



On the moderation of the relation between overeducation and depressive symptoms through labor market and macro-economic factors

Pieter Dudal*, Piet Bracke

Department of Sociology - Ghent University, Korte Meer 5, 9000 Ghent, Belgium



ARTICLE INFO

Keywords:

Overeducation
Comparative research
Depressive symptoms
Labor market
Macro-economy

ABSTRACT

Empirical research has consistently shown that overeducation is positively associated with depressive symptoms. However, little is known about the cross-national variation of this association. This study investigates the issue by examining how macro-economic factors and labor-market policies moderate the link between two objective measures of overeducation (the realized-matches and job-analyst methods) and depressive symptoms. Analysis is based on individual-level data from the European Social Survey, Rounds 3, 6, and 7 (N = 51,054). Results from 20 countries, based on a sample of respondents between the ages of 20 and 65 years, indicate that higher unemployment rates are the primary factor strengthening the relationship between overeducation and depressive symptoms. The realized-matches method reveals one important exception for women. This exception is reported and discussed in light of the literature on gender discrimination. Our results provide no evidence that labor-market policies (unemployment benefits and employment-protection legislation) have any impact on the relationship under study.

1. Introduction

Following World War II, scholars observed an acceleration in the expansion of tertiary education in almost all European countries (Schofer and Meyer, 2005). Tertiary education is now one of the most central institutions in modern societies. The supply of people with higher education is currently higher than it has ever been at any other time in history (Schofer and Meyer, 2005), and it continues to increase (OECD, 2016). In general, scholars agree that the expansion of tertiary education was accompanied by the enhancement of employment opportunities for individuals with higher education (Aberg, 2003; Oesch and Menes, 2011). Despite a general process of occupational upgrading in Europe, the demand was unable to keep pace with the supply in some countries, resulting in an oversupply of more highly educated people on the labor market. This has placed pressure on labor markets in general, as increasing numbers of job seekers are forced to look for jobs for which they are formally overqualified. This phenomenon – which is generally referred to as “overeducation” in the economic literature – is common in a large majority of European countries, and it has experienced an overall increase from 7.6% in 2002 to 11% in 2014 (Sparreboom and Tarvid, 2017).

The term “overeducation” refers primarily to the relationship between educational attainment and position on the labor market. From a

health-sociological perspective, however, the term might appear counterintuitive. From this perspective, it is difficult to see how someone could have too much education, given that the positive relationship between education and mental health is one of the most consistent findings in the field of social epidemiology (Mirowsky and Ross, 2003). Nevertheless, there are clear indications that overeducation imposes limits to the mental-health returns on education, as it has been linked to lower well-being (Chen et al., 2010; Dean and Wilson, 2009) and a higher prevalence of depressive symptoms (Bracke et al., 2013, 2014; Johnson and Johnson, 1999; Tarvid, 2017). The majority of research in this areas consists of single-country studies (Chen et al., 2010; Dean and Wilson, 2009; Friedland and Price, 2003; Johnson and Johnson, 1999), but recent efforts have been made to expand the focus to include samples covering a broad range of European countries (Bracke et al., 2013, 2014; Tarvid, 2017). Notwithstanding their important contributions to the field, the advantages of these samples merit further exploration, given that an important implicit assumption of such research is homogeneity in the relationship between overeducation and depressive symptoms across countries.

The present study explicitly addresses this issue in response to indications that the aforementioned relationship varies between countries. For example, it has been reported that countries vary in terms of the upward mobility of overeducated people and their ability to find

* Corresponding author.

E-mail address: Pieter.Dudal@ugent.be (P. Dudal).

properly matched jobs (Baert et al., 2013). This finding implies that, in some countries, the status of being overeducated is prolonged, with the potential for increased negative consequences, including shame and alienation, which are seen as important mediators in the relationship between overeducation and mental health (Bracke et al., 2013).

In this paper, we focus on macro-economic conditions and various labor-market policies, given their apparent role as important moderators of the health consequences of other unfavorable employment characteristics. To the best of our knowledge, this is the first empirical study to link the literature on overeducation and depressive symptoms to an increasing body of research aimed at contextualizing the health (and mental health) impact of employment characteristics (Buffel et al., 2015a; McLeod et al., 2012; Shahidi et al., 2016). This is in line with a recommendation by Tarvid (2017), who suggests that the macro-level context should be considered in research on overeducation, thereby adding to the body of knowledge on the link between overeducation and depressive symptoms.

2. Theory

2.1. Macro-economic context

Recent empirical research has repeatedly shown the relevance of the macro-economic context as a moderator of the health effects of unfavorable employment conditions (Buffel et al., 2017, 2015b; Clark et al., 2010; De Moortel et al., 2018; Eichhorn, 2014; McLeod et al., 2012; Reibling et al., 2017). This topic has often been approached using social norm theory, which is based on the premise that economic conditions influence the extent to which an individual's position on the labor market is regarded as deviant. It has been argued that, in countries with poorly performing economies, being unemployed is considered less deviant and stigmatizing, as more people are in the same situation (Buffel et al., 2015b; Clark, 2003; De Moortel et al., 2018). Moreover, individuals are less likely to regard their own unemployment as a matter of personal failure, as the specific context allows them to attribute their situation to more external factors (Buffel et al., 2015b; Vossemmer et al., 2017). We argue that a similar line of reasoning can be applied to the case of overeducation. In direct application, the theory would predict that the share of overeducated people in a country could alter the extent to which the status of being overeducated is regarded as deviant.

Indirect ways in which other macro-economic conditions can influence these processes also merit investigation. First, the prevalence of overeducation might be related to economic fluctuations, as recessions can increase job competition and force people to take jobs below their own level of education (vanOurs and Ridder, 1995; Verhaest and Van der Velden, 2013). Empirical evidence regarding this proposition has been mixed. For example, in a meta-analysis, Groot and Van den Brink (2000) found no evidence of a link between overeducation and national unemployment rates.¹ Based on more recent data, however, Verhaest and Van der Velden (2013) confirm a link between cyclic economic components and overeducation. Structural economic factors (which refer to a more general state of a country's economy) have also been related to employment opportunities (Verhaest and Van der Velden, 2013). In recent years, increases in overeducation were especially prevalent in countries with less GDP per capita (Sparreboom and Tarvid, 2017). Considering that the expansion of tertiary education is global (Schofer and Meyer, 2005), occupational upgrading (i.e., the transition to a more knowledge-based economy due to processes of technological changes, thereby increasing jobs for those with higher

¹ Our analysis based on a more recent sample and including more countries provides additional support for this proposition, revealing a positive relationship between the unemployment rate and higher levels of overeducation in Europe (see Table 5 in the appendix).

education) in these countries is likely to be delayed, resulting in fewer employment opportunities for overeducated people.

Macro-economic conditions can influence the experience and associated mental-health consequences of overeducation in several ways. First, in line with social-norm theory, the status of being overeducated is likely to be less deviant and stigmatizing in countries in which employment opportunities are less than optimal, given that the experience is shared by more people. In addition, overeducated individuals in these countries are better able to attribute their educational mismatches to objective economic conditions than to personal failure. Finally, in countries where employment opportunities are less optimistic, overeducated people are more likely to accept their employment status more readily, in addition to being happier, because they at least have jobs (Scherer, 2009; Vossemmer et al., 2017).

Based on this logic, we hypothesize:

H1.1. The positive association between overeducation and depressive symptoms is weaker in countries with less-than-optimal employment opportunities.

In general, social-norm theory provides clear hypotheses concerning how macro-economic conditions can soften the detrimental consequences of undesired labor-market conditions by altering the societal stigma related to such condition. At the same time, however, these macro-economic conditions can obviously affect stigma in multiple – and sometimes conflicting – ways, as it exists and is shaped at the micro, meso, and macro levels (Corrigan et al., 2004; Pescosolido et al., 2008; Phelan et al., 2014). In this study, therefore, we consider this multilayered context by proposing – prior to the statistical analyses – alternative hypotheses that are complementary to those derived from social-norm theory.

Economic contractions apparently reduce upward job mobility and the likelihood of finding a new job (Clark et al., 2010; Rubb, 2011; Verhaest and Van der Velden, 2013). This prolongs the status of overeducation, and it can affect mental health in several ways. First, being overeducated is seen as a bad signal for potential employers so longer periods of overeducation might lead to an intensification of the stigma related to this employment condition (Baert and Verhaest, 2014). In addition to its direct impact, stigma can affect mental health indirectly, as it can lead to even longer periods of overeducation, making the job-search process even more complex and stressful (Baert et al., 2013; Meroni and Vera-Toscano, 2017; Vossemmer and Schuck, 2016). Second, worse economic conditions yield poor prospects to overeducated individuals with regard to future job mobility. In line with the disappointment-paradox hypothesis, such poor prospects are likely to interfere with the expectations that individuals have based on their educational degrees, possibly increasing levels of stress and depressive symptoms (Montgomery et al., 2013; Osika and Montgomery, 2008). Based on this argumentation, we hypothesize:

H1.2. The positive association between overeducation on depressive symptoms is stronger in countries with less-than-optimal employment opportunities.

2.2. Labor-market policies

A focus on employment protection legislation (EPL) as a feature of a country's labor-market policies is relevant, as previous studies have highlighted its moderating influence on the relationship between unemployment and insecure jobs (Ochsen and Welsch, 2012; Scherer, 2009; Vossemmer et al., 2017). In addition, there is evidence to suggest that EPL also influences the detrimental health consequences of overeducation.

First, as a result of the process of technological change that occurred during the second half of the 20th century, firms developed an increasing need for highly educated employees to perform the more complex tasks that were characteristic of the new knowledge economy

(Oesch, 2013). Although the supply of highly educated people was not a problem, due to the expansion of higher education, stricter EPL (and other factors) made it more difficult for firms to replace existing employees with new, highly educated job seekers (Di Pietro, 2002). It has therefore been suggested that EPL is related to a higher incidence of overeducation. Empirical evidence of this proposition is mixed, and it appears to be dependent on the selection of countries in the analysis (Berton et al., 2017; Di Pietro, 2002; Robert, 2014; Verhaest and Van der Velden, 2013). If EPL leads to more overeducation, the status of being overeducated could be expected to be less stigmatizing in countries with stricter EPL, given that the experience is shared by more people. In addition, overeducated individuals in these countries are able to attribute their status to the strictness of the labor market instead of to personal failure. We therefore hypothesize:

H2.1. The positive relationship between overeducation on depressive symptoms is lower in countries with stricter employment protection legislation.

It is nevertheless possible that other mechanisms are at work as well. Scholars have advanced the theoretical argument that, in addition to making it more difficult for labor-market entrants to find adequately matched jobs, stricter EPL generally makes it more difficult to achieve upward mobility between jobs (Gangl, 2003). For this reason, EPL might be related to both the incidence and duration of overeducation (Di Pietro, 2002; Gangl, 2003; Verhaest and Van der Velden, 2013). Similar to the arguments mentioned in the section on macro-economic conditions, this could be expected to generate greater stigma and poorer labor-market prospects for overeducated individuals, thereby strengthening the detrimental consequences related to depressive symptoms. We therefore hypothesize:

H2.2. The positive association between overeducation and depressive symptoms is higher in countries with stricter employment protection legislation

In addition to EPL, unemployment benefits are seen as an important moderator of the health effects of unemployment (Bambra and Eikemo, 2009; O'Campo et al., 2015; Ochsens and Welsch, 2012; Vossemmer et al., 2017). Furthermore, studies have indicated that unemployment benefits also have an impact the health status of the working population. It has been suggested that more generous unemployment benefits allow people to have greater control over the duration of particular employment statuses, as they are better able to refuse or quit jobs and continue searching for appropriate jobs (Carr and Chung, 2014; Eichhorn, 2014; O'Campo et al., 2015; Vossemmer et al., 2017). The availability of such protections reduces stress levels related to the threat of future job loss, thus attenuating the risk of negative mental-health consequences (Sjoberg, 2010; Vossemmer et al., 2017). In addition, such protection can benefit mental health by enhancing a sense of agency and providing a greater sense of control and fewer feelings of alienation and hopelessness (Abramson et al., 1990).

Empirical studies have applied these theories primarily to the investigation of links between job insecurity and health (including mental health). In this article, however, we argue that they are also applicable to the context of overeducation. In line with the aforementioned research, it is possible that overeducated individuals have greater control over the duration of this employment condition in countries with more generous benefits, as such benefits make it possible for them to quit less-suitable jobs and continue searching for more appropriate jobs. Overeducated individuals in these countries are thus likely to have less stress and a greater sense of control. We therefore hypothesize: *H3: The positive association between overeducation and depressive symptoms is lower in countries with more generous unemployment benefits.*

3. Methods

3.1. Data

Our analyses are based on the European Social Survey (ESS), Rounds 3, 6, and 7 (2006, 2012, and 2014). Respondents were selected using strict probability samples of the resident national population 15 years of age or older, living in private households. Data were gathered through face-to-face interviews, with response rates ranging from 33.8% (Germany, ESS 6) to 77.1% (Portugal, ESS 6). We restricted our sample to respondents between the ages of 20 and 65 years. In order to retain only labor-active respondents, the sample thus excluded respondents who were still studying, homemakers, permanently ill, or disabled. We also excluded respondents for whom there was no information on the variables under examination (8.2%), with the highest percentage of missing data found for *parental education* (4.4%). The final sample comprises 51,054 respondents from 20 countries.

3.2. Variables

Depressive symptoms were measured using an eight-item version of the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). Respondents were asked to indicate how often they had felt or behaved in a particular way (e.g., felt depressed, felt that everything was an effort, slept poorly, felt lonely, felt sad, could not get started, enjoyed life, felt happy) in the week before the survey. Response categories ranged from “none or almost none of the time” (0) to “all or almost all of the time” (3). Total CES-D8 scores range from 0 to 24, with higher values indicating higher levels of depressive symptoms. The percentage of missing values for the separate items ranged from 0.3% to 0.5% (a complete overview is available in Table 6, in the appendix). These respondents (1.7%) were excluded from the sample. Given that previous research supports the measurement equivalence of the shortened eight-item CES-D scale for European respondents, we were confident in using this variable in a cross-national design (Missinne et al., 2014; Van de Velde et al., 2010). Cronbach's alpha values for the CES-D8 scale ranged from 0.7 (Denmark) to 0.84 (France) for men, and from 0.76 (Denmark) to 0.87 (Poland) for women.

Our analysis included two measures to control for the sensitivity of our findings, as previous studies have suggested the possibility of measurement error in the various operationalizations of *overeducation* (Baert et al., 2013; Bracke et al., 2013). The first such control that we use is the realized-matches (RM) method, in which respondents are considered overeducated if their educational level (measured in years of completed education) is more than one standard deviation above the average educational level for their own occupational category (ISCO-08) within their own countries (Verdugo and Verdugo, 1989). As a second control, we use the job-analyst (JA) method, which draws on both ISCED-97 and ISCO-08 qualification. In this method, individuals are considered overeducated if their educational level is at least one ISCED score higher than the educational level required for their occupational category. The categories are mapped as follows: ISCED 5–6 & ISCO 1–3; ISCED 3–4 & ISCO 4–8; and ISCED 1–2 & ISCO 9.

We included age, marital status, work status, parental education, and educational attainment as individual-level control variables. Age is measured as a categorical variable with five-year intervals, given the persistent ambiguity concerning the form or direction of the relationship between age and depressive symptoms. *Marital status* indicates whether a respondent was married or cohabiting (reference category), divorced or separated, widowed, or single. *Work status* indicates whether respondents were employed or unemployed looking for work (reference category) during the seven days immediately preceding the interview. To measure *parental education*, we used the ISCED-97 classification: Primary or lower (reference category, ISCED 0-1), lower secondary completed (ISCED 2), upper secondary completed (ISCED 3), post-secondary non-tertiary completed (ISCED 4), and tertiary

completed (ISCED 5–6). If the two parents had different levels of education, we selected the highest of the two. We measured *educational attainment* according to the International Standard Classification of Education 1997 (ISCED-97). This classification differentiates between seven levels of education, ranging from “pre-primary education” (Level 0) to “second stage of tertiary education” (Level 6). For the current study, this variable was recoded into the following categories: (1) “lower education” (ISCED 0-2), (2) “intermediate education” (ISCED 3–4), and (3) “higher education” (ISCED 5-6). At the macro level, overeducation is captured by the share of overeducated individuals, as measured by the RM and JA methods. We used per capita GDP (in dollars, controlled for purchasing power parity) to capture the structural macro-economic conditions within a country and used the unemployment rate to represent cyclical macro-economic conditions. These data were retrieved from the database of Key Indicators of the Labor Market published by the International Labor Organization.

We measured EPL is measured according to the OECD EPL index for regular contracts (Version 2). This index consists of 21 items that consider a wide range of factors, including the procedures of unfair dismissal, severance pay, and notification periods (Venn, 2009). The values of the index range from 0 (not regulated) to 6 (highly regulated). Data for most of the countries were retrieved from the OECD database. Because the database lacked information on some Central and Eastern European countries, however, we complemented this with data from Avdagic (2015).

Our measurement of unemployment benefits took two components into account: the net replacement rate (i.e., the percentage of the respondent’s previous wage covered by the unemployment benefit) and the duration of these benefits. This procedure follows studies by Vossemmer et al. (2017) and by Wulfgramm (2014), in which the duration of benefits is expressed as a percentage of 48 months. Countries in which unemployment benefits last 48 months or longer are assigned a value of 100% on this component. The final measure is calculated by multiplying the net replacement rate (i.e., the average replacement rate for singles and families) by the standardized duration component, with values ranging from 0 to 100. The measure provides an estimate of the generosity of unemployment benefits in a given country.

3.3. Statistical method

This study draws on repeated cross-sectional data from multiple countries, which are clustered by time and country. It was therefore advisable to use multi-level modelling with a three-level structure, as other methods could generate biased standard errors, thereby increasing the risk of Type-1 errors (Schmidt-Catran and Fairbrother, 2016). Questions on depressive symptoms were available in only three rounds of the ESS. Our study is therefore based on only three moments in time, which is not sufficient to fix this as a separate higher level (Stegmueller, 2013). To address this problem, we use the models developed by Fairbrother (2013), in which individuals (Level 1) are clustered within country-periods (Level 2), which are further clustered within countries (Level 3). Although this procedure should theoretically result in 69 units at Level 2 (i.e., 3 points in time x 20 countries), data restrictions (not every country is represented in all rounds of the ESS) made it necessary to limit our model to 56 Level-2 units, which is sufficient to fix this as a higher level. One important advantage of this modelling procedure is that it allows the simultaneous assessment of cross-sectional (differences between countries) and longitudinal (differences within countries over time) relationships (Buffel et al., 2015b; Fairbrother, 2013). Cross-sectional relationships are investigated by calculating the average value of the macro variable over the various rounds of the ESS and entering it at Level 3 of the model, while longitudinal relationships are calculated as the round specific deviation from that country average and entered at Level 2.

We applied stepwise modelling to investigate the research questions, performing separate analyses for each measure of overeducation.

The first model examines the general relationship between overeducation and depressive symptoms, controlling for covariates at the individual level. The second model adds the macro-economic variables and serves as a baseline model for testing whether the inclusion of the cross-level interactions (which are added in subsequent models to test the hypotheses) produce a better model fit. If this is the case, and if the cross-level interaction term is statistically significant, the results can be interpreted as meaningful and substantial. The equations used in the various models are provided in the appendix.

It is important to acknowledge the possibility that part of the results could be biased due to selection effects. For instance, it can be the case that in times with high unemployment rates and hence more job-competition, the employed with a better mental health have a competitive advantage. The resulting possibility that the group of unemployed people includes more individuals with poorer mental health, while the group of overeducated people includes more individuals with better mental health could therefore lead to biased estimates. Other selection mechanisms could be at work as well. Because they are more prepared for the job-search process – which is seen as stressful – the healthiest overeducated people in countries with more generous unemployment benefits might be more likely to quit their lower-level jobs, preferring the status of being unemployed to that of being overeducated. If this is the case, the remaining overeducated workers in these countries might have poorer mental health. In line with Buffel et al. (2015b), we attempt to model these possible selection effects by adding an interaction term for employment status variable and the macro variables that are tested. Finally, separate analyses are conducted for men and women, as depressive symptoms are more prevalent among women, who are also at greater risk of being overeducated. Moreover, as the effects of overeducation for women are added to those of existing processes and structures of labor-market discrimination, we expect that (1) overeducation is more harmful for women and (2) the strength of the relationships outlined in our theoretical framework might be stronger for women. For this reason, we consider the discussion on gender differences in overeducation, as initiated by Frank’s (1978) theory of “differential overeducation.”

4. Results

4.1. Descriptive analysis

The descriptive analyses for both individual and country-level characteristics are presented in Tables 1, 2. The majority of respondents in the total sample were men (52.1%), and the largest age category consisted of respondents between 45 and 49 years of age (14.1%). Most of the respondents were either married or cohabiting (55.9%), with an intermediate level of education (52.3%). The overall percentage of overeducated respondents was 14.3%, as measured according to the RM (realized-matches) method, while the JA (job-analyst) method resulted in a share of 10.3% overeducated respondents. Based on the RM measurement, Estonia had the highest percentage of overeducated respondents (15.8%), with the lowest percentage being found in Norway (11.8%). According to the JA method, the highest percentage of overeducated respondents was found in Hungary (16.3%), with the lowest being found in Switzerland (5.6%). Additional analysis (see Table 7 in the Appendix) indicates that the association between these two measurements is weak for both men and women (Cramer’s V is 0.2 for both men and women). We also observed differences in the composition of the two measures of overeducation (see Table 8 in the Appendix). With regard to educational level, in the group of overeducated respondents based on the JA method, 47.3% of the men and 48.29% of the women had higher levels of education. These percentages were higher in the group compiled according to the RM method, with 57.3% of the overeducated men and 67.8% of the overeducated women having higher levels of education. The difference in proportions was statistically significant (at the 99% level) only for the RM measurement.

Table 1
Descriptive statistics.

	Mean	Standard Error
CESD-8	5.03	3.67
	%	N
Age	42.3	11.4
20–24	6.2	3182
25–29	9.9	5072
30–34	11.9	6077
35–39	13.2	6735
40–44	14	7129
45–49	14.1	7199
50–54	13.3	6809
55–59	11.2	5698
60–65	6.2	3152
Gender (women)	47.9	24,450
Marital status		
Married/cohabiting	55.9	28,521
Divorced or separated	11.9	6051
Widowed	1.8	931
Single – never married/civil partnership	30.5	15,551
Parental education		
Primary or less	21.6	11,044
Lower secondary education	18.6	9510
Upper secondary education	33.2	16,940
Post-secondary non-tertiary education	9	4604
Tertiary education	17.4	8891
Educational level		
Lower educated	16.8	8596
Intermediate educated	52.3	26,703
Higher educated	30.9	15,755
Overeducation (Realized Matches)	14.3	6812
Overeducation (Job Analyst)	10.3	4916
Employment status		
Employed	93.3	47,658
Unemployed	6.7	3396

European Social Survey, Rounds 3, 6, and 7 (N = 51,054). Weighted data.

Cross-national variations in the selected macro-economic variables are presented in Table 2. The lowest unemployment rate was 3.7% (Norway), and the highest was 18.9% (Spain). The generosity of unemployment benefits ranged from 4.7% (United Kingdom) to 65.8% (Belgium). Portugal had the strictest EPL (EPL = 3.4), while the United Kingdom had the most lenient (EPL = 1.7).

Table 2
Descriptive statistics by country.

Country	Unemployment rate (%)	GDP/Capita	NRR	EPL	Overeducation (RM)	Overeducation (JA)
Austria	5.2	40,591.10	11.9	2.6	14.6	8.2
Belgium	8.0	37,727.20	65.8	2.9	13.2	11.8
Czech Republic	7.2	14,631.80	8.4	2.8	15.5	8.5
Denmark	6.5	48,566.50	46.8	2.4	10.8	12.2
Estonia	9.6	11,883	15.8	2.2	15.8	14.5
Finland	8.1	39,664.80	30.8	2.0	13.8	10.3
France	9.3	35,603.30	35.9	2.7	14.5	11.8
Germany	7.4	38,322.90	18.2	2.9	13.4	7.7
Hungary	9.5	11,556.60	8.6	2.3	15.7	16.3
Ireland	10.6	49,521.10	16.5	1.9	15.6	14.2
Netherlands	5.3	43,060.30	17.6	2.9	13.1	7.2
Norway	3.7	67,298.90	34.1	2.4	11.8	7.2
Poland	12.5	10,171.10	6.3	2.4	15.5	11.2
Portugal	12.2	18,523.80	37.4	3.4	17	6
Slovakia	14.7	14,508.90	9.3	2.5	13.5	11.2
Slovenia	8.3	19,033.30	13.8	2.7	14.1	10.7
Spain	18.9	26,050.50	33.7	2.6	13.8	12.4
Sweden	7.8	45,391.20	17.7	2.6	13.8	6.4
Switzerland	4.3	57,442.50	16.7	2.2	16.5	5.6
United Kingdom	6.8	40,536.40	4.7	1.7	15.5	16

European Social Survey, Rounds 3, 6, and 7 (N = 51,054). Weighted data.

Table 3
Depressive symptoms regressed on overeducation.

Country	Realized matches		Job analyst	
	B	S.E.	B	S.E.
Austria	0.047	0.229	0.145	0.283
Belgium	0.264	0.212	0.839***	0.217
Czech Republic	0.346	0.359	0.983 [†]	0.352
Denmark	0.271	0.213	0.506 [†]	0.202
Estonia	0.164	0.199	0.579**	0.193
Finland	0.343 [†]	0.157	0.203	0.176
France	0.111	0.205	0.406 +	0.212
Germany	0.56***	0.158	0.897***	0.203
Hungary	0.702*	0.311	0.181	0.314
Ireland	0.163	0.195	0.566***	0.194
Netherlands	0.082	0.183	0.274	0.299
Norway	0.429 [†]	0.168	0.434 [†]	0.206
Poland	0.166	0.25	1.01***	0.27
Portugal	0.329	0.25	0.871 [†]	0.376
Slovakia	0.419 +	0.25	0.316	0.283
Slovenia	0.366	0.2661	0.524 +	0.276
Spain	0.146	0.242	1.309***	0.242
Sweden	0.276	0.192	0.806**	0.257
Switzerland	0.348 [†]	0.177	– 0.139	0.275
United Kingdom	0.236	0.194	– 0.049	0.191

+ p < 0.1.

Weighted data.

European Social Survey, Rounds 3, 6, and 7 (N = 51,054).

*** p < 0.001.

** p < 0.01.

* p < 0.05.

4.2. Overeducation and the macro-context

Based on all Models 1 (Tables 4–7), we can confirm that being overeducated is related to having more depressive symptoms. Although there is a consistent statistically significant relationship, the impact of overeducation on depressive symptoms depends on how it is measured. The coefficients generated by the RM method were smaller (women: B = 0.282; men: B = 0.207) than those generated by the JA measurement (women: B = 0.58; men: B = 0.399). As indicated by these figures, overeducation is more harmful to women than it is to men, although additional analysis (Table 9 in Appendix) revealed that these effects are not statistically significant. In addition, the figures

Table 4
Depressive symptoms regressed on overeducation (RM method; women).

	M1		M2		M3		M4		M5		M6		M7	
	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)
Constant	6.94***	0.26	6.86***	0.199	6.896***	0.201	6.848***	0.202	6.846***	0.199	6.864***	0.199	6.875***	0.200
Overeducation	0.282***	0.073	0.281***	0.073	0.282***	0.073	0.296***	0.074	0.289***	0.074	0.282***	0.073	0.280***	0.074
Cross-level interactions														
Unemployment rate X overeducation (cross-sectional)					- 0.053**	(0.02)								
Unemployment rate X overeducation (longitudinal)					- 0.019	(0.029)								
GDP per capita X overeducation (cross-sectional)							0.012**	(0.004)						
GDP per capita X overeducation (longitudinal)							- 0.041	(0.065)						
Overeducationmacro X overeducation (cross-sectional)									- 0.027	(0.048)				
Overeducationmacro X overeducation (longitudinal)									- 0.061	(0.062)				
Unemployment benefits X overeducation (cross-sectional)											0.004	(0.005)		
Unemployment benefits X overeducation (longitudinal)											- 0.02	(0.019)		
EPL X overeducation (cross-sectional)													- 0.098	(0.175)
EPL X overeducation (longitudinal)													- 0.04	(0.569)
Variance components														
Country	0.783		0.222		0.222		0.223		0.224		0.227		0.237	
Country x period	0.043		0.043		0.036		0.04		0.039		0.038		0.036	
Individual	13.457		13.457		13.449		13.445		13.455		13.456		13.46	
- 2LL	134,152.4		134,129.1		134,109.2		134,104.7		134,122.6		134,123.6		134,124.4	

European Social Survey, Rounds 3, 6, and 7 (N = 24,450); weighted data.

All macro variables are mean centered.

All macro variables have a time lag of 1 year.

All models are controlled for gender, age, marital status, education, parental education, ESS round, unemployment rate, GDP/capita, overeducation (macro), NRR, and EPLR (except model 1, which did not include macro-economic variables).

EPL = Employment Protection Legislation.

*p < 0.05.

*** p < 0.001.

** p < 0.01.

presented in Table 3 exhibit substantial cross-national variation in the size of this relationship. The smallest coefficients were found for Austria (RM: $B = 0.047$) and Switzerland (JA = -0.139), while the largest were found in Hungary (RM:B = 0.702) and Poland (JA:B = 1.01). The coefficients for Austria and Switzerland are not statistically significant.

With regard to the role of macro-economic conditions, the results indicate that the unemployment rate has the most profound impact on the relationship between overeducation and depressive symptoms. For men (based on both overeducation measures), Model 3 in Tables 6 and 7 indicates that within-country shifts to higher unemployment rates were significantly related to a worsening of the depressive symptoms of the overeducated (RM:B = 0.048 ; JA:B = 0.053). In line with these results, Model 3 in Table 5 indicates that overeducated women (JA measure) have significantly more depressive symptoms in countries with higher unemployment rates ($B = 0.068$). The results reveal an exception to these consistent findings for women. As demonstrated by Model 3 in Table 4, based on the RM measurement, overeducation is significantly related to fewer depressive symptoms in countries with higher unemployment rates ($B = -0.053$). For women, these results are complemented by the findings for GDP: based on the RM measure, Model 4 in Table 4 reveals a significant relationship between overeducation and more depressive symptoms in countries with higher per capita GDP ($B = 0.012$), while the exact opposite applies for the JA measure (Table 5, Model 4:B = -0.015). Although the GDP results for men are statistically significant (Tables 6 and 7, Model 4:RM:B = 0.01 ; JA:B = 0.009), they cannot be interpreted substantially, as the inclusion of these coefficients in the statistical model did not result in a statistically significant better fit. Finally, Model 5 in Tables 6 and 7 demonstrates that being overeducated is less harmful to men in countries with higher rates of overeducation, although only the results for the RM measure ($B = -0.125$) yielded a significant improvement in model fit (see Table 10 in the Appendix for a complete overview of these tests). More specific to our sample, these results indicate that the relationship between overeducation and depressive symptoms in countries with higher or lower shares of overeducated people (defined as 1 standard deviation above/below the mean) varies from 0.01 (Estonia) to 0.359 (Netherlands).

The results of analysis including labor-market policies are presented in Models 6 and 7. The only significant relationship with the generosity of unemployment benefits is exhibited in Model 7 in Table 7, and it applies only to men and only according to the JA measure of overeducation ($B = 0.011$). Because the model did not improve model fit, however, this result cannot be interpreted as evidence of a substantial moderating factor. Finally, and contrary to our expectations, we found no consistent effect of EPL. This outcome indicates that the extent to which employment is protected does not change the impact of overeducation on depressive symptoms. The results do reveal one exception for men, indicating that within-country shifts to stricter employment legislation are related to attenuation in the detrimental consequences of overeducation, as measured by the RM method (Table 6, Model 7:B = -1.357).

5. Discussion

Our results confirm the detrimental relationship between two objective indicators of overeducation and depressive symptoms. This finding is in line with recent empirical research (Bracke et al., 2013; Tarvid, 2017). In theoretical terms, such observations run counter to the premises of the human-capital perspective that underlie a large majority of research on the relationship between education and mental health (Mirowsky and Ross, 2003). From this perspective, scholars often assume that more education is accompanied by almost unlimited health benefits. As clearly indicated by our results and those of the aforementioned studies, however, there are limits to the mental-health returns of education, at least in terms of depressive symptoms. From the health-sociological perspective, it thus demonstrates that people can be

overeducated in terms of mental-health status, as well as in relation to position on the labor market.

The most important finding of this study is that this relationship primarily interferes with macro-economic conditions, and especially with unemployment rates. In line with Hypothesis 1.2, the most consistent finding is that being overeducated is more harmful in countries where unemployment is high or has increased over time. This specific context offers less-than-optimal conditions to overeducated individuals, as the prospects for upward job mobility are limited. This conflicts with expectations concerning educational attainment, and it ultimately imposes further limits on the ability of people to profit from their additional years of education. Contrary to this general finding, but in line with social-norm theory, our results based on the RM method indicate that overeducation is less harmful to women in countries with less favorable economic conditions. This result is even more surprising when considering that people with higher education constitute a large majority of this specific group. In a previous study, De Moortel and colleagues (2018) report that, in terms of unemployment and mortality, social-norm effects were present only for individuals with lower levels of education and not for those with higher education. The primary argument advanced by the authors is that job prospects related to educational degrees affect the impact of macro-economic factors on mental health. Optimistic prospects conflict with less-favorable economic conditions and result in the deterioration of mental health status, even though the same economic conditions attenuate the mental-health consequences for those with limited job prospects (A. Clark et al., 2010; De Moortel et al., 2018).

Based on their credentials, overeducated women could be expected to have optimistic job prospects. These expectations can be placed in perspective, however, through detailed examination of the distribution of this group across occupational categories. Contrary to the assumptions of the JA method, people who are working in jobs appropriate to those with higher education can still be overeducated if their own educational levels exceed the average within their occupational categories. Close examination of the distribution of overeducated respondents across ISCO-08 Categories 1–3 reveals that women are overrepresented in Categories 2 and 3 and underrepresented in the managerial category, while men are more equally distributed across the three groups. Given the pervasive phenomenon of gender segregation at the top of the labor-market hierarchy, processes of gender discrimination are likely to drive the distribution of women with higher levels of education across these occupational categories (Fitzsimons, 2002; Haveman and Beresford, 2012). Instead of treating this group as having good job prospects, it could be argued that, educational attainment aside, gender discrimination imposes limits on the job prospects associated with higher educational degrees, and it might explain differences in the effects of economic conditions. For women, the findings for this cyclic macro-economic component were supported by the findings for GDP. They further indicate that structural aspects of an economy also affect the relationship between overeducation and depressive symptoms. In this regard, we conclude that macro-economic conditions have a greater impact on women. This conclusion is in line with the proposed logic used to justify splitting the analysis according to gender. Finally, despite one exception for men, we found no general results for overeducation at the macro level. This leads us to the conclusion that, with regard to the role of macro-economic factors, only an indirect application of social-norm theory and the accompanying conflicting hypotheses are relevant in the case of overeducation.

With regard to the role of labor-market policies, we conclude that, despite a slight exception for men, labor-market policies generally do not alter the impact of overeducation on depressive symptoms. We must therefore reject Hypotheses 2.1, 2.2 and 3. Contrary to the existing literature, we found no evidence of a moderating effect for EPL (Carr and Chung, 2014; Scherer, 2009; Vossemmer et al., 2017). The main difference between the studies cited and the current study is that the previous studies focus on unemployed people and those working in

Table 5
Depressive symptoms regressed on overeducation (JA method; women).

	M1		M2		M3		M4		M5		M6		M7	
	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)
Constant	6.857***	(0.259)	6.782***	(0.198)	6.822***	(0.2)	6.755***	(0.201)	6.775***	(0.199)	6.783***	(0.198)	6.795***	(0.199)
Overeducation	0.58***	(0.075)	0.578**	(0.075)	0.559***	(0.075)	0.549***	(0.076)	0.556***	(0.078)	0.578***	(0.075)	0.59***	(0.076)
Gross-level interactions														
Unemployment rate X overeducation (cross-sectional)					0.068**	(0.021)								
Unemployment rate X overeducation (longitudinal)					0.053	(0.028)								
GDP per capita X overeducation (cross-sectional)							-0.015***	(0.005)						
GDP per capita X overeducation (longitudinal)							0.025	(0.073)						
Overeducationmacro X overeducation (cross-sectional)									0.027	(0.024)				
Overeducationmacro X overeducation (longitudinal)									-0.006	(0.027)				
Unemployment benefits X overeducation (cross-sectional)											-0.001	(0.005)		
Unemployment benefits X overeducation (longitudinal)											-0.009	(0.017)	0.27	(0.187)
EPL X overeducation (cross-sectional)													-0.113	(0.674)
EPL X overeducation (longitudinal)														
Variance components														
Country	0.78		0.218		0.223		0.218		0.216		0.222		0.224	
Country x period	0.042		0.042		0.0332		0.038		0.042		0.037		0.036	
Individual	13,433		13,433		13,423		13,421		13,432		13,432		13,431	
-2LL	134,107.8		134,084.2		134,057.9		134,058.8		134,081		134,079.9		134,077.5	

European Social Survey, Rounds 3, 6, and 7 (N = 24,450); weighted data.

All macro variables are mean centered.

All macro variables have a time lag of 1 year.

All models are controlled for gender, age, marital status, education, parental education, ESS round, unemployment rate, GDP/capita, overeducation (macro), NRR, and EPLR (except model 1, which did not include macro-economic variables).

EPL = Employment Protection Legislation.

*p < 0.05.

*** p < 0.001.

** p < 0.01.

Table 6
Depressive symptoms regressed on overeducation (RM method; men).

	M1		M2		M3		M4		M5		M6		M7	
	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)
Constant	6.41***	(0.239)	6.333***	(0.186)	6.306***	(0.189)	6.325***	(0.189)	6.317***	(0.187)	6.342***	(0.187)	6.344***	(0.187)
Overeducation	0.207***	(0.061)	0.207***	(0.061)	0.208***	(0.061)	0.206*	(0.061)	0.23*	(0.061)	0.208*	(0.061)	0.213*	(0.061)
Cross-level interactions														
Unemployment rate X overeducation (cross-sectional)					0.007	(0.016)								
Unemployment rate X overeducation (longitudinal)					0.048*	(0.023)								
GDP per capita X overeducation (cross-sectional)							0.01***	(0.003)						
GDP per capita X overeducation (longitudinal)							-0.013	(0.049)						
Overeducationmacro X overeducation (cross-sectional)									-0.125**	(0.039)				
Overeducationmacro X overeducation (longitudinal)									-0.087	(0.052)				
Unemployment benefits X overeducation (cross-sectional)											0.003	(0.004)		
Unemployment benefits X overeducation (longitudinal)											-0.017	(0.015)		
EPL X overeducation (cross-sectional)													0.002	(0.142)
EPL X overeducation (longitudinal)													-1.357*	(0.463)
Variance components														
Country	0.746		0.285		0.289		0.286		0.286		0.286		0.287	
Country x period	0.041		0.041		0.035		0.041		0.042		0.041		0.04	
Individual	10.75080		10.751		10.747		10.747		10.744		10.749		10.745	
-2LL	139,726.1		139,707.9		139,696.7		139,699.9		139,690.6		139,702.9		139,693.7	

European Social Survey, Rounds 3, 6, and 7 (N = 26,604); weighted data.

All macro variables are mean centered.

All macro variables have a time lag of 1 year.

All models are controlled for gender, age, marital status, education, parental education, ESS round, unemployment rate, GDP/capita, overeducation (macro), NRR, and EPLR (except model 1, which did not include macro-economic variables).

EPL = Employment Protection Legislation.

*** p < 0.001.

** p < 0.01.

* p < 0.05.

Table 7
Depressive symptoms regressed on overeducation (JA method; men).

	M1		M2		M3		M4		M5		M6		M7	
	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)	B	(S.E.)
Constant	6.365***	0.239	6.281***	0.184	6.253***	0.187	6.269***	0.189	6.308***	0.186	6.289***	0.184	6.294***	0.184
Overeducation	0.399**	0.075	0.398***	0.075	0.4***	0.075	0.398***	0.075	0.463**	0.079	0.414**	0.075	0.429***	0.077
Cross-level interactions														
Unemployment rate X overeducation (cross-sectional)					0.01	0.022								
Unemployment rate X overeducation (longitudinal)					0.053*	0.026								
GDP per capita X overeducation (cross-sectional)							0.009*	0.005						
GDP per capita X overeducation (longitudinal)							-0.042	0.066						
Overeducationmacro X overeducation (cross-sectional)									-0.047*	0.023				
Overeducationmacro X overeducation (longitudinal)									-0.036	0.026				
Unemployment benefits X overeducation (cross-sectional)											0.011*	0.005		
Unemployment benefits X overeducation (longitudinal)											0.007	0.016		
EPL X overeducation (cross-sectional)													0.584	0.653
EPL X overeducation (longitudinal)													-0.319	0.191
Variance components														
Country	0.742		0.268		0.271		0.269		0.27		0.269		0.271	
Country x period	0.041		0.042		0.035		0.042		0.041		0.041		0.039	
Individual	10.744		10.744		10.741		10.742		10.741		10.742		10.741	
- 2LL	139,709.3		139,690.1		139,679.5		139,685.3		139,681.4		139,681.9		139,680.9	

European Social Survey, Rounds 3, 6, and 7 (N = 26,604); weighted data.

All macro variables are mean centered.

All macro variables have a time lag of 1 year.

All models are controlled for gender, age, marital status, education, parental education, ESS round, unemployment rate, GDP/capita, overeducation (macro), NRR and EPLR (except model 1 which did not include macro-economic variables).

**p < 0.01.

*p < 0.05.

EPL = Employment Protection Legislation.

*** p < 0.001.

insecure jobs, while our study focuses on overeducated individuals. It is possible that EPL has a greater impact on the former groups, as research has indicated that EPL strengthens the distinction between outsiders (i.e., unemployed and job-insecure individuals) and insiders (Scherer, 2009; Vossemmer et al., 2017). Even though strict EPL limits the likelihood of re-employment for outsiders, overeducated people nevertheless are more likely to achieve a better job match, due to internal promotion (Verhaest and Van der Velden, 2013). This process is reinforced by the higher employability of overeducated individuals (e.g., based on their higher educational degrees) and the fact that less stigma is attached to overeducation than is associated with unemployment (Baert and Verhaest, 2014). Given that overeducation is often a temporal phenomenon (Dekker et al., 2002; Sicherman and Galor, 1990), stricter EPL might pose more problems for outsiders, possibly intensifying the health effects related to their employment status, as compared to those experienced by overeducated individuals.

According to the results of this study, the strength of unemployment benefits has no impact on the relationship between overeducation and depressive symptoms, standing in contrast to research focusing on job-insecurity as a detrimental employment status (Carr and Chung, 2014; O'Campo et al., 2015; Ochsens and Welsch, 2012; Scherer, 2009). An explanation for this difference can be sought in the potential advantages of unemployment benefits for those who are in insecure jobs, as well as for overeducated people. In the case of job insecurity, unemployment benefits are helpful, as they open the possibility of quitting an insecure job (which is often characterized by lower job quality), as such jobs tend to be located at the bottom of the labor market. Although the incentive to quit these jobs is clear, it might be less pronounced for overeducated workers, as their jobs are located within the middle and upper segments of labor market, and many have better job conditions. Moreover, in line with stepping-stone theory (Sicherman and Galor, 1990), it is likely that people prefer to stay in these jobs, as they still offer some advantages in terms of future job mobility (e.g. inside job information). If this is true, the size of unemployment benefits indeed has no effect on the relative harmfulness of overeducation, as it does not affect the job choices of overeducated people.

Finally, from a methodological point of view, this study stresses the importance of including two measures of objective overeducation, as the two definitions can differ in terms of the strength of the relationship with depression, as well as with regard to how this relationship can be altered by macro-economic conditions. In this context, our discussion on gender discrimination clearly demonstrates that different measurements can result in different socio-economic compositions, which could possibly affect the results. Such differences in socio-economic composition (in this case, educational level) could possibly also explain why, for men, two macro-economic conditions had a significant impact in the RM analysis, but not in the JA analysis. The overeducated group composed according to the RM method consists of more people with higher education than is the case for the group composed according to the JA method. The former group of overeducated individuals might therefore be more sensitive to macro-economic conditions as, for them, being overeducated is more in conflict with societal expectations relating to higher education (Montgomery et al., 2013; Osika and Montgomery, 2008).

Despite its contributions to the existing body of knowledge, the present study is subject to several limitations. First, the cross-sectional design makes it difficult to investigate the direction of the relationship between overeducation and depressive symptoms. Selection into overeducation is possible if prior feelings of low self-esteem, uncertainty, or similar characteristics lead people to accept jobs below their educational level (Bracke et al., 2013). According to results from longitudinal designs, however, the causal pathway is more likely (Smith and Frank, 2005). Second, we used only objective measures of overeducation, as it was not possible to use subjective measures. This could have been interesting, as those who are identified as overeducated according to objective criteria do not necessarily feel overeducated, given the

general increase in skill requirements on the labor market (Chevalier, 2000). It is thus likely that the proposed contextual moderators do not affect these individuals, such that the effect sizes found in this study could possibly be underestimated.

Finally, the results of this study suggest several opportunities for further research. In order to cope with economic recessions or policies that make job mobility more difficult, people could also adopt strategies that place them outside the labor market (e.g., housekeeping or additional education). It would be interesting to examine how this strategy could influence the results of this and other studies focusing on the relationship between overeducation and mental health. It is possible that this group is highly selective, as specific resources (e.g., finance, cognitive abilities) are needed in order to make these choices. Overeducation is therefore likely to have a more moderate impact on this group, such that the size of the associations found in this study are slightly overestimated.

Acknowledgement

Funding for this research was provided by the Research Foundation Flanders (FWO), Belgium (G0B8714N).

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.healthplace.2018.12.009](https://doi.org/10.1016/j.healthplace.2018.12.009).

References

- Aberg, R., 2003. Unemployment persistency, over-education and the employment chances of the less educated. *Eur. Sociol. Rev.* 19 (2), 199–216. <https://doi.org/10.1093/esr/19.2.199>.
- Abramson, L.Y., Alloy, L.B., Metalsky, G.I., 1990. Hopelessness Depression - an Empirical Search for a Theory-Based Subtype. *Contemporary Psychological Approaches to Depression*, 37–58. Retrieved from < Go to ISI > ://WOS:A1990BS13D00004 (March 21, 2018).
- Avdagic, S., 2015. Does deregulation work? Reassessing the unemployment effects of employment protection. *Br. J. Ind. Relat.* 53 (1), 6–26. <https://doi.org/10.1111/bjir.12086>.
- Baert, S., Cockx, B., Verhaest, D., 2013. Overeducation at the start of the career: stepping stone or trap. *Labour Econ.* 25, 17.
- Baert, S., Verhaest, D., 2014. *Unemployment or Overeducation: Which is a Worse Signal to Employers?* Institute for the Study of Labor, Bonn.
- Bambra, C., Eikemo, T.A., 2009. Welfare state regimes, unemployment and health: a comparative study of the relationship between unemployment and self-reported health in 23 European countries. *J. Epidemiol. Community Health* 63 (2), 92–98. <https://doi.org/10.1136/jech.2008.077354>.
- Berton, F., Devicienti, F., Grubanov-Boskovic, S., 2017. *Employment Protection Legislation and Mismatch: Evidence from a Reform*. Bonn.
- Bracke, P., Pattyn, E., von dem Knesebeck, O., 2013. Overeducation and depressive symptoms: diminishing mental health returns to education. *Sociol. Health Illn.* 35 (8), 1242–1259. <https://doi.org/10.1111/1467-9566.12039>.
- Bracke, P., van de Straat, V., Missinne, S., 2014. Education, mental health, and education-labor market misfit. *J. Health Social. Behav.* 55 (4), 442–459. <https://doi.org/10.1177/0022146514557332>.
- Buffel, V., Dereuddre, R., Bracke, P., 2015a. Medicalization of the uncertainty? An empirical study of the relationships between unemployment or job insecurity, professional care seeking, and the consumption of antidepressants. *Eur. Sociol. Rev.* 31 (4), 446–459. <https://doi.org/10.1093/esr/jcv004>.
- Buffel, V., Missinne, S., Bracke, P., 2017. The social norm of unemployment in relation to mental health and medical care use: the role of regional unemployment levels and of displaced workers. *Work Employ. Soc.* 31 (3).
- Buffel, V., Van de Velde, S., Bracke, P., 2015b. The mental health consequences of the economic crisis in Europe among the employed, the unemployed, and the non-employed. *Soc. Sci. Res.* 54, 263–288. <https://doi.org/10.1016/j.sres.2015.08.003>.
- Carr, E., Chung, H.J., 2014. Employment insecurity and life satisfaction: the moderating influence of labour market policies across Europe. *J. Eur. Soc. Policy* 24 (4), 383–399. <https://doi.org/10.1177/0958928714538219>.
- Chen, C., Smith, P., Mustard, C., 2010. The prevalence of over-qualification and its association with health status among occupationally active new immigrants to Canada. *Ethn. Health* 15 (6), 601–619 (doi:Pii 930290815. 10.1080/13557858.2010.502591).
- Chevalier, A., 2000. Graduate over-education in the UK. Retrieved from London.
- Clark, A., Knabe, A., Ratzel, S., 2010. Boon or bane? Others' unemployment, well-being and job insecurity. *Labour Econ.* 17 (1), 52–61. <https://doi.org/10.1016/j.labeco.2009.05.007>.

- Clark, A.E., 2003. Unemployment as a social norm: psychological evidence from panel data. *J. Labor Econ.* 21 (2), 323–351. <https://doi.org/10.1086/345560>.
- Corrigan, P.W., Markowitz, F.E., Watson, A.C., 2004. Structural levels of mental illness stigma and discrimination. *Schizophr. Bull.* 30 (3), 481–491. <https://doi.org/10.1093/oxfordjournals.schbul.a007096>.
- De Moortel, D., Hagedoorn, P., Vanroelen, C., Gadeyne, S., 2018. Employment status and mortality in the context of high and low regional unemployment levels in Belgium (2001–2011): a test of the social norm hypothesis across educational levels. *PLoS One* 13 (2), e0192526. <https://doi.org/10.1371/journal.pone.0192526>.
- Dean, J.A., Wilson, K., 2009. 'Education? It is irrelevant to my job now. It makes me very depressed': exploring the health impacts of under/unemployment among highly skilled recent immigrants in Canada. *Ethn. Health* 14 (2), 185–204 (doi:Pii 904735631.10.1080/13557850802227049).
- Dekker, R., de Grip, A., Heijke, H., 2002. The effects of training and overeducation on career mobility in a segmented labour market. *Int. J. Manpow.* 23 (2), 106–125. <https://doi.org/10.1108/01437720210428379>.
- Di Pietro, G., 2002. Technological change, labor markets, and 'low-skill, low-technology traps'. *Technol. Forecast. Social. Change* 69 (9), 885–895 (doi:Pii S0040-1625)(01)(00182-2). Doi 10.1016/S0040-1625(01)(00182-2).
- Eichhorn, J., 2014. The (Non-) effect of unemployment benefits: variations in the effect of unemployment on life-satisfaction between EU countries. *Soc. Indic. Res.* 119 (1), 389–404. <https://doi.org/10.1007/s11205-013-0474-9>.
- Fairbrother, M., 2013. Two multilevel modeling techniques for analyzing comparative longitudinal survey datasets. *Political Sci. Res. Methods* 2 (1), 21.
- Fitzsimons, A., 2002. Gender as a Verb. Gender Segregation at Work. Ashgate Publishing Limited, Aldershot.
- Frank, R.H., 1978. Why women earn less - theory and estimation of differential overqualification. *Am. Econ. Rev.* 68 (3), 360–373 (Retrieved from < Go to ISI > ://WOS:A1978FG76400011).
- Friedland, D.S., Price, R.H., 2003. Underemployment: consequences for the health and well-being of workers (doi). *Am. J. Community Psychol.* 32 (1–2), 33–45. <https://doi.org/10.1023/A:1025638705649>.
- Gangl, M., 2003. The only way is up? Employment protection and job mobility among recent entrants to European labour markets. *Eur. Sociol. Rev.* 19 (5), 429–449. <https://doi.org/10.1093/esr/19.5.429>.
- Groot, W., Van den Brink, H., 2000. Overeducation in the labor market: a meta-analysis. *Econ. Educ. Rev.* 19, 9.
- Haveman, H.A., Beresford, L.S., 2012. If you're so smart, why aren't you the boss? Explaining the persistent vertical gender gap in management. *Ann. Am. Acad. Political Social. Sci.* 639, 114–130. <https://doi.org/10.1177/0002716211418443>.
- Johnson, G.J., Johnson, W.R., 1999. Perceived overqualification and health: a longitudinal analysis. *J. Social. Psychol.* 139 (1), 14–28. <https://doi.org/10.1080/00224549909598358>.
- McLeod, C.B., Hall, P.A., Siddiqi, A., Hertzman, C., 2012. How society shapes the health gradient: work-related health inequalities in a comparative perspective. *Annu. Rev. Public Health* 33 (33) (59+). doi:10.1146/annurev-publhealth-031811-124603).
- Meroni, E.C., Vera-Toscano, E., 2017. The persistence of overeducation among recent graduates. *Labour Econ.* 48, 120–143. <https://doi.org/10.1016/j.labeco.2017.07.002>.
- Mirowsky, J., Ross, C.E., 2003. Education, Social Status and Health. Aldine De Gruyter, New York.
- Missinne, S., Vandeviver, C., Van de Velde, S., Bracke, P., 2014. Measurement equivalence of the CES-D 8 depression-scale among the ageing population in eleven European countries. *Soc. Sci. Res.* 46, 38–47. <https://doi.org/10.1016/j.sresresearch.2014.02.006>.
- Montgomery, S., Udumyan, R., Magnuson, A., Osika, W., Sundin, P.O., Blane, D., 2013. Mortality following unemployment during an economic downturn: swedish register-based cohort study. *BMJ Open* 3 (7) (doi:ARTN e003031). 10.1136/bmjopen-2013-003031).
- O'Campo, P., Molnar, A., Ng, E., Renahy, E., Mitchell, C., Shankardass, K., Muntaner, C., 2015. Social welfare matters: a realist review of when, how, and why unemployment insurance impacts poverty and health. *Soc. Sci. Med.* 132, 88–94. <https://doi.org/10.1016/j.socscimed.2015.03.025>.
- Ochsen, C., Welsch, H., 2012. Who benefits from labor market institutions? Evidence from surveys of life satisfaction. *J. Econ. Psychol.* 33 (1), 112–124. <https://doi.org/10.1016/j.joep.2011.08.007>.
- OECD, 2016. Population-with-tertiary-education Retrieved from <<https://data.oecd.org/eduatt/population-with-tertiary-education.htm#indicator-chart>>.
- Oesch, D., 2013. Occupational Change in Europe: How Technology and Education Transforms the Job Structure. Oxford University Press, Oxford.
- Oesch, D., Menes, J.R., 2011. Upgrading or polarization? Occupational change in Britain, Germany, Spain and Switzerland, 1990–2008. *Socio-Econ. Rev.* 9 (3), 503–531. <https://doi.org/10.1093/ser/mwq029>.
- Osika, W., Montgomery, S.M., 2008. Economic disadvantage modifies the association of height with low mood in the US, 2004: the disappointment paradox. *Econ. Human Biol.* 6 (1), 95–107. <https://doi.org/10.1016/j.ehb.2007.09.001>.
- Pescosolido, B.A., Martina, 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. <https://doi.org/10.1016/j.socscimed.2008.03.018>.
- Phelan, J.C., Lucas, J.W., Ridgeway, C.L., Taylor, C.J., 2014. Stigma, status, and population health. *Soc. Sci. Med.* 103, 15–23. <https://doi.org/10.1016/j.socscimed.2013.10.004>.
- Radloff, L.S., 1977. The CES-D Scale: a self-report depression scale for research in the general population. *Appl. Psychol. Meas.* 1, 16. <https://doi.org/10.1177/014662167700100306>.
- Reibling, N., Beckfield, J., Huijts, T., Schmidt-Catran, A., Thomson, K.H., Wendt, C., 2017. Depressed during the depression: has the economic crisis affected mental health inequalities in Europe? Findings from the European social survey (2014) special module on the determinants of health. *Eur. J. Public Health* 27, 47–54. <https://doi.org/10.1093/eurpub/ckw225>.
- Robert, P., 2014. Job mismatch in early career of graduates under post-communism. *Int. J. Manpow.* 35 (4), 500–513. <https://doi.org/10.1108/ijm-05-2013-0113>.
- Rubb, S., 2011. Factors influencing the likelihood of overeducation: a bivariate probit with sample selection framework. *Econ. Econ.* 22 (2), 27.
- Scherer, S., 2009. The Social Consequences of Insecure Jobs. *Social. Indic. Res.* 93, 20.
- Schmidt-Catran, A.W., Fairbrother, M., 2016. The random effects in multilevel models: getting them wrong and getting them right. *Eur. Sociol. Rev.* 32 (1), 23–38. <https://doi.org/10.1093/esr/jcv090>.
- Schofer, E., Meyer, J.W., 2005. The worldwide expansion of higher education in the twentieth century. *Am. Soc. Rev.* 70 (6), 898–920. <https://doi.org/10.1177/000312240507000602>.
- Shahidi, F., De Moortel, D., Muntaner, C., Davis, O., Siddiqi, A., 2016. Do flexicurity policies protect workers from the adverse health consequences of temporary employment? A cross-national comparative analysis. *SSM - Popul. Health* 2, 8.
- Sicherman, N., Galor, O., 1990. A theory of career mobility. *J. Political Econ.* 98 (1), 169–192. <https://doi.org/10.1086/261674>.
- Sjoberg, O., 2010. Social insurance as a collective resource: unemployment benefits, job insecurity and subjective well-being in a comparative perspective. *Soc. Forces* 88 (3), 1281–1304 (Retrieved from < Go to ISI > ://WOS:000276499600012).
- Smith, P., Frank, J., 2005. When aspirations and achievements don't meet. A longitudinal examination of the differential effect of education and occupational attainment on declines in self-rated health among Canadian labour force participants. *Int. J. Epidemiol.* 34 (4), 827–834. <https://doi.org/10.1093/ije/dyi047>.
- Sparreboom, T., Tarvid, A., 2017. Skills Mismatch of Natives and Immigrants in Europe. Retrieved from Geneva.
- Stegmuller, D., 2013. How many countries for multilevel modeling? A comparison of frequentist and Bayesian approaches. *Am. J. Political Sci.* 57 (3), 748–761. <https://doi.org/10.1111/ajps.12001>.
- Tarvid, A., 2017. Symptoms of depression and status in the European labour market. In: Tsounis, N., Vlachvei, A. (Eds.), *Advances in Applied Economic Research: Proceedings of the 2016 International Conference on Applied Economics (ICAOE)*. Springer, Switzerland.
- Van de Velde, S., Bracke, P., Levecque, K., Meuleman, B., 2010. Gender differences in depression in 25 European countries after eliminating measurement bias in the CES-D 8. *Soc. Sci. Res.* 39 (3), 396–404. <https://doi.org/10.1016/j.sresresearch.2010.01.002>.
- vanOurs, J.C., Ridder, G., 1995. Job matching and job competition: are lower educated workers at the back of job queues? (doi). *Eur. Econ. Rev.* 39 (9), 1717–1731. [https://doi.org/10.1016/0014-2921\(95\)00010-0](https://doi.org/10.1016/0014-2921(95)00010-0).
- Venn, D., 2009. Legislation, collective bargaining and enforcement: updating the OECD employment protection indicator. Retrieved from <www.oecd.org/els/workingpapers/>.
- Verdugo, R.R., Verdugo, N.T., 1989. The impact of surplus schooling on earnings: some additional findings. *J. Human. Resour.* 24 (4), 14.
- Verhaest, D., Van der Velden, R., 2013. Cross-country differences in graduate over-education. *Eur. Soc. Rev.* 29 (3), 11.
- Vossemer, J., Gebel, M., Täht, K., Unt, M., Högberg, B., Strandh, M., 2017. The effects of unemployment and insecure jobs on well-being and health: the moderating role of labor market policies.
- Vossemer, J., Schuck, B., 2016. Better overeducated than unemployed? The short- and long-term effects of an overeducated labour market re-entry. *Eur. Soc. Rev.* 32 (2), 251–265. <https://doi.org/10.1093/esr/jcv093>.
- Wulfgramm, M., 2014. Life satisfaction effects of unemployment in Europe: the moderating influence of labour market policy. *J. Eur. Soc. Policy* 24 (3), 258–272. <https://doi.org/10.1177/0958928714525817>.