



# The mark of mental health problems. A field experiment on hiring discrimination before and during COVID-19

Vegar Bjørnshagen

Norwegian Social Research, Oslo Metropolitan University, Pb. 4 St. Olavs plass, 0130, Oslo, Norway

## ARTICLE INFO

### Keywords:

Mental health  
Hiring discrimination  
Field experiment  
COVID-19  
Recession

## ABSTRACT

Mental health problems are associated with poor labour market outcomes. Based on data from a field experiment, this article investigates the extent to which hiring discrimination limits the job opportunities of young applicants who disclose a history of mental health problems. From September 2019 to December 2020, 1398 job applications were sent in pairs to 699 employers with job openings in a broad selection of occupations in the Norwegian labour market. The applicants were equally qualified except that, in each pair, one applicant informed about mental health problems as an explanation for a past employment break. The results show that applicants who disclose mental health problems are discriminated against in hiring processes. Applicants with mental health problems have about 27% lower probability of receiving an invitation to a job interview and about 22% lower probability of receiving any positive employer response. These results do not seem to have been driven by the COVID-19 crisis that unfolded during the course of the study. As such, the study provides suggestive evidence that uncertain economic times might not necessarily increase the level of discrimination against applicants with mental health problems.

## 1. Introduction

An ongoing concern related to mental health problems is their negative impact on employment outcomes. Mental health problems are associated with lower levels of employment and disproportionately affect the unemployed (OECD, 2012). Unemployment as such can have negative psychological effects (Gebel and Voßemer, 2014; Montgomery et al., 1999; Paul and Moser, 2009) but the relationship between mental health and employment status is also due to health selection (Butterworth et al., 2012; Mastekaasa, 1996). To investigate a mechanism that possibly contribute to these selection processes, this paper asks the following question: To what extent are persons with a history of mental health problems discriminated against in hiring processes?

Discrimination could explain residual employment and wage differentials between persons with and without mental health problems that are unexplained by other observed, productivity-related traits (Baldwin and Marcus, 2007). Moreover, surveys of employers indicate that they are indeed sceptical towards workers with mental health problems (Bjørnshagen and Ugreninov, 2021; Stuart, 2006) and people with such problems report that they experience discrimination (Baldwin and Marcus, 2006; Thornicroft et al., 2009). Although this extant research provides indicative evidence on discrimination, the above

methodological approaches are limited in identifying its actual existence and prevalence (Pager and Shepherd, 2008): Even when observed employment-related characteristics are accounted for in statistical analyses based on survey or administrative data, remaining disparities in outcomes that are attributed to discrimination may actually be due to some other unobserved characteristics. Moreover, employers' expressed attitudes may deviate from their behaviour and the extent to which perceived discrimination corresponds to empirical realities is unclear.

By contrast, correspondence studies, which is a type of field experiment, offer a direct measure of discrimination based on actual hiring behaviour in real-world settings (Pager, 2007). In correspondence studies, researchers send job applications in response to real job advertisements and measure employers' response (e.g. invitations to job interviews). The fictitious applicants are similar in all employment-relevant respects but differ by some characteristic(s), such as information about mental health problems. Since the information about mental health problems can be randomised to the applications, their causal effect on response from employers can be isolated and identified. Two previous correspondence studies have investigated discrimination based on disclosed mental health problems. In the US, Hipes et al. (2016) documented discrimination against applicants (approximately aged 32) who explained a six months absence from work

E-mail address: [vegar.bjornshagen@oslomet.no](mailto:vegar.bjornshagen@oslomet.no).

<https://doi.org/10.1016/j.socscimed.2021.114181>

Received 8 March 2021; Received in revised form 14 May 2021; Accepted 25 June 2021

Available online 28 June 2021

0277-9536/© 2021 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

with having been hospitalised for mental health treatment. Compared with applicants who explained an equivalent absence period with having been hospitalised for a physical injury, mental illness reduced the probability of receiving any expression of employer interest by 45.6%. In Belgium, Baert et al. (2016) found that applicants (between 37 and 38 years old) who disclosed a year of inactivity due to former depression decreased the probability of being invited to a job interview by 34.2% and of receiving any positive reaction from employers by 19.5% compared with applicants who had just become unemployed. However, no significant difference was found when compared with applicants with a year of unexplained unemployment.

In this article, I present the results from a preregistered correspondence study that was conducted in the Norwegian labour market between September 2019 and December 2020. The preregistration presents the hypothesis, variables, sample size and methods (available at: <https://aspredicted.org/qu6cx.pdf>). In the experiment, matched pairs of job applications of which one randomly signalled that the applicant had a history of mental health problems were sent to employers ( $N = 699$ ) with vacancies. As such, the study is one of three recent field experiments that investigate how employers respond to applicants who disclose mental health problems. The current research contributes to this literature in several ways: First, discrimination is investigated among applicants who are younger (i.e. 21–25 years old) than in the previous experiments. Young people with mental health problems might be even more susceptible to the diminished employment prospects, or *scarring effects*, that are generally associated with early unemployment (Mousteri et al., 2019; Scarpetta et al., 2010). Employers could be more reluctant towards younger applicants who disclose such problems because they have less work experience to compensate for potential concerns about their job performance. Next, the study provides evidence on the short-term persistence of the negative effect of mental health-related breaks in employment because the applicants were given at least a year of subsequent work experience following the period of inactivity. The field experiment also covers a broader segment of the labour market in terms of occupational contexts. The degree to which mental health status becomes decisive in employers' hiring decisions might vary across occupations, as previous field experiments have shown that discrimination rates tend to do (OECD, 2013). Previous research on adolescent mental health problems and adult earnings also suggests that employers' willingness to provide accommodations for persons with such problems could depend on job characteristics and pay (Evensen et al., 2017). Additionally, the study was conducted in a new context: Cross-national structural differences are likely to affect employers' hiring behaviour and thus the extent of discrimination (Quillian et al., 2019). The Norwegian labour market is characterised by stringent employment protection legislation, restrictions on temporary contracts and a high wage level combined with a compressed wage structure. Theoretically, such structural factors could increase the perceived risk involved when hiring new workers and thus make employers more reluctant towards applicants whom they are uncertain about (Halvorsen et al., 2016).

Finally, economic conditions unexpectedly changed during the course of the field experiment when the COVID-19 crisis, and its associated increase in unemployment rates and decline in job openings, unfolded at midpoint in the data collection. While previous field experimental evidence on the impact of occupational labour market tightness and economic conditions on ethnic/racial discrimination is mixed (Baert et al., 2015; Carlsson et al., 2018; Quillian et al., 2019; Vuolo et al., 2017; Zschirnt and Ruedin, 2016), the level of mental health-based discrimination could change in turbulent economic times. Hence, the impact of the pandemic on the estimated level of discrimination is explored to examine the degree to which the COVID-19-induced change in contextual conditions might have driven the main results. In doing so, the current study contributes suggestive evidence on whether uncertain economic times affect hiring discrimination against persons with mental health problems.

## 2. Theoretical framework

There are several reasons why employers might use information about applicants' history of mental health problems to make hiring decisions. Theories of statistical discrimination (Aigner and Cain, 1977; Arrow, 1973; Phelps, 1972) assume that employers are risk-averse and attempt to hire the most 'productive' candidate. Since they have limited information about individual applicants, they make decisions based on perceived group characteristics. Research indeed shows that people with mental health problems have higher average levels of absenteeism and diminished performance at work (Bubonya et al., 2017). Employers may therefore use information about mental health problems as a proxy for an individual applicants' expected productivity. Based on beliefs that, on average, persons with such problems are less productive and reliable, have greater accommodation needs and will be a burden on administrative resources and colleagues, they will be unlikely to select such applicants if they have other to choose from.

However, mental illness is often also accompanied by stigma (Goffman, 1963; Pescosolido et al., 2008; Phelan et al., 2008). Link and Phelan (2001) define stigma as a social process that transpires when labelling, stereotyping, status loss, and discrimination co-occur within a context of power asymmetry. Persons with mental health problems are stereotyped as dependent, unreliable, less competent and sometimes also as dangerous (Angermeyer and Dietrich, 2006; Follmer and Jones, 2018; Sadler et al., 2012). Moreover, sociological research indicates that even when average group differences in productivity-related characteristics do exist, employers often exaggerate them when applied in evaluations of individual applicants and that they also rely on erroneous cultural beliefs about groups (Birkelund et al., 2020; Midtbøen, 2014; Pager and Karafin, 2009; Tomaskovic-Devey and Skaggs, 1999). To the extent that employers make discriminatory decisions on the basis of productivity considerations in evaluations of applicants who disclose mental health problems, they might therefore be influenced as much by negative stereotypes and erroneous beliefs as by correct information. At the occupation level, such evaluations could be influenced by employers' perceived compatibility between the nature of the mental health problems and the characteristics of the job (Stone and Colella, 1996). If employers, for instance, believe that people with certain mental health problems are unpredictable or unreliable, they may be perceived as less 'fit' for jobs in service- or care occupations than in occupation contexts with less interpersonal demands.

Although the data does not allow for testing the specific theoretical mechanisms, the perspectives predict that employers will discriminate applicants with mental health problems. Thus, the prespecified hypothesis is that compared to otherwise identical applicants, employers will be less likely to invite applicants who disclose a history of mental health problems to job interviews.

### 2.1. The impact of economic conditions on discrimination

Employers' hiring behaviour towards applicants with mental health problems and thus the level of discrimination might vary with the economic contexts within which their hiring decisions are made. The spike in unemployment rates and uncertainty during the COVID-19 crisis is likely to have brought about a change in employers' opportunity structure for discrimination and might influence how they perceive applicants with mental health problems.

Regardless of whether employers discriminate on the basis of correct information or negative stereotypes, their opportunities to do so increase when there are more qualified job applicants to each vacancy (Birkelund, 2016; Midtbøen, 2015). With many applicants to choose from, employers can be more selective and applicants with certain characteristics, such as mental health problems, can more easily be rejected without further consideration. Moreover, assuming that employers are risk-averse, their perception of applicants with mental health problems could change when economic conditions take a turn for the

worse, irrespective of the number of applications they receive: The perceived risk involved in hiring applicants expected to be less productive might be accentuated in times of economic uncertainty.

Conversely, employers may be cognizant of the changing composition of the unemployed population during economic downturns. Depending on factors such as employment protection and the severity of crises, people with (mental) health problems could be among the first to be laid off, while employers will often also have to dismiss presumably more productive workers with better health that would otherwise have kept their jobs (Evans-Lacko et al., 2013; Heggebo and Dahl, 2015; Moustერი et al., 2019; Reeves et al., 2014). Insofar as employers assume that only the most 'productive' workers are employed when economic conditions are worse, they could become *less* uncertain about the unobserved productivity-related characteristics of applicants with mental health problems who still participate in the labour market. Consistent with the idea that employers may perceive a minority signal differently depending on the economic situation (Carlsson et al., 2018), discrimination might therefore decrease during a recession because employers' perception of information about mental health problems changes.

Employers' hiring behaviour towards applicants with mental health problems could also remain stable during uncertain economic times. If so, the effect of a decline in labour demand should be proportional for applicants with and without mental health problems assuming that employers who are more or less likely to discriminate against them are equally likely to be hiring before and during the pandemic. If they are not, however, discrimination rates could go in either direction.

Overall, the above reasoning suggests that discrimination on the basis of mental health problems could increase or decrease when economic conditions are more uncertain. Hence, the following hypothesis is explored: Mental health-based differences in employers' invitations to job interviews will change during the COVID-19 crisis.

## 2.2. The field experiment

The data come from a correspondence study that was conducted to investigate discrimination against persons with mental health problems in recruitment processes. From September 2019 to December 2020, pairs of job applications with equal qualifications that differed only in whether the applicant either informed about a history of mental health problems or having travelled as an explanation for a past employment break were sent in response to job openings in the Oslo area.

On March 12, 2020, approximately halfway into the data collection, infection control measures were implemented to limit the spread of COVID-19 in Norway. The remaining data was collected during the pandemic and its effects on the labour market. In Norway, initial 'lockdown' measures included, but were not limited to, closure of schools and kindergartens, personal services such as hairdressing salons, and all enterprises in food and beverage service activities, such as restaurants and bars except for eating places that could ensure a 1-m distance between customers. While Norway was in a strong economic position with low unemployment rates before the outbreak of COVID-19, the labour market was hit hard by the pandemic and the lockdown measures (The Norwegian Labour and Welfare Administration, 2020). This involved a sharp increase in layoffs, of which the majority were temporary. The layoffs started in the sectors that were directly affected by the infection control measures, but quickly spilled over to the rest of the economy (Alstadsæter et al., 2020). Already in the weeks before the initial lockdown, Norwegian employers appear to have responded to the anticipated pandemic: Holgersen et al. (2020) show that there was a large drop in vacancy postings that started before the first case of COVID-19 infection was confirmed on February 26 and that continued in the following months. This is consistent with the idea that higher uncertainty in economic outlook can cause firms to temporarily pause their investments and hiring (Bloom, 2009). Although the impact varied, there was a substantial deterioration in labour demand in almost all occupations and industries (Holgersen et al., 2020). While infection

control measures and unemployment rates varied over the COVID-19 period during which the experiment was conducted, the decline in labour demand combined with increased unemployment rates suggests that there were more jobseekers to fewer vacancies during the pandemic.

The sample size was determined based on a priori power calculations. 1200 applications would be sent to 600 employers within the following occupations: early childhood teachers, electricians and carpenters, waiters and cooks, material-recording and transport clerks, shop sales assistants and hairdressers. These occupations were chosen based on differences in levels of customer contact, skills and educational requirements. Moreover, estimates from the Norwegian Labour Force Survey show that in 2019 (2nd quarter), these occupations covered around 36 percent of all employed workers in Norway between 21 and 25 years old (Table A1 in the online appendix). Due to the reduced number of available vacancies during the pandemic, however, more occupations were added to obtain the appropriate sample size to test the main effect of mental health problems. The number of vacancies in an occupation had to be sufficiently large to ensure progress in the experiment. This selection criterion is of particular importance in small labour markets such as the Norwegian one. Thus, based on observations on the main Norwegian private recruitment website from which the job vacancies were sampled, the following occupations were included as of March 2020: Software developers, information and communications technology (ICT) operations and user support technicians, accounting and office clerks, graduate sales representatives as well as sales and customer service representatives. Overall, the selected occupations are estimated to cover about 44 percent of all employed workers aged 21–25 years old (Table A1 in the online appendix).

The job applications consisted of a cover letter and a CV that were designed to appear realistic as well as equal in terms of work experience, educational background and personal characteristics, while sufficiently different to avoid employer suspicion. Thus, for each occupational category, job postings were examined to ensure that the applications matched the common requirements in the occupations. All the application templates included upper-secondary education from schools in Oslo that had similar admission requirements. Applications for positions as material-recording and transportation clerks, waiters, shop sales assistants, sales and customer service representatives application listed that the applicant had achieved general university admissions certification, whereas applications for positions as cooks, hairdressers, carpenters and electricians listed that the applicant had achieved vocational competence. Application templates for positions as early childhood teachers, software developers, ICT operations and user support technicians, accounting and office clerks and graduate sales representatives included relevant bachelor's degrees.

Career counsellors and persons working in the selected occupations were consulted for advice and revision of the application material. The applications were designed for currently employed young workers aged 21–25 years. An example of a CV and cover letter is provided in the online appendix.

In principle, all job openings in the selected occupations were collected provided that the job requirements matched the qualifications of the applicants and that it was possible to apply by e-mail or direct upload on the recruitment website. Since public sector employers use an online recruitment platform that requires applicants to create user profiles that render the randomisation procedure impossible to implement, the experiment is restricted to the private sector. The final sample consists of 1398 job applications that were sent to 699 employers, 310 of which were sampled before COVID-19 and 389 during the pandemic. The data collection was continued after the minimum required number of 1200 observations had been sampled in order to explore the impact of COVID-19. Table 1 shows the occupational distribution of employers by COVID-19, which reflects that there were fewer available vacancies during the pandemic.

To minimise employer suspicion, there was a time-lag of one or two

**Table 1**  
Descriptive statistics. Distribution of job vacancies by occupation and COVID-19.

	Before COVID-19 <sup>a</sup>		During COVID-19 <sup>b</sup>	
	%	N	%	N
Occupations targeted throughout the experiment				
Early childhood teachers	16.8	52	12.6	21
Electricians/carpenters	27.7	86	32.3	54
Waiters/cooks	13.2	41	13.2	22
Material-recording/transportation clerks	17.4	54	20.4	34
Shop sales assistants	19.0	59	15.6	26
Hairdressers	5.8	18	6.0	10
Total	100.0	310	100.0	167
Occupations included during COVID-19				
Software developers	–	–	16.7	37
ICT operations/user support technicians	–	–	15.3	34
Accounting/office/administrative clerks	–	–	14.0	31
Graduate sales representatives	–	–	17.6	39
Sales/customer service representatives	–	–	36.5	81
Total			100.0	222

Notes. N = number of job vacancies. Total sample.

<sup>a</sup> September 16, 2019–March 8, 2020.

<sup>b</sup> March 9, 2020–December 12, 2020.

days between each application in a pair was submitted for a given job posting. Before each pair was sent, the information about mental health problems was randomly assigned to one of the applications to ensure that there was no correlation between the treatment and the template or the order in which the employers received the applications. Likewise, the applications were randomly assigned home addresses in Oslo as well as male or female names that were combinations of the most common first names and last names in Norway in the years the applicants were born. While gender was randomised across all occupations, applicant pairs for each job opening were always either male or female.

The study was approved by The National Committee for Research Ethics in the Social Sciences and the Humanities and the National Centre for Research Data.

### 2.3. Experimental treatment

Job applicants might prefer to keep information about their mental health to themselves in job search processes to increase their hiring chances (Brohan et al., 2012). However, persons with such problems are likely to experience periods of unemployment (Butterworth et al., 2012; Mastekaasa, 1996; OECD, 2012). Employers may perceive unemployment as a signal of negative unobserved characteristics, such as low motivation (Van Belle, Di Stasio, Caers, De Couck and Baert, 2018). Therefore, employment services recommend that job seekers account for any gaps in employment or education.

To signal mental health problems in the applications, a one-year gap was included in all applicants' employment history. Since shorter breaks in employment may not be unusual among young adults in school to work transitions (OECD, 2018) and therefore perceived as necessary to explain by employers, the length of the time gap was chosen to warrant an explanation. A number of field experiments have documented that contemporary unemployment have a negative effect on employers' hiring decisions (e.g. Birkelund et al., 2016; Kroft et al., 2013), whereas Eriksson and Rooth (2014) also found that long-term unemployment spells in the past do not. Applicants were therefore assigned a recent yet *past* employment break, that is, after graduation from upper secondary education or university. By contrast, applicants in the previous correspondence studies on mental health-based discrimination indicated contemporary absence from work. The applicants in the current experiment were provided with at least a year of subsequent work experience following the year of inactivity.

Applicants with mental health problems address the gap in their CV

by the following paragraph in their cover letter: "I would like to be open about not having been employed or in education after finishing [upper secondary education/vocational education/my bachelor's degree] due to mental health challenges. I spent this time doing voluntary work for Mental Health Youth, where I used my own experiences to help others that were in situations similar to my own". The phrase about voluntary work was added to convey information about mental health problems also in the CV to increase the likelihood that employers would notice the signal. The applicants' age, and by extension the timing of the employment break due to mental health problems, corresponds to evidence that many mental disorders have an early onset and that 75% of all mental illnesses have developed by age 24 (Kessler et al., 2005). The length of the employment break is also consistent with the overrepresentation of mental health problems among young people who are not in employment, education or training (NEET) and that among the Norwegian 1990 birth cohort, 13% experienced a NEET period that lasted between 7 and 12 months and that 35% were NEETs for at least 13 months in the period between the ages of 16 and 24 (OECD, 2018).

In contrast to the previous correspondence studies, the applicants with mental health problems do not inform about having recovered, which is consistent with the often persistent, recurrent and episodic nature of mental health problems (OECD, 2012). A year out of work and education suggests that the mental health problems were quite serious and the unclarity about their current severity might induce various assumptions among employers. However, since the gap which is explained as being due to mental health problems ended more than at least a year prior to the data collection, the present signal should be considered less strong than those in the other correspondence studies in which the applicants are still unemployed and inform about recently having recovered from respectively a year of severe depression (Baert et al., 2016) and after being hospitalised for mental health treatment (Hipes et al., 2016). Moreover, the participation in voluntary work during the year outside the labour market may also limit the extent of employers' potential reluctance towards the applicants. Furthermore, 'mental health challenges' is a broad category from which employers might draw multiple conclusions concerning the nature of the applicants' mental health problems.

Although evidence suggests that subsequent work experience offsets any negative signals of *unexplained* employment gaps (Eriksson and Rooth, 2014), it cannot be excluded that employers could perceive such past gaps negatively, or assume that they are (mental) health-related. To estimate the level of discrimination against applicants with a history of mental health problems, the comparison group was therefore also provided with an explanation for their employment break that can be considered unrelated to productivity, that is, having travelled. These applicants explained their employment break in the following way: "Before starting my current job, I wanted to take a year off to travel in Asia and South-America. Therefore, I have a gap in my CV this period." The control applicants were also provided with experience with voluntary work but for the Red Cross Youth following the year of travel.

There is little data on the prevalence of these kinds of travels among young adults in Norway. However, a survey among pupils in upper secondary school in Oslo suggests that they are common. When asked about their life plans before the age of 25, about half of the respondents answered that they planned to make a trip abroad of more than 2 months duration (Frøyland and Gjerustad, 2012). However, there are some drawbacks with the present approach. Such 'gap year' trips might be more common among persons who graduate from academic upper secondary education than those on the vocational programmes or those who graduate from university. As a consequence, employers may perceive the information differently across the selected occupations. A related issue is that employers could associate these trips with other characteristics, such as a privileged social background. However, all applicants list part-time work, or apprenticeships as part of their vocational education, in their CV's before their year of non-employment, which at least should remove any assumptions or suspicion about the

economic feasibility of the trip. While these potential issues should be kept in mind, the present approach is based on an assumption that the information about having travelled will not be decisive in employers' hiring decisions.

#### 2.4. Measured outcome

The response from employers was received by e-mail, text or voice messages and included invitations to job interviews, requests for more information, that the applicant complete tests, rejections, confirmation receipts and missed phone calls. The response was registered and invitations to job interviews and requests for more information were declined. The main outcome variable in this study is invitation to job interview, which is coded as 1 if the applicant received such an invitation, otherwise as 0. Explicit invitations to job interviews represent an unambiguous sign that the employer is interested in the candidate. However, employers who are sceptical towards applicants with mental health problems might request more information before inviting the applicant to an interview. Thus, the variable any employer interest was constructed to measure any positive reaction from employers, including invitations to interviews, requests for more information, that the applicant contact the employer or complete a test. The variable is coded 1 if the applicant received any such response, otherwise as 0.

#### 2.5. Analytical strategy

In the preregistered, primary analysis, the effect of disclosing mental health problems on the probability of being invited to a job interview is analysed using linear probability models (i.e. linear regressions on a binary variable), including control variables for occupation and month fixed effects. Discrimination is measured as any significant differences in interview invitations. Since the employers were sent two applications, standard errors are corrected for clustering at the vacancy level to address non-independence of repeated observations on the same units. Identical regressions are conducted using any employer interest as the dependent variable.

In the non-preregistered, exploratory analysis, linear probability models are used to estimate whether there was a significant change in the effect of mental health problems during COVID-19. The purpose is to assess whether the overall results were driven by the change in economic conditions and, by extension, to explore the degree to which turbulent economic times might have an impact on hiring discrimination against applicants with mental health problems. To this end, an indicator variable, *COVID-19*, was created to mark observations that were sampled during the pandemic. This includes observations sampled since the second week of March 2020, when the first lockdown was ordered in Norway. An interaction term between mental health problems and COVID-19 compares the effect of mental health problems before and during the pandemic. This approach is known as difference-in-differences, which is based on the counterfactual 'parallel trends' assumption (Angrist and Pischke, 2009). The assumption implies that the difference in interview invitation rates between applicants with and without mental health problems would have remained the same had COVID-19 not occurred. While the matched study design ensures that the proportion of applicants with and without mental health problems within each time period is equal, there are systematic differences between employers in terms of occupational composition since some occupations were targeted only during the pandemic. The latter selection of occupations are also jobs that can be done remotely, whereas the occupations targeted throughout the experiment cannot. Although Hipes et al. (2016) did not find any telecommuting-related differences in discrimination levels against persons with mental illness for jobs in software engineering, this introduces a bias. To the extent that discrimination rates are likely to vary between occupations, the assumption about parallel trends is implausible. Across the occupations that were targeted throughout the experiment, however, there is less

imbalance between the time periods (Table 1). In addition to including occupation covariates, identical regressions are therefore estimated for two analytical samples: (1) The total sample (N = 1398), including all observations, and (2) a restricted sample (N = 954) that only includes observations in occupations that were targeted throughout the experiment.

### 3. Results

#### 3.1. Primary analysis

Table 2 presents the distribution of interview invitations by mental health problems and occupation. The percentage for which applicants with mental health problems were invited to an interview is thus 20.7% compared to 28.5% for applicants without such problems. One interview invitation received via voice message on the telephone for female applicants without mental health problems was impossible to match with a job vacancy and is therefore not captured in the analyses. The ratio of interview invitations is 1.38, which indicates that applicants with mental health problems have to apply for 38.0% more jobs to be invited to a job interview compared to applicants without mental health problems with identical qualifications. The disclosure of such problems thus decreases the probability of receiving an interview invitation by 27.5%. Mental health-related differences in interview invitations also vary across occupations, although these subsample comparisons are limited by the small number of observations in each occupational category. Furthermore, Table A2 in the online appendix shows that the percentage for which applicants with and without mental health problems receive any expression of employer interest is respectively 31.5% and 40.5%, which indicates that mental health problems decreases the probability of

**Table 2**  
Interview invitations by mental health problems and occupation.

	Number of jobs	Interview invitations for applicants without mental health problems (%)	Interview invitations for applicants with mental health problems (%)	Ratio
Overall	699	28.5	20.7	1.38**
Occupations				
Early childhood teachers	73	78.1	75.3	1.04
Electricians/carpenters	140	43.6	29.3	1.49*
Waiters/cooks	63	15.9	9.5	1.67
Material-recording/transportation clerks	88	6.8	4.6	1.48
Shop sales assistants	85	11.8	4.7	2.51+
Hairdressers	28	53.6	35.7	1.50
Software developers	37	35.1	21.6	1.63
ICT operations/user support technicians	34	23.5	11.8	1.99
Accountants/office/administrative clerks	31	9.7	3.2	3.03
Graduate sales representatives	39	7.7	7.7	1.00
Sales/customer service representatives	81	16.1	11.1	1.45

Notes. The ratio of interview invitations is calculated by the following equation: (Interview invitation rate, applicant without mental health problems)/(Interview invitation rate, applicant with mental health problems). Total sample. + p < 0.10, \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

receiving any positive employer response by 22.5%.

Table 3 presents results from linear probability models estimating the probability of being invited to a job interview and for receiving any response from employers. Model 1 includes only the treatment variable and shows that the probability of being invited to an interview is reduced by 7.7 percentage points for applicants with mental health problems. Model 2 includes control variables for occupations and month fixed effects. As expected, the constant changes and is large because early childhood teachers, positions for which there is a high demand for qualified labour (Table 2), is in the reference group, while mental health problems, which is the coefficient of interest, is unaffected. Model 3 and 4 shows that the probability of receiving any expression of employer interest is reduced by 9.0 percentage points for applicants with mental health problems. More or less the same results are obtained when these models are estimated using logistic regression with month dummies rather than fixed effects (Table A4 in the online appendix).

### 3.2. Exploratory analysis

Table 4 presents results from the exploratory analysis of whether the effect of mental health problems changed during COVID-19. These estimates show that, before the pandemic, disclosing mental health problems reduced the probability of being invited to a job interview by 9.7 percentage points. Although not statistically significant, the interaction terms are positive and respectively 0.035 and 0.043 for the total and the restricted sample. The COVID-19 coefficient in Model 1 implies that during the pandemic, there was a drop in interview invitations by 12.6 percentage points for applicants without mental health problems. When adjusting for occupations in Model 2, however, the COVID-19 coefficient is reduced to  $-0.042$  and is virtually equal to the COVID-19 coefficient for the restricted sample ( $-0.046$ , Model 4). Thus, the inclusion of more occupations during COVID-19 and occupational heterogeneity in overall interview invitation rates likely account for much of the large COVID-19 coefficient in Model 1. On the other hand, these occupations do not seem to have affected the overall estimate of discrimination. This is supported by estimates from a linear probability model in which mental health problems is interacted with a dummy variable for observations in occupations that were added during COVID-19 (Table A6 in the online appendix). The exploratory analysis was also conducted using any employer interest as the outcome variable, which yielded similar results, except that the COVID-19 coefficients were significant and negative for both analytical samples also when adjusting for occupation (Table A7 in the online appendix).

**Table 3**

Regression coefficients from linear probability models predicting the probability of callbacks from employers (invitation to interview and any employer interest) by mental health problems.

Model	(1)	(2)	(3)	(4)
Outcome variable	Invitation to interview		Any employer interest	
Mental health problems	$-0.077^{***}$ (0.012)	$-0.077^{***}$ (0.012)	$-0.090^{***}$ (0.014)	$-0.090^{***}$ (0.014)
Constant	$0.285^{***}$ (0.017)	$0.795^{***}$ (0.046)	$0.405^{***}$ (0.019)	$0.854^{***}$ (0.039)
Controls: Occupation (ref.: early child. teachers)		Yes		Yes
Month FE		Yes		Yes
N	1398	1398	1398	1398
R2	0.008	0.257	0.009	0.240

Notes. Robust standard errors in parentheses are clustered at the vacancy level. Total sample. In the online appendix (Table A3), all estimated coefficients for these models are reported. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 4**

Regression coefficients from linear probability models predicting the probability of callbacks from employers (invitation to interview) by mental health problems and COVID-19.

Model	(1)	(2)	(3)	(4)
Sample	Total sample		Restricted sample	
Mental health problems	$-0.097^{***}$ (0.019)	$-0.097^{***}$ (0.019)	$-0.097^{***}$ (0.019)	$-0.097^{***}$ (0.019)
COVID-19	$-0.126^{***}$ (0.035)	$-0.042$ (0.037)	$-0.061$ (0.045)	$-0.046$ (0.039)
Mental health problems $\times$ COVID- 19	0.035 (0.025)	0.035 (0.025)	0.043 (0.033)	0.043 (0.033)
Constant	$0.355^{***}$ (0.027)	$0.822^{***}$ (0.045)	$0.355^{***}$ (0.027)	$0.822^{***}$ (0.045)
Controls: Occupation (ref.: early child. teachers)		Yes		Yes
N	1398	1398	954	954
R2	0.024	0.260	0.010	0.295

Notes. Results from non-preregistered exploratory analyses. Robust standard errors in parentheses are clustered at the vacancy level. Restricted sample excludes occupations targeted only during COVID-19. In the online appendix (Table A5), all estimated coefficients for these models are reported. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

## 4. Discussion

The present article provides direct evidence on one mechanism by which mental health problems may lead to poor employment outcomes, namely hiring discrimination. There are two main findings in the current study. First, there is clear evidence of discrimination against applicants with a history of mental health problems: Applicants who disclose mental health problems as an explanation for a past one-year employment break are about 27% less likely to be invited to a job interview and about 22% less likely to receive any expression of employer interest than identical applicants without such problems. Second, the COVID-19-related change in economic context during the course of the study had minimal impact on the estimated level of discrimination.

Although findings cannot be directly compared due to differences in design and the circumstances under which the experiments were carried out, the level of discrimination in the current study is lower than in earlier correspondence studies that have investigated mental health-based discrimination (Baert et al., 2016; Hipes et al., 2016). An exception to this pattern, however, is the mental health-related difference in the probability of receiving any employer response, which is slightly larger in the present experiment than in the Flemish one (Baert et al., 2016). While structural differences and similarities may be relevant to explain such cross-national variation, it is also likely that it could be due to differences in treatment and control conditions, the timing and duration of the absence from work and which occupations were included in the experiments. Employers might, for example, believe that hospitalisation in the past six months due to mental illness (Hipes et al., 2016) indicates mental health problems that are more severe than those in the Flemish and the current study. As different ways of signalling mental health problems are likely to elicit different levels of discrimination, the relatively less strong signal of mental health problems in the current experiment compared to the previous ones is consistent with a lower discrimination rate.

Given such differences in design and the diversity of mental health problems, these few correspondence studies on the present topic may be viewed as complementary in terms of providing evidence on discrimination based on various life situations that persons with different mental health problems are likely to experience and thus have to manage in the labour market. Whereas the previous studies document discrimination against applicants with a recent employment break due to mental illness, the current study shows that, for a younger group of applicants, a history

of mental health problems continues to yield an influence on employers' decision-making even after they have gained work experience following the period of mental health-related inactivity. At least a year of subsequent work experience does therefore not seem to eliminate the negative signal of mental health problems that led to a long-term employment break in the past.

The estimated level of discrimination in the present study was not substantially affected by the change in economic conditions during COVID-19. Thus, the null hypothesis of no change in discrimination rates during the COVID-19 crisis cannot be rejected. This corresponds with previous field experimental research on ethnic/racial discrimination in which discrimination does not vary according to unemployment or GDP growth rates (Quillian et al., 2019; Vuolo et al., 2017; Zschirnt and Ruedin, 2016). In sum, the exploratory results indicate, at a minimum, that discrimination rates did not increase during COVID-19. Although the data does not allow for distinguishing between potential underlying mechanisms, these suggestive findings seem to contradict the argument that because employers might 'skim the cream' when they have plenty of applicants to choose from, they will be even more likely to reject applicants with mental health problems. The explorative analysis neither supports the argument that employers, due to risk aversion, might become more reluctant towards such applicants when economic times are uncertain. Of course, different mechanisms that predict that employers could become both more and less likely to discriminate during times of economic uncertainty, may be simultaneously at work and neutralise each other's effect on average. Moreover, as economic uncertainty persists, discrimination rates could still increase or decrease.

A limitation of this study is that differences in callbacks from employers only address the initial stage of the recruitment process. A recent meta-analysis of field experiments on ethnic/racial discrimination suggests that there is considerable discrimination also in job offers (Quillian et al., 2020). Furthermore, the results do not shed light on exclusion from more informal recruitment channels such as through networks. However, a recent employer survey indicates that a majority of Norwegian employers publicly announce their job openings (Kalstø, 2019).

Moreover, the experiment was limited to occupations in the private sector, where there might be more discrimination than in the public sector due to factors such as less formalised hiring procedures (Quillian and Midtbøen, 2021). The study also concentrated on a single geographical region. To the extent that processes of stereotyping and stigma contribute to employers' reluctance to hire people with mental health problems, discrimination rates may vary across cultural contexts according to different levels of mental health stigma (Pescosolido, 2013).

Of course, the study was not designed to test the mental health problems by COVID-19 interaction and the precision of these estimates are accordingly low. The possibility that there might actually be an interaction effect therefore cannot be excluded based on the current data. If it does exist, however, the relatively small effect sizes nevertheless suggest that the discrimination level was not affected to a considerable degree. However, the relevant level of analysis could be occupation- or industry-specific because the impact of COVID-19 varied across the labour market (Holden et al., 2020). Over time, there could also be variation in the effect of mental health problems during the pandemic. The focus on average effects of mental health problems solely before and during COVID-19 might mask such potential variation. However, subsamples were too small to allow these heterogeneity analyses. For the purpose of examining the robustness of the overall estimate of discrimination, however, this is a minor issue.

Finally, the application material was not updated over the course of the data collection. Consequently, the applicants successively gained more work experience over time and the year of inactivity due to mental health problems or travelling receded further back in time during the experiment. If employers therefore gradually perceived the mental health problems as less of a risk, it could have attenuated some of the negative effect it might otherwise have had during the pandemic had the

inactivity period been adjusted. If so, the overall discrimination rate should also be considered a lower bound estimate.

Despite these limitations, this article shows that employers' discriminatory hiring decisions are likely to shape the labour market outcomes of persons with a history of mental health problems. Although turbulent economic times might not increase the likelihood that persons with mental health problems are discriminated against, they will nevertheless be in a more disadvantaged position when demand for labour declines and job opportunities in general are scarce. The current COVID-19 crisis may therefore be especially consequential for persons with mental health problems, not only because they could be at higher risk of losing their jobs (Evans-Lacko et al., 2013; Mousteri et al., 2019) but also because hiring discrimination limits their chances of re-employment if they do.

### Credit author statement

Vegar Bjørnshagen: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.

### Declaration of competing interest

None.

### Acknowledgements

This paper is part of the HIRE project at Norwegian Social Research, Oslo Metropolitan University, funded by The Research Council of Norway (grant number: 273745). The research was conducted in cooperation with Elisabeth Ugreninov, who also contributed valuable comments on the article that were much appreciated. Gunn Elisabeth Birkelund also provided excellent suggestions on design and comments on the article. The study design has also benefited from useful advice and comments from Dan-Olof Rooth and Edvard Nergård Larsen. Sehrish Akhtar, Nora Birgitte Framstad and Even Kallevik provided excellent research assistance. I also thank the participants and partner institutions of the HIRE project and Mental Health Youth Norway. All errors are the author's own.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.114181>.

### References

- Bjørnshagen, V., Ugreninov, E., 2021. Labour market inclusion of young people with mental health problems in Norway. *Alter* 15 (1), 46–60.
- Aigner, D.J., Cain, G.G., 1977. Statistical theories of discrimination in labor markets. *Ind. Labor Relat. Rev.* 30 (2), 175–187.
- Alstadsæter, A., Bratsberg, B., Eielson, G., Kopczuk, W., Markussen, S., Raaum, O., Røed, K., 2020. The First Weeks of the Coronavirus Crisis: Who Got Hit, When and Why? Evidence from Norway. National Bureau of Economic Research. No. 27131.
- Angermeyer, M.C., Dietrich, S., 2006. Public beliefs about and attitudes towards people with mental illness: a review of population studies. *Acta Psychiatr. Scand.* 113 (3), 163–179.
- Angrist, J.D., Pischke, J.-S., 2009. *Mostly Harmless Econometrics. An Empiricist's Companion*. Princeton University Press.
- Arrow, K.J., 1973. The theory of discrimination. In: Ashenfelter, O., Rees, A. (Eds.), *Discrimination in Labor Markets*. Princeton University Press, Princeton, pp. 15–42.
- Baert, S., Cockx, B., Gheyle, N., Vandamme, C., 2015. Is there less discrimination in occupations where recruitment is difficult? *ILR Rev.* 68 (3), 467–500.
- Baert, S., De Visschere, S., Schoors, K., Vandenberghe, D., Omeij, E., 2016. First depressed, then discriminated against? *Soc. Sci. Med.* 170, 247–254.
- Baldwin, M., Marcus, S., 2006. Perceived and measured stigma among workers with serious mental illness. *Psychiatr. Serv.* 57 (3), 388–392.
- Baldwin, M., Marcus, S., 2007. Labor market outcomes of persons with mental disorders. *Ind. Relat.: J. Econ. Soc.* 46 (3), 481–510.
- Birkelund, G.E., 2016. Rational laziness - when time is limited, supply abundant, and decisions have to be made. *Analyse & Kritik* 38 (1).

- Birkelund, G.E., Heggebo, K., Rogstad, J., 2016. Additive or multiplicative disadvantage? The scarring effects of unemployment for ethnic minorities. *Eur. Socio Rev.* 33 (1), 17–29.
- Birkelund, G.E., Johannessen, L.E.F., Rasmussen, E.B., Rogstad, J., 2020. Experience, stereotypes and discrimination. Employers' reflections on their hiring behavior. *Eur. Soc. Rev.* 43 (4), 503–524.
- Bloom, N., 2009. The impact of uncertainty shocks. *Econometrica* 77 (3), 623–685.
- Brohan, E., Henderson, C., Wheat, K., Malcolm, E., Clement, S., Barley, E.A., Thornicroft, G., 2012. Systematic review of beliefs, behaviours and influencing factors associated with disclosure of a mental health problem in the workplace. *BMC Psychiatr.* 12 (1), 11.
- Bubonya, M., Cobb-Clark, D.A., Wooden, M., 2017. Mental health and productivity at work: does what you do matter? *Lab. Econ.* 46, 150–165.
- Butterworth, P., Leach, L.S., Pirkis, J., Kelaher, M., 2012. Poor mental health influences risk and duration of unemployment: a prospective study. *Soc. Psychiatr. Psychiatr. Epidemiol.* 47 (6), 1013–1021.
- Carlsson, M., Fumarco, L., Rooth, D.-O., 2018. Ethnic discrimination in hiring, labour market tightness and the business cycle - evidence from field experiments. *Appl. Econ.* 50 (24), 2652–2663.
- Eriksson, S., Rooth, D.-O., 2014. Do employers use unemployment as a sorting criterion when hiring? Evidence from a field experiment. *Am. Econ. Rev.* 104 (3), 1014–1039.
- Evans-Lacko, S., Knapp, M., McCrone, P., Thornicroft, G., Mojtabai, R., 2013. The mental health consequences of the recession: economic hardship and employment of people with mental health problems in 27 European countries. *PLoS One* 8 (7), e69792.
- Evensen, M., Lyngstad, T.H., Melkevik, O., Reneflot, A., Mykletun, A., 2017. Adolescent mental health and earnings inequalities in adulthood: evidence from the Young-HUNT Study. *J. Epidemiol. Community Health* 71 (2), 201–206.
- Follmer, K.B., Jones, K.S., 2018. Mental illness in the workplace: an interdisciplinary review and organizational research agenda. *J. Manag.* 44 (1), 325–351.
- Frøyland, L.R., Gjerustad, C., 2012. Venenskap, utdanning og framtidspaner: Forskjeller og likheter blant ungdom med og uten innvanderbakgrunn i Oslo. Oslo: NOVA Rapport 5/2012.
- Gebel, M., Voßemer, J., 2014. The impact of employment transitions on health in Germany. A difference-in-differences propensity score matching approach. *Soc. Sci. Med.* 108, 128–136.
- Goffman, E., 1963. *Stigma: Notes on the Management of Spoiled Identity*. Prentice-Hall, Englewood Cliffs, N.J. [1963].
- Halvorsen, R., Hvinden, B., Schoyen, M.A., 2016. The Nordic Welfare Model in the Twenty-First Century: The Bumble-Bee Still Flies! *Soc. Pol. Soc.* 15 (1), 57–73.
- Heggebo, K., Dahl, E., 2015. Unemployment and health selection in diverging economic conditions: compositional changes? Evidence from 28 European countries. *Int. J. Equity Health* 14 (1), 121.
- Hipes, C., Lucas, J., Phelan, J.C., White, R.C., 2016. The stigma of mental illness in the labor market. *Soc. Sci. Res.* 56, 16–25.
- Holden, S., von Brasch, T., Torstensen, K.N., Magnussen, J., Sæther, E.M., Evje, T., Røttingen, J.-A., 2020. Samfunnsøkonomisk vurdering av smitteverntiltak – covid-19. Rapport fra ekspertgruppe på oppdrag av helsedirektoratet, 7. april 2020. The Norwegian Directorate of Health, Oslo.
- Holgersen, H., Jia, Z., Svenkerud, S., 2020. Labor Demand During the COVID-19 Crisis in Norway: Evidence from Vacancy Posting Data.
- Kalstø, Å.M., 2019. Hvilke rekrutteringskanaler benytter virksomhetene? Norwegian Labour and Welfare Administration. Notat 1/2019.
- Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., Walters, E.E., 2005. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch. Gen. Psychiatr.* 62 (6), 593–602.
- Kroft, K., Lange, F., Notowidigdo, M.J., 2013. Duration dependence and labor market conditions: evidence from a field experiment\*. *Q. J. Econ.* 128 (3), 1123–1167.
- Link, B.G., Phelan, J.C., 2001. Conceptualizing stigma. *Annu. Rev. Sociol.* 27 (1), 363–385.
- Mastekaasa, A., 1996. Unemployment and health: selection effects. *J. Community Appl. Soc. Psychol.* 6 (3), 189–205.
- Midtbøen, A.H., 2014. The invisible second generation? Statistical discrimination and immigrant stereotypes in employment processes in Norway. *J. Ethnic Migrat. Stud.* 40 (10), 1657–1675.
- Midtbøen, A.H., 2015. The context of employment discrimination: interpreting the findings of a field experiment. *Br. J. Sociol.* 66 (1), 193–214.
- Montgomery, S.M., Cook, D.G., Bartley, M.J., Wadsworth, M.E., 1999. Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *Int. J. Epidemiol.* 28 (1), 95–100.
- Mousteri, V., Daly, M., Delaney, L., Tynelius, P., Rasmussen, F., 2019. Adolescent mental health and unemployment over the lifespan: population evidence from Sweden. *Soc. Sci. Med.* 222, 305–314.
- OECD, 2012. *Sick on the Job?* OECD Publishing, Paris.
- OECD, 2013. *Discrimination against Immigrants – Measurements, Incidence and Policy Instruments*. OECD Publishing, Paris.
- OECD, 2018. *Investing in Youth: Norway*. OECD Publishing, Paris.
- Pager, D., 2007. The use of field experiments for studies of employment discrimination: contributions, critiques, and directions for the future. *Ann. Am. Acad. Polit. Soc. Sci.* 609 (1), 104–133.
- Pager, D., Karafin, D., 2009. Bayesian Bigot? Statistical Discrimination, Stereotypes, and Employer Decision Making. *Ann. Am. Acad. Polit. Soc. Sci.* 621 (1), 70–93.
- Pager, D., Shepherd, H., 2008. The sociology of discrimination: racial discrimination in employment, housing, credit, and consumer markets. *Annu. Rev. Sociol.* 34 (1), 181–209.
- Paul, K.I., Moser, K., 2009. Unemployment impairs mental health: meta-analyses. *J. Vocat. Behav.* 74 (3), 264–282.
- Pescosolido, B.A., 2013. The public stigma of mental illness: what do we think; what do we know; what can we prove? *J. Health Soc. Behav.* 54 (1), 1–21.
- Pescosolido, B.A., Martin, J.K., Lang, A., Olafsdottir, S., 2008. Rethinking theoretical approaches to stigma: a framework integrating normative influences on stigma (FINIS). *Soc. Sci. Med.* 67 (3), 431–440.
- Phelan, J.C., Link, B.G., Dovidio, J.F., 2008. Stigma and prejudice: one animal or two? *Soc. Sci. Med.* 67 (3), 358–367.
- Phelps, E., 1972. The statistical theory of racism and sexism. *Am. Econ. Rev.* 62 (4), 659–661.
- Quillian, L., Heath, A., Pager, D., Midtbøen, A.H., Fleischmann, F., Hexel, O., 2019. Do some countries discriminate more than others? Evidence from 97 field experiments of racial discrimination in hiring. *Socio. Sci.* 6 (18).
- Quillian, L., Lee, J.J., Oliver, M., 2020. Evidence from field experiments in hiring shows substantial additional racial discrimination after the callback. *Soc. Forces* 99 (2), 732–759.
- Quillian, L., Midtbøen, A.H., 2021. Comparative perspectives on racial discrimination in hiring: the rise of field experiments. *Annu. Rev. Sociol.* 47 (1) null.
- Reeves, A., Karanikolos, M., Mackenbach, J., McKee, M., Stuckler, D., 2014. Do employment protection policies reduce the relative disadvantage in the labour market experienced by unhealthy people? A natural experiment created by the Great Recession in Europe. *Soc. Sci. Med.* 121, 98–108.
- Sadler, M.S., Meagor, E.L., Kaye, K.E., 2012. Stereotypes of mental disorders differ in competence and warmth. *Soc. Sci. Med.* 74 (6), 915–922.
- Scarpetta, S., Sonnet, A., Manfredi, T., 2010. Rising Youth Unemployment During the Crisis.
- Stone, D.L., Colella, A., 1996. A model of factors affecting the treatment of disabled individuals in organizations. *Acad. Manag. Rev.* 21 (2), 352–401.
- Stuart, H., 2006. Mental illness and employment discrimination. *Curr. Opin. Psychiatr.* 19 (5), 522–526.
- The Norwegian Labour and Welfare Administration, 2020. Utviklingen på arbeidsmarkedet. NAVs arbeidsmarkedspåprognose.
- Thornicroft, G., Brohan, E., Rose, D., Sartorius, N., Leese, M., 2009. Global pattern of experienced and anticipated discrimination against people with schizophrenia: a cross-sectional survey. *Lancet* 373 (9661), 408–415.
- Tomaskovic-Devey, D., Skaggs, S., 1999. An establishment-level test of the statistical discrimination hypothesis. *Work Occup.* 26 (4), 422–445.
- Van Belle, E., Di Stasio, V., Caers, R., De Couck, M., Baert, S., 2018. Why are employers put off by long spells of unemployment? *Eur. Socio Rev.* 34 (6), 694–710.
- Vuolo, M., Uggen, C., Lageson, S., 2017. Race, recession, and social closure in the low-wage labor market: experimental and observational evidence. In: *Emerging Conceptions of Work, Management and the Labor Market*, vol. 30. Emerald Publishing Limited, pp. 141–183.
- Zschirnt, E., Ruedin, D., 2016. Ethnic discrimination in hiring decisions: a meta-analysis of correspondence tests 1990–2015. *J. Ethnic Migrat. Stud.* 42 (7), 1115–1134.