (vectors of) parameters associated with  $CC$ ,  $PC$ , and  $REF$  in the equations with  $M_i$  as a dependent variable, and  $\alpha_i$  represents the intercept in these equations.  $\beta'$ ,  $\gamma'$ ,  $\delta'$ , and  $\alpha'$  are the corresponding parameters in the equation with  $Y$  as a dependent variable. Finally,  $\theta$  is the vector parameters associated with the mediating signals in the latter equation. As a consequence,  $\delta'$  is the remaining direct effect of the referral after controlling for the five mediators. The products  $\delta_i \theta_i$  are the indirect effects of the referral on  $Y$  through each mediator  $M_i$ . In line with Hayes (2013), we estimate this system of six equations simultaneously and, as before, correct the standard errors  $\varepsilon_i$  and  $\varepsilon'$  for clustering of the observations at the participant level.

The main results of this analysis with the interview scale (hiring scale) as the outcome are reported in Figure 2 (Figure A1). The corresponding full estimation results are reported in Table 4 (Table A4). Just as was the case with the overall signalling effect discussed in Section 3.1, the effect of the referral on each of the five

perceptions concerning the candidate (i.e. the  $\delta_i$  in our model) can be interpreted as causal effects as a consequence of the random assignment of a referral to the vignettes. In contrast, the effect of these perceptions on the interview (and hiring) scale (i.e. the  $\theta_i$  in our model) cannot be given a causal interpretation as the included mediators could correlate with other, unobserved, signals related to applying under a job-vacancy referral system. As a consequence, also the mediation effects  $\delta_i\theta_i$  should be seen as associations rather than as causal effects. We return to this point in Section 4.

**< Figure 2 about here >**

**< Table 4 about here >**

The left-hand side of Figure 2 shows the effect of the referral on each of the five mediators. Also after controlling for the other mediators, candidates with a referral are perceived as being less motivated, possessing less intellectual and social abilities, and being less trainable. Again, the impact of a referral on perceived motivation is substantially larger than its impact on any of the other potential signals. Finally, being referred to the vacancy does not have any effect on the perceived evaluation by other employers, and in terms of magnitude.

The right-hand side of Figure 2 reports the effect of the different signals on the likelihood of being invited for a job interview. We find that having higher perceived motivation, higher perceived intellectual or social abilities, and a better perceived evaluation by other employers all significantly enhance one's chances of being invited for a job interview. In contrast with what is expected based on queuing theory (Thurow, 1975), we find that perceived trainability does not have any impact on the

probability of being invited for a job interview.

By multiplying the left- and right-hand sides of this figure, we can decompose the total effect of a referral on the likelihood of being invited for a job interview ( $\delta = -0.655$ ;  $p = 0.000$ ) found in Subsection 3.1 into a remaining direct effect and indirect effects via perceptions concerning the candidate's motivation, intellectual ability, social ability, trainability, and evaluation by other employers. We find a substantial mediation effect related to perceived motivation ( $\delta_1\theta_1 = -0.492$ ;  $p = 0.000$ ): 75.1% (i.e.  $-0.492/-0.655$ ) of the total effect of a referral on the interview probability is explained by this referral constituting a negative signal of motivation. Additionally, being referred to a vacancy also constitutes a signal of lesser intellectual ( $\delta_2\theta_2 = -0.042$ ;  $p = 0.010$ ) and social ( $\delta_3\theta_3 = -0.027$ ;  $p = 0.043$ ) abilities. However, these coefficients are very small compared to the mediation effect related to perceived motivation. The measured direct effect ( $\delta' = -0.090$ ;  $p = 0.235$ ) is the part of the total effect that remains unexplained by the inclusion of the mediators. Given that this direct effect is not significantly different from zero, we can infer that the signals included in our mediation model fully explain the effect of a referral on interview chances.

These findings corroborate the evidence from qualitative research suggesting that referral is seen as a signal of lower motivation (Bellis et al., 2011; Ingold & Stuart, 2014). They seem to indicate that employers do view the candidates who apply via the PES as candidates who mainly apply in order to continue receiving benefits, which contrasts with the insignificant interaction effect between referral and unemployment duration, as elaborated on in Subsection 3.2.

The results of the mediation analysis with the probability of being hired for the position as the outcome variable are largely similar to the results with the probability of a job interview as the outcome variable.

## **4. Conclusion**

This article contributed to the literature on the effectiveness of active labour market policies. As argued, the evaluation literature has mainly focused on measuring the overall effectiveness of these programmes, with mixed results. Therefore, in our opinion, the logical next step to take in this literature is to explain why this unsatisfactory effectiveness exists. In this study, we investigated the signalling effect of applying for a job through a vacancy referral scheme. Based on a vignette experiment with HR professionals, we provided first causal evidence for a large negative effect of being referred on one's probability of getting invited to a job interview and finally getting the job. In addition, our experimental design allowed us to explore what exactly is signalled by a job-vacancy referral, testing five potential signals documented in the literature: lower motivation, lower intellectual abilities, lower social abilities, lower trainability, and poor evaluation by other employers. The single most important explanation appeared to be that candidates applying for a position after a PES referral were perceived as significantly less motivated. This corroborates earlier qualitative findings by Bonoli and Hinrichs (2010), Bellis et al. (2011), and Ingold and Stuart (2014).

Besides their academic relevance, our results have substantial policy



implications. Our findings are consistent with two possible scenarios. Either the referred candidates are indeed less motivated and the employers act on the basis of earlier experience, or the referred candidates are, in reality, at least on average, not less motivated than general candidates. In the first situation, it is important to know whether those referred are intrinsically less motivated or whether it is the referral which causes the lower motivation. If those referred are intrinsically less motivated, the PES should link the referrals to other policies to increase the benefit recipient's motivation. If it is the referral that is lowering the benefit recipient's motivation, one might question the usefulness of the referral scheme. If, on the other hand, the second scenario is the true scenario, it is important to reverse the negative perception of referred applicants. We see two ways of doing this. One way would be simply not to inform employers of the referral status of applicants. As aforementioned, at the time of Bollens and Cockx's (2016) study, the employer was only informed of a candidate being referred by the PES in approximately 25% of the cases. As they found a large positive effect of the referral on job-finding probabilities, this suggests that not informing employers about a referral could indeed mitigate the negative effect on hiring probabilities. However, if the unemployed person is aware that the employer is not informed about the existence of the referral, and consequently, the PES cannot effectively monitor compliance, this might lower the overall effectiveness of the referral as there will no longer be a threat effect. Another way would entail the PES informing employers better that the referred candidates have gone through an initial screening and should therefore be a better match to the vacancy than other candidates. Overall, our findings suggest that there is room for improvement in the implementation of the vacancy referral scheme in Flanders.

We end this article by acknowledging some limitations inherent to our experimental approach. Firstly, contrary to field experiments, the data collection within a vignette experiment does not take place under real-life circumstances, and participants are aware that they are taking part in an experiment. This creates the risk of participants answering in a socially desirable way. However, we believe this to be less of a concern in our vignette experiment for a number of reasons. An important feature of a vignette experiment is that each participant is shown only a small number of vignettes, and these vary on a number of factors. Therefore, it is very difficult for the participant to ascertain the socially desirable answer (Auspurg et al., 2014; Liechti et al., 2017; Mutz, 2011). Vignette experiments have been able to identify unequal treatment, even when used to investigate socially sensitive topics such as unequal treatment based on gender and race (Auspurg & Hinz, 2014). Moreover, if we did record some socially desirable answers in our experiment, the results described in this study could be seen as a lower bound of the true effects. To determine whether or not this is the case, it would be interesting to replicate our study by means of a field experiment, although it would not be straightforward to inform employers on the referral status of applicants in a realistic way, and this type of experiment would not allow insight into the specific signals of a job-vacancy referral scheme. Secondly, it is important to recall that we only measured the effect of referral on hiring for individuals with a specific profile applying for a specific position. As a consequence, we cannot say to what extent our results are generalisable to settings with different jobs and candidate profiles. Further research is necessary to ensure the robustness of our results in another setting (see also Van Belle et al., 2017). Thirdly, as mentioned in Section 3.3, we cannot give a causal interpretation to our mediation

analysis aimed at decomposing the overall effect of referral on hiring chances into a direct effect and five indirect effects via the particular signals theoretically related to a referral. While the treatment of a referral is randomly assigned to the fictitious job candidates within our experiment, the five potential signals related to this referral are not experimentally manipulated. As a consequence, they may correlate with other, unobserved, perceptions. Nevertheless, we believe that the suggestive evidence for our overall (and causal) negative signalling effect of applying for a vacancy under a referral scheme being, to a large extent, explained by a negative (and causal) impact of applying under this scheme on signalled motivation is a substantial input for further research.

## References

- Albanese, A., Cockx, B., & Thuy, Y. (2016). Working time reductions at the end of the career. Do they prolong the time spent in employment? (IZA Discussion Papers, 9619)
- Ambuehl, S., & Ockenfels, A. (2017). The ethics of incentivizing the uninformed: A vignette study. *American Economic Review*, 107, 91–95.
- Arrow, K. J. (1973). The theory of discrimination. In O. Ashenfelter & A. Rees (Eds.), *Discrimination in labour markets*. Princeton: Princeton University Press.
- Auer, D., Bonoli, G., Fossati, F., & Liechti, F. (2016). *The matching hierarchies model: Evidence from a survey experiment on employers' hiring intent of*

*immigrant applicants*. Unpublished manuscript.

Auspurg, K., & Hinz, T. (2014). *Factorial survey experiments*. Thousand Oaks: Sage.

Auspurg, K., Hinz, T., Liebig, S., & Sauer, C. (2014). The factorial survey as a method for measuring sensitive issues. In U. Engel, B. Jann, P. Lynn, A. Scherpenzeel, & P. Sturgis (Eds.), *Improving survey methods: Lessons from recent research*. New York: Routledge.

Auspurg, K., Hinz, T., & Sauer, C. (2017). Why should women get less? Evidence on the gender pay gap from multifactorial survey experiments. *American Sociological Review*, 82, 179–210.

Baert, S., & Vujčić, S. (2016). Immigrant volunteering: A way out of labour market discrimination? *Economics Letters*, 146, 95–98.

Baert, S., & Vujic, S. (in press). Does it pay to care? Volunteering and employment opportunities. *Journal of Population Economics*. DOI: 10.1007/s00148-017-0682-8.

Banerjee, A. (1992). A simple model of herd behaviour. *Quarterly Journal of Economics*, 107, 797–817.

Bellis, A., Sigala, M., and Dewson, S. (2011). Employer engagement and Jobcentre Plus, Research Report No. 742, Sheffield: DWP.

Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom and cultural change as informational cascades. *Journal of Political Economy*, 100, 992–1026.

- Blanchard, O. J., & Diamond, P. (1994). Ranking, unemployment duration, and wages. *Review of Economic Studies*, 61, 417–434.
- Bollens, J., & Cockx, B. (2016). Effectiveness of a job vacancy referral scheme. *WSE Report 2016*, 2.
- Bonoli, G., & Hinrichs, K. (2012). Statistical discrimination and employers' recruitment: Practices for low-skilled workers. *European Societies*, 14(3), 338–361.
- Burtless, G. (1985). Are targeted wage subsidies harmful? Evidence from a wage voucher experiment. *ILR Review*, 39(1), 105–114.
- Card, D., Kluve, J., & Weber, A. (2010). Active labour market policy evaluations: A meta-analysis. *Economic Journal*, 120(548).
- Card, D., Kluve, J., & Weber, A. (2015). What works? A meta analysis of recent active labour market program evaluations (IZA Discussion Papers, 9236).
- Cozzi, G., Mantovan, N., & Sauer, R. M. (2013). Does it pay to work for free? Wage returns and gender differences in the market for volunteers. *Oxford Bulletin of Economics and Statistics*, 79(6), 1018–1045.
- Crépon, B., Gurgand, M., Kamionka, T., & Lequien, L. (2013). Is counseling welfare recipients cost-effective? Lessons from a random experiment (No. 2013-01). *Centre de Recherche en Economie et Statistique*.
- Damelang, A., & Abraham, M. (2016). You can take some of it with you! *Zeitschrift für Soziologie*, 45, 91–106.
- Day, K. M., & Devlin, R. A. (1997). Can volunteer work help explain the male–

female earnings gap? *Applied Economics*, 29(6), 707–721.

Day, K. M., & Devlin, R. A. (1998). The payoff to work without pay: Volunteer work as an investment in human capital. *Canadian Journal of Economics*, 1179–1191.

Detollenaere, J., Willems, S., & Baert, S. (2017). Volunteering, income and health. *PloS one*, 12(3), e0173139.

Di Stasio, V. (2014). Education as a signal of trainability: Results from a vignette study with Italian employers. *European Sociological Review*, 30, 796–809.

Di Stasio, V., & Gërkhani, K. (2015). Employers' social contacts and their hiring behaviour in a factorial survey. *Social Science Research*, 51, 93–107.

Engström, P., Hesselius, P., & Holmlund, B. (2012). Vacancy referrals, job search, and the duration of unemployment: a randomized experiment. *Labour*, 26(4), 419–435.

Eriksson, T., & Kristensen, N. (2014). Wages or fringes? Some evidence on trade-offs and sorting. *Journal of Labor Economics*, 32, 899–928.

Falk, A., Lalive, R., & Zweimüller, J. (2005). The success of job applications: a new approach to program evaluation. *Labour Economics*, 12(6), 739–748.

Fougère, D., Pradel, J., & Roger, M. (2009). Does the public employment service affect search effort and outcomes? *European Economic Review*, 53(7), 846–869.

Greenberg, D. H., Michalopoulos, C., & Robins, P. K. (2003). A meta-analysis of government-sponsored training programs. *ILR Review*, 57(1), 31–53.

- Hackl, F., Halla, M., Pruckner, G. J. (2007). Volunteering and Income – The Fallacy of the Good Samaritan? *Kyklos*, 60, 77–104.
- Heckman, J. J., LaLonde, R. J., & Smith, J. A. (1999). The economics and econometrics of active labour market programs. *Handbook of Labour Economics*, 3, 1865–2097.
- Ingold, J., & Stuart, M. (2015). The demand-side of active labour market policies: a regional study of employer engagement in the Work Programme. *Journal of Social Policy*, 44(3), 443–462.
- Jasso, G. (2006). Factorial survey methods for studying beliefs and judgments. *Sociological Methods & Research*, 34, 334–423.
- Jespersen, S. T., Munch, J. R., & Skipper, L. (2008). Costs and benefits of Danish active labour market programmes. *Labour Economics*, 15(5), 859–884.
- Kluve, J. (2010). The effectiveness of European active labour market programs. *Labour Economics*, 17(6), 904–918.
- Liechti, F., Fossati, F., Bonoli, G., & Auer, D. (2017). The signalling value of labour market programmes. *European Sociological Review*, 33(2), 257–274.
- Martin, J. P. (2014). Activation and active labour market policies in OECD countries: stylized facts and evidence on their effectiveness (IZA Policy Papers, 84).
- Martin, J. P., & Grubb, D. (2001). What works and for whom: A review of OECD countries' experiences with active labour market policies. *Swedish Economic Policy Review*, 8, 9–56.
- Mathew, S. (2017). How the second-order free rider problem is solved in a small-

- scale society. *American Economic Review*, 107, 578–581.
- McDonald, P. (2017). *Improving our understanding of employer decision-making thanks to factorial survey analysis*. (LIVES Working paper, 2017/61).
- Moscarini, G. (1997). *Unobserved heterogeneity and unemployment duration: A fallacy of composition*. Unpublished manuscript.
- Mutz, D. C. (2011). *Population-based survey experiments*. Princeton: Princeton University Press.
- Prouteau, L., & Wolff, F. C. (2006). Does volunteer work pay off in the labour market? *Journal of Socio-Economics*, 35(6), 992–1013.
- Rivera, L. A., & Tilcsik, A. (2016). Class advantage, commitment penalty: The gendered effect of social class signals in an elite labour market. *American Sociological Review*, 81, 1097–1131.
- Rossi, P. H., & Nock, S. L. (1982). *Measuring social judgments: The factorial survey approach*. Thousand Oaks: Sage.
- Sauer, R. M. (2015). Does it pay for women to volunteer? *International Economic Review*, 56(2), 537–564.
- Spence, M. (1973). Job market signalling. *Quarterly Journal of Economics*, 87, 355–374.
- Thurow, L. C. (1975). *Generating inequality: Mechanisms of distribution in the U.S. economy*. New York: Basic Books.
- Van Belle, E., Caers, R., De Couck, M., Di Stasio, V., & Baert, S. (2017). Why is



unemployment duration a sorting criterion in hiring? (IZA Discussion Papers, 10876).

Van Den Berg, G. J., Hofmann, B., & Uhlendorff, A. (2016). The role of sickness in the evaluation of job search assistance and sanctions. (IZA Discussion Papers, 9626).

van den Berg, G. J., Kjærsgaard, L., & Rosholm, M. (2014). To meet or not to meet, that is the question: Short-run effects of high-frequency meetings with case workers. (IFAU Working Paper, 2014:6).

van den Berg, G. J., & van der Klaauw, B. (2006). Counseling and monitoring of unemployed workers: Theory and evidence from a controlled social experiment. *International Economic Review*, 47(3), 895–936.

van den Berg, G. J., & Vikström, J. (2014). Monitoring job offer decisions, punishments, exit to work, and job quality. *Scandinavian Journal of Economics*, 116(2), 284–334.

Van Hoya, G., & Lievens, F. (2003). The effects of sexual orientation on hirability ratings: An experimental study. *Journal of Business and Psychology*, 18, 15–30.

Vishwanath, T. (1989). Job search, stigma effect, and escape rate from unemployment. *Journal of Labor Economics*, 7, 487–502.

## **Appendix A: Additional Figures and Tables**

**< Figure A1 about here >**

**< Table A1 about here >**

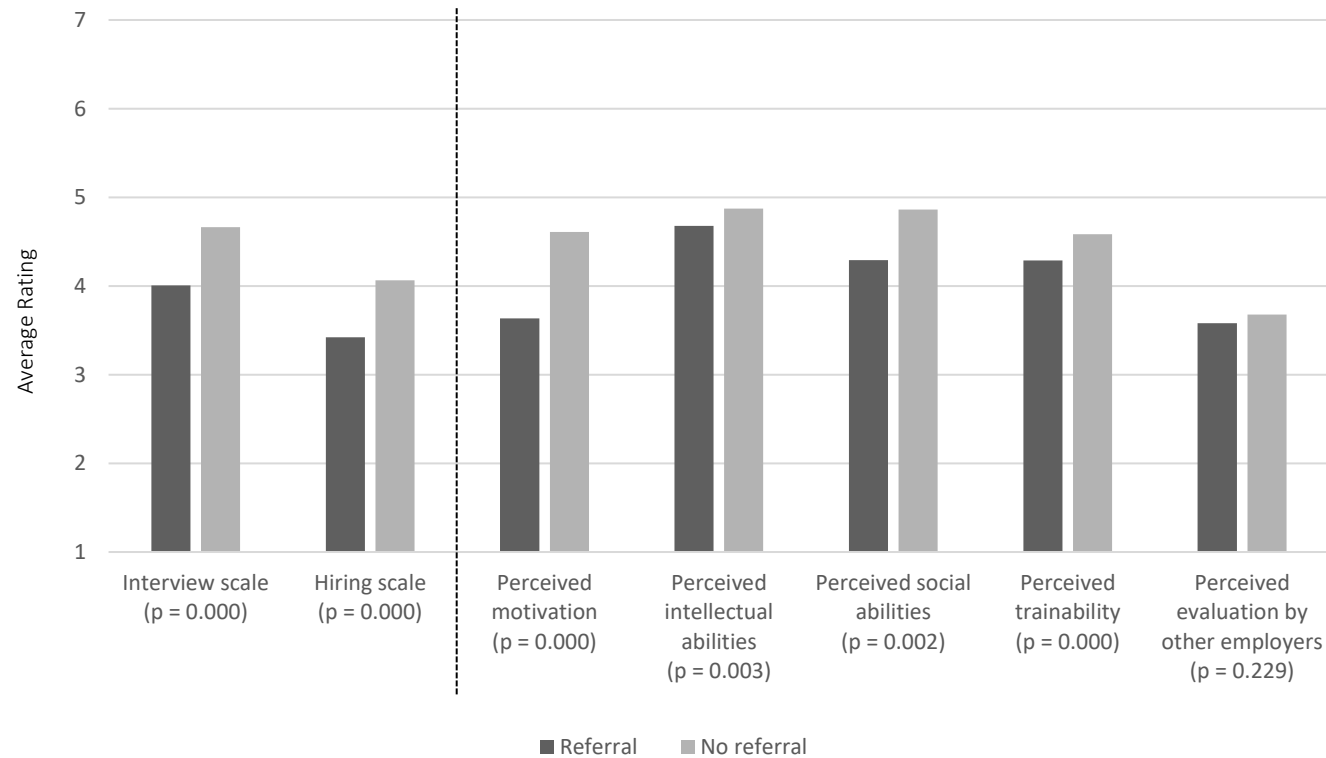
**< Table A2 about here >**

**< Table A3 about here >**

**< Table A4 about here >**

**Figure 1.**

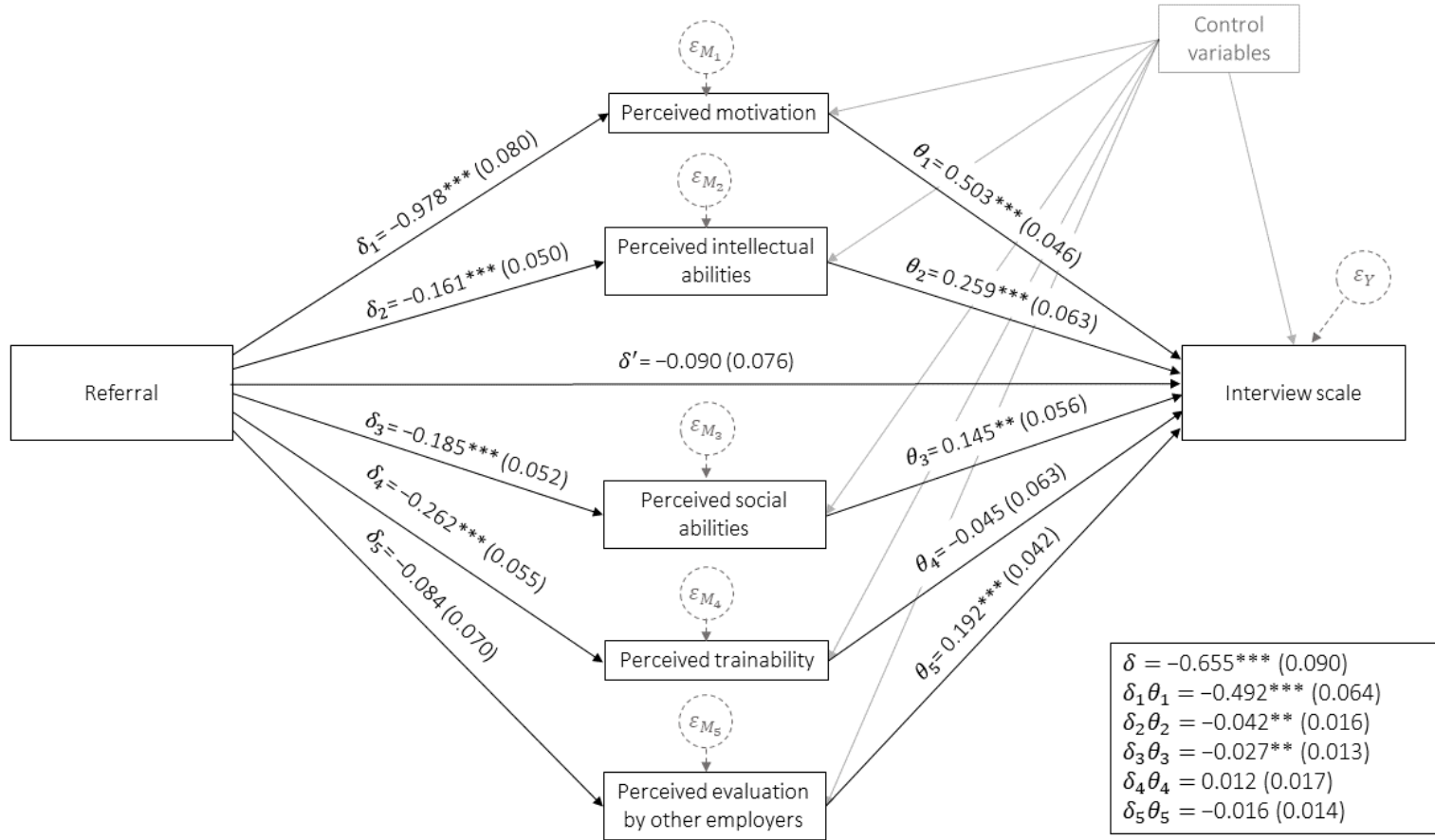
*Differences in Average Ratings by Referral Status of the Candidate*



Note. More information concerning the used scales can be found in Subsection 2.3. T-tests are performed to test whether the presented differences are significantly different from 0. Standard errors are corrected for clustering of the observations at the participant level.

**Figure 2.**

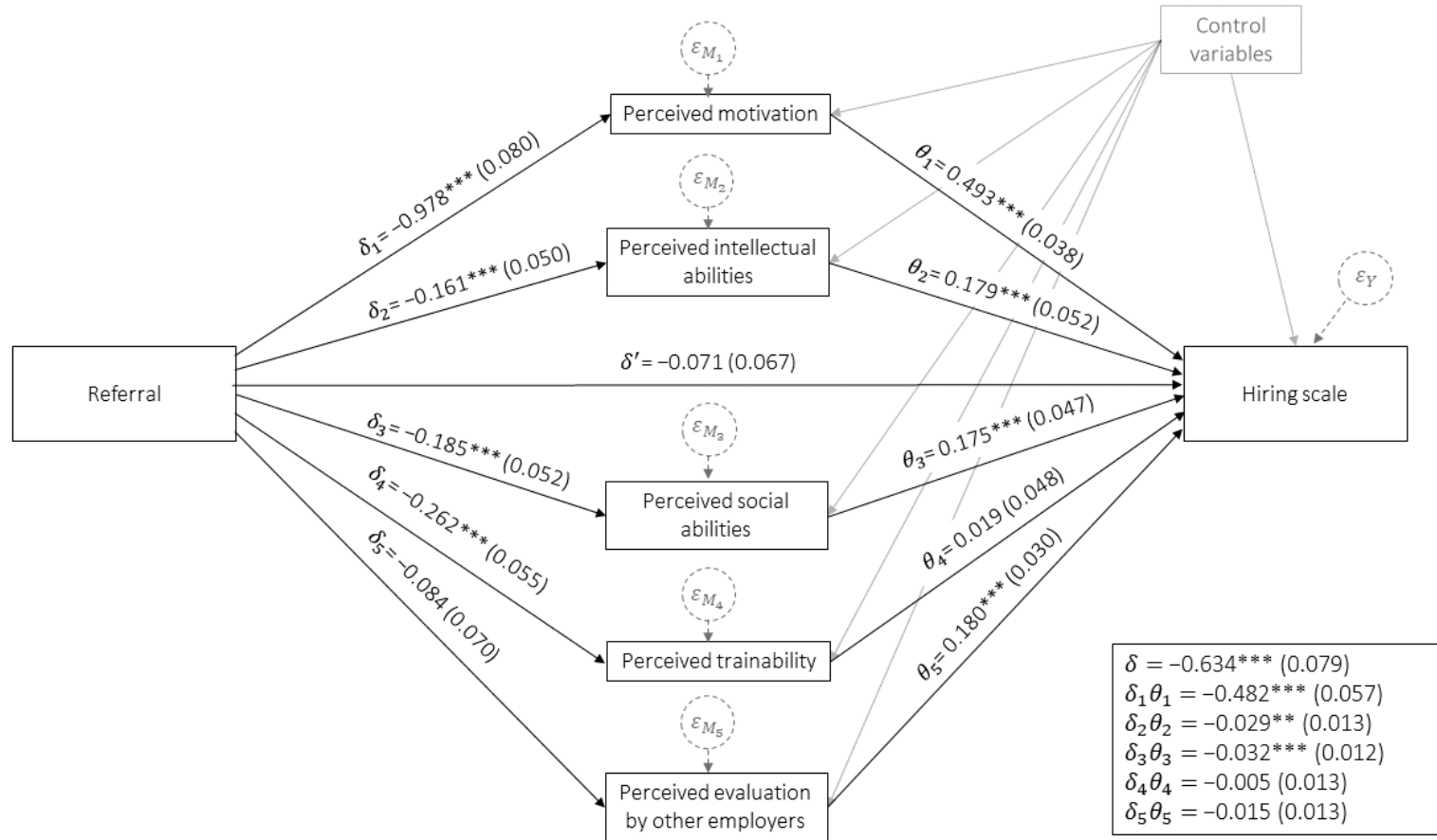
*Mediation Model with Interview Scale as Outcome*



Note. The presented statistics are coefficient estimates (and standard errors in parentheses) for the mediation model outlined in Subsection 3.3.  $\delta$  stands for the total effect,  $\delta'$  for the direct effect, and  $\delta_i\theta_i$  for the indirect effects of a referral on the likelihood of an interview invitation passing through mediator  $M_i$ . Standard errors are corrected for clustering of the observations at the participant level. The confidence intervals for the mediation effects are based on 10,000 bootstrap samples. \*\*\* (\*\*) ((\*)) indicates significance at the 1% (5%) ((10%)) significance level.

**Figure A1.**

*Mediation Model with Hiring Scale as Outcome*



Note. The presented statistics are coefficient estimates (and standard errors in parentheses) for the mediation model outlined in Subsection 3.3.  $\delta$  stands for the total effect,  $\delta'$  for the direct effect, and  $\delta_i \theta_i$  for the indirect effects of a referral on the likelihood of hiring passing through mediator  $M_i$ . Standard errors are corrected for clustering of the observations at the participant level. The confidence intervals for the mediation effects are based on 10,000 bootstrap samples. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) (10%) significance level.

**Table 1.**  
*Vignette Factors and Levels*

<b>Vignette factors</b>	<b>Vignette levels</b>
Gender	{Male, Female}
Highest obtained educational certification	{Secondary education, Bachelor's degree}
Previous work experience	{Two years' experience, Five years' experience}
Mentioned social activities	{None, Volunteering}
Unemployment duration	{1 month, 2 months, ..., 36 months}
Referral	{Referred by the PES, Direct application}

Note. PES stands for the Public Employment Service (of Flanders). The factorial product of the vignette levels ( $2 \times 2 \times 2 \times 2 \times 36 \times 2$ ) resulted in 1,152 possible combinations. Sets of five vignettes were drawn from this vignette universe using a D-efficient design (D-efficiency: 99.809; Auspurg & Hinz, 2014) and distributed at random to the participants as described in Subsection 2.2. This guaranteed that the vignette factors were nearly orthogonal, as shown in Table A1.

**Table 2.**  
*Summary Statistics by Referral Status of the Candidate*

	Mean			Difference: (3) – (2)
	Full sample	Subsample: Referral	Subsample: No referral	
	N = 1,025	N = 521	N = 504	
	(1)	(2)	(3)	(4)
<b>A. PARTICIPANT CHARACTERISTICS</b>				
Female gender	0.566	0.564	0.567	–0.003 [0.228]
Age	43.024	43.177	42.867	0.310 [0.966]
Foreign nationality	0.093	0.094	0.091	0.003 [0.345]
Highest obtained educational certification				
Secondary education or lower	0.093	0.100	0.085	0.014* [1.860]
Tertiary education: outside university	0.429	0.436	0.423	0.013 [0.950]
Tertiary education: university	0.478	0.464	0.492	–0.028** [1.993]
Frequency of hiring: weekly	0.468	0.468	0.468	0.001 [0.005]
Experience as HR professional: $\geq 10$ years	0.551	0.559	0.544	0.015 [1.074]
<b>B. EVALUATION: INTERVIEW AND HIRING DECISIONS</b>				
Interview scale	4.329	4.006	4.663	–0.657*** [6.548]
Hiring scale	3.739	3.422	4.065	–0.643*** [7.324]
<b>C. EVALUATION: PERCEIVED CANDIDATE TRAITS</b>				
Perceived motivation	4.115	3.635	4.611	–0.976*** [11.736]
Perceived intellectual abilities	4.774	4.678	4.873	–0.195*** [3.054]
Perceived social abilities	4.386	4.290	4.861	–0.196*** [3.173]
Perceived trainability	4.433	4.288	4.583	–0.295*** [4.649]
Perceived evaluation by other employers	3.629	3.582	3.679	–0.097 [1.207]

Note. More information concerning the scales mentioned in Panel B and Panel C can be found in Subsection 2.3. T-tests are performed to test whether the presented differences are significantly different from 0. Standard errors are corrected for clustering of the observations at the participant level. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) (10%) significance level. T-statistics are between brackets.

**Table 3.***Multivariate Analysis: Regression Analysis with Interview Scale as Outcome*

Explanatory variables	(1)	(2)	(3)
A. CANDIDATE CHARACTERISTICS			
Female gender	0.075 (0.074)	0.036 (0.117)	0.083 (0.074)
Bachelor's degree	0.344*** (0.083)	0.385*** (0.123)	0.356*** (0.083)
Five years' experience	0.265*** (0.080)	0.360*** (0.111)	0.264*** (0.079)
Unemployment duration	−0.053*** (0.004)	−0.057*** (0.005)	−0.053*** (0.004)
Volunteering	0.356*** (0.067)	0.388*** (0.108)	0.360*** (0.068)
Referral	−0.655*** (0.090)	−0.690*** (0.260)	−0.590*** (0.500)
Referral × Female gender		0.067 (0.179)	
Referral × Bachelor's degree		−0.096 (0.176)	
Referral × Five years' experience		−0.185 (0.187)	
Referral × Unemployment spell		0.009 (0.007)	
Referral × Volunteering		−0.048 (0.169)	
B. PARTICIPANT CHARACTERISTICS			
Female gender	0.341** (0.161)	0.344** (0.161)	0.363** (0.167)
Age	0.027*** (0.009)	0.027*** (0.009)	0.018* (0.010)
Highest obtained educational certification			
Secondary education or lower	0.005 (0.269)	−0.002 (0.270)	−0.216 (0.319)
Tertiary education: outside university	0.074 (0.147)	0.067 (0.148)	0.119 (0.164)
Tertiary education: university (reference)			
Frequency of hiring: weekly	−0.393** (0.168)	−0.391** (0.168)	−0.460** (0.191)
Experience as HR professional: ≥ 10 years	−0.239 (0.177)	−0.240 (0.178)	−0.153 (0.198)
Referral × Female gender			−0.044 (0.177)
Referral × Age			0.017 (0.011)
Referral × Secondary education or lower			0.405 (0.305)
Referral × Tertiary education: outside university			−0.077 (0.187)
Referral × Frequency of hiring: weekly			0.120 (0.183)
Referral × Experience as HR professional: ≥ 10 years			−0.182 (0.205)
Observations		1,025	

Note. The presented statistics are coefficient estimates and standard errors in parentheses for the regression model outlined in Subsection 3.2. Standard errors are corrected for clustering of the observations at the participant level. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) (10%) significance level.

**Table 4.**



*Multivariate Analysis: Mediation Analysis with Interview Scale as Outcome*

Explanatory variables	Outcome variables					
	Perceived motivation	Perceived intellectual abilities	Perceived social abilities	Perceived trainability	Perceived evaluation by other employers	Interview scale
A. CANDIDATE CHARACTERISTICS						
Female gender	−0.080 (0.074)	0.157*** (0.054)	0.185*** (0.052)	0.142*** (0.053)	0.076 (0.063)	0.040 (0.058)
Bachelor's degree	0.018 (0.065)	0.991*** (0.066)	0.233*** (0.054)	0.775*** (0.067)	0.215*** (0.065)	0.038 (0.079)
Five years' experience	0.127* (0.066)	0.098** (0.048)	0.070 (0.053)	0.020 (0.053)	−0.037 (0.066)	0.174*** (0.067)
Unemployment duration	−0.029*** (0.003)	−0.019*** (0.003)	−0.019*** (0.003)	−0.025*** (0.003)	−0.049*** (0.004)	−0.023*** (0.004)
Volunteering	0.268*** (0.066)	0.122*** (0.046)	0.949*** (0.068)	0.152*** (0.052)	0.219*** (0.066)	0.017 (0.063)
Referral	−0.978*** (0.080)	−0.161*** (0.050)	−0.185*** (0.052)	−0.262*** (0.055)	−0.084 (0.070)	−0.090 (0.076)
B. PARTICIPANT CHARACTERISTICS						
Female gender	−0.014 (0.106)	0.082 (0.101)	0.058 (0.077)	0.080 (0.107)	−0.115 (0.138)	0.344** (0.141)
Age	0.012* (0.007)	0.001 (0.005)	−0.001 (0.005)	0.001 (0.006)	0.015* (0.008)	0.018** (0.007)
Highest obtained educational certification						
Secondary education or lower	−0.161 (0.219)	0.173 (0.147)	0.191 (0.137)	0.063 (0.180)	0.184 (0.204)	−0.019 (0.252)
Tertiary education: outside university	−0.158 (0.103)	0.008 (0.104)	−0.042 (0.078)	0.095 (0.100)	0.288** (0.127)	0.107 (0.122)
Tertiary education: university (reference)						
Frequency of hiring: weekly	−0.123 (0.119)	−0.278*** (0.103)	−0.181** (0.091)	−0.119 (0.106)	−0.146 (0.153)	−0.210 (0.143)
Experience as HR professional: ≥ 10 years	−0.086 (0.134)	0.039 (0.117)	−0.057 (0.093)	0.020 (0.118)	−0.075 (0.164)	−0.182 (0.148)
C. PERCEIVED CANDIDATE TRAITS						
Perceived motivation						0.503*** (0.046)
Perceived intellectual abilities						0.259*** (0.063)
Perceived social abilities						0.144** (0.056)
Perceived trainability						−0.045 (0.063)
Perceived evaluation by other employers						0.192*** (0.042)
Observations	1,025					

Note. The presented statistics are coefficient estimates and standard errors in parentheses for the mediation model outlined in Subsection 3.3. Standard errors are corrected for clustering of the observations at the participant level. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) (10%) significance level.

**Table A1.**  
*Correlations Between Vignette Factors*

	1	2	3	4	5	6
1 Gender	1.000					
2 Highest obtained educational certification	−0.009	1.000				
3 Previous work experience	−0.081	0.058	1.000			
4 Mentioned social activities	−0.020	0.006	−0.009	1.000		
5 Unemployment duration	−0.007	0.030	0.024	−0.037	1.000	
6 Referral	−0.017	−0.038	0.077	0.011	−0.001	1.000

Note. Cramer's V is reported as all values being categorical. These statistics are based on the full sample of 1,025 observations.

**Table A2.**  
*Signals and Accompanying Statements*

Signal	Statement
Perceived motivation	I think this person will be sufficiently motivated to perform properly in this job.
Perceived intellectual abilities	I think this person possesses sufficient intellectual abilities to perform properly in this job.
Perceived social abilities	I think this person possesses sufficient social abilities to perform properly in this job.
Perceived trainability	I think this person will be easy to train.
Perceived evaluation by other employers	I think this person has often been rejected by other employers.

Note. All statements are translated from Dutch. The scale with respect to the perceived evaluation by other employers is reverse scored.

**Table A3.***Multivariate Analysis: Regression Analysis with Hiring Scale as Outcome*

Explanatory variables	(1)	(2)	(3)
A. CANDIDATE CHARACTERISTICS			
Female gender	0.144** (0.068)	0.209* (0.108)	0.148** (0.069)
Bachelor's degree	0.325*** (0.074)	0.401*** (0.107)	0.328*** (0.073)
Five years' experience	0.223*** (0.068)	0.303*** (0.103)	0.217*** (0.068)
Unemployment duration	−0.043*** (0.004)	−0.042*** (0.005)	−0.043*** (0.004)
Volunteering	0.298*** (0.066)	0.308*** (0.102)	0.305*** (0.066)
Referral	−0.634*** (0.079)	−0.381* (0.229)	−0.635*** (0.166)
Referral × Female gender		−0.144 (0.163)	
Referral × Bachelor's degree		−0.153 (0.148)	
Referral × Five years' experience		−0.156 (0.168)	
Referral × Unemployment spell		−0.001 (0.007)	
Referral × Volunteering		−0.035 (0.160)	
B. PARTICIPANT CHARACTERISTICS			
Female gender	0.124 (0.137)	0.128 (0.136)	0.195 (0.151)
Age	0.013** (0.007)	0.013* (0.007)	0.014* (0.008)
Highest obtained educational certification			
Secondary education or lower	−0.177 (0.217)	−0.191 (0.219)	−0.362 (0.268)
Tertiary education: outside university	0.029 (0.130)	0.021 (0.131)	0.123 (0.153)
Tertiary education: university (reference)			
Frequency of hiring: weekly	−0.369** (0.143)	−0.366** (0.143)	−0.462*** (0.163)
Experience as HR professional: ≥ 10 years	−0.199 (0.138)	−0.198 (0.139)	−0.246 (0.160)
Referral × Female gender			−0.142 (0.160)
Referral × Age			−0.002 (0.009)
Referral × Secondary education or lower			0.328 (0.281)
Referral × Tertiary education: outside university			−0.182 (0.165)
Referral × Frequency of hiring: weekly			0.172 (0.167)
Referral × Experience as HR professional: ≥ 10 years			0.090 (0.181)
Observations		1,025	

Note. The presented statistics are coefficient estimates and standard errors in parentheses for the regression model outlined in Subsection 3.2. Standard errors are corrected for clustering of the observations at the participant level. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) ((10%)) significance level.

**Table A4.***Multivariate Analysis: Mediation Analysis with Hiring Scale as Outcome*

Explanatory variables	Outcome variables					
	Perceived motivation	Perceived intellectual abilities	Perceived social abilities	Perceived trainability	Perceived evaluation by other employers	Hiring Scale
<b>A. CANDIDATE CHARACTERISTICS</b>						
Female gender	−0.080 (0.074)	0.157*** (0.054)	0.185*** (0.052)	0.142*** (0.053)	0.076 (0.063)	0.106** (0.051)
Bachelor's degree	0.018 (0.065)	0.991*** (0.066)	0.233*** (0.054)	0.775*** (0.067)	0.215*** (0.065)	0.044 (0.069)
Five years' experience	0.127* (0.066)	0.098** (0.048)	0.070 (0.053)	0.020 (0.053)	−0.037 (0.066)	0.137** (0.054)
Unemployment duration	−0.029*** (0.003)	−0.019*** (0.003)	−0.019*** (0.003)	−0.025*** (0.003)	−0.049*** (0.004)	−0.013*** (0.003)
Volunteering	0.268*** (0.066)	0.122*** (0.046)	0.949*** (0.068)	0.152*** (0.052)	0.219*** (0.066)	−0.065 (0.059)
Referral	−0.978*** (0.080)	−0.161*** (0.050)	−0.185*** (0.052)	−0.262*** (0.055)	−0.084 (0.070)	−0.071 (0.067)
<b>B. PARTICIPANT CHARACTERISTICS</b>						
Female gender	−0.014 (0.106)	0.082 (0.101)	0.058 (0.077)	0.080 (0.107)	−0.115 (0.138)	0.125 (0.108)
Age	0.012* (0.007)	0.001 (0.005)	−0.001 (0.005)	0.001 (0.006)	0.015* (0.008)	0.005 (0.005)
Highest obtained educational certification						
Secondary education or lower	−0.161 (0.219)	0.173 (0.147)	0.191 (0.137)	0.063 (0.180)	0.184 (0.204)	−0.196 (0.168)
Tertiary education: outside university	−0.158 (0.103)	0.008 (0.104)	−0.042 (0.078)	0.095 (0.100)	0.288** (0.127)	0.059 (0.101)
Tertiary education: university (reference)						
Frequency of hiring: weekly	−0.123 (0.119)	−0.278*** (0.103)	−0.181** (0.091)	−0.119 (0.106)	−0.146 (0.153)	−0.198* (0.111)
Experience as HR professional: ≥ 10 years	−0.086 (0.134)	0.039 (0.117)	−0.057 (0.093)	0.020 (0.118)	−0.075 (0.164)	−0.141 (0.112)
<b>C. PERCEIVED CANDIDATE TRAITS</b>						
Perceived motivation						0.493*** (0.038)
Perceived intellectual abilities						0.179*** (0.052)
Perceived social abilities						0.175*** (0.047)
Perceived trainability						0.019 (0.048)
Perceived evaluation by other employers						0.180*** (0.030)
Observations	1,025					

Note. The presented statistics are coefficient estimates and standard errors in parentheses for the mediation model outlined in Subsection 3.3. Standard errors are corrected for clustering of the observations at the participant level. \*\*\* (\*\*) (\*) indicates significance at the 1% (5%) ((10%)) significance level.