



Mental Well-being Among Workers: A Cross-national Analysis of Job Insecurity Impact on the Workforce

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Abstract

Drawing on 2011 and 2016 *European Quality of Life Survey* data from eight European countries, this paper considers the importance of subjective indicators of employment conditions in impacting mental well-being. Among employment conditions, job insecurity has been discussed as having a negative impact on mental well-being by enhancing the worker's sense of unpredictability. The idea of losing one's job brings with it the fear of an uncertain or unclear future and the sense of lack of agency—i.e. feeling powerless with respect to the risk of becoming unemployed. Thus, we investigate two dimensions of job insecurity, namely 'cognitive job insecurity' and 'labour market insecurity'. Our dependent variable is mental health well-being, measured using the 5-item World Health Organization Well-Being Index (WHO-5), which is a self-reported health scale validated by several studies and internationally adopted for measuring psychological well-being. We apply a fixed-effects model and use a set of individual control variables to obtain parameter estimates. Moreover, to control for country-level heterogeneity, two macro-level variables are considered: the type of welfare regime and employment protection. The novelty of this research lies in disentangling the concept of precariousness from the dichotomy of open-ended/non-open-ended contract and in including in the analysis subjective categories such as self-perceived job insecurity. The findings of our study suggest that self-perceived job insecurity is negatively related to mental well-being for both permanent and temporary workers, making this stressor an important feature in predicting the emergence of psychological distress (i.e. feelings of anxiety or depression) among the workforce.

Keywords Mental well-being · Job insecurity · Sociology of health · Quantitative research

1 Introduction

Gradually over the last 20 years and at an even faster pace after the 2008 crisis which affected Western economies, the labour market has shrunk, and employment patterns have critically changed. Standard employment (represented by the open-ended contract) has

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gradually decreased, making way for more unstable forms of workforce contracts. Terms such as insecurity, precariousness and vulnerability entered the employment-related lexicon and came to assume relevance in the scientific debate among sociologists (Anderson and Pontusson 2007; Juliá et al. 2017), psychologists (Dooley et al. 1987; Vander Elst et al. 2014) and economists (Böckerman 2004; Origo and Pagani 2009; Böckerman et al. 2011).

In *The Corrosion of Character*, Richard Sennett (1998) discusses the profound effect that a fixed-term contract can have on an individual's consciousness and, more generally, on society. As case studies, Sennett uses a group of former IBM workers, an advertising agent who decided to leave her job because it was causing her frustration and a group of people working as bakers after losing the jobs they were trained for. He argues that under the regime of flexibility, which is a common work condition in contemporary times all over the world, the production of subjectivities dramatically interplays with new forms of anxiety. Those new forms of anxiety could be considered to be deeply linked with the sense of lack of agency that people face when they struggle with uncertainty and they lose a sense of liability for their actions (Sennett 1998).

Because working is not only a matter of 'breadwinning' but is also one of the main features placing an individual in the social structure, scholars have started to investigate to what extent and in which peculiar ways the increase in temporary and precarious forms of employment might affect workers' physical and mental health (Benach and Muntaner 2007; Vives et al. 2013). A rich volume of scientific literature has focused on the relationship between 'working conditions' (specifically, the material conditions under which the job is performed) and workers' physical and mental well-being to the point that factors related to working conditions are recognised, by both scholars and international bodies such as the World Health Organization, as social determinants of health and health inequalities (Benavides et al. 2000; Theorell 2000). Far less substantial attention has been paid to 'employment conditions' (which include precarious jobs, informal jobs and other forms of job-related insecurity), even though these are a defining feature of welfare states (Esping-Andersen 1990; Huber and Stephens 2001).

Self-perceived job insecurity has been investigated by numerous economic studies (Gottschalk and Moffitt 1999; Böckerman 2004; Böckerman et al. 2011). With regard to our interest in disentangling the research on the effects of precariousness on mental well-being from investigating the type of contract per se, it is particularly relevant that Origo and Pagani (2009), by analysing the microdata from 2001 Special Eurobarometer 56.1, found that self-perceived job insecurity had a deeper impact on job satisfaction than the type of contract, to the point that the combination 'temporary but secure job' emerged as preferable to the combination 'permanent but insecure job' (Origo and Pagani 2009).

Drawing on 2011 and 2016 *European Quality of Life Survey* data from eight European countries, this paper considers the importance of subjective indicators of employment conditions in impacting mental well-being according to Thomas' theorem 'if men define situations as real, they are real in their consequences' (Thomas and Thomas 1928: 572). The novelty of this approach lies in disentangling the quantitative analysis of the relationship between employment conditions and workers' well-being from only considering objective categories such as the duration of the contract and employees' union participation, and interrogating more subjective categories—such as self-perceived job insecurity—which so far have been explored by qualitative studies (Sennett 1998; Spyridakis 2016) and have been almost completely overlooked by scholars of the sociology of health.

In designing our study, we referred to two main theoretical models: the effort-reward imbalance model (Siegrist 1996; Siegrist and Li 2017) and the locus of control model (Rotter 1954). Both perspectives have been used to analyse stressful psychosocial

work-environments. The effort-reward imbalance model engages with stressful aspects of the employment contract, stating that reciprocity results from the adequacy between the effort a certain job requires and the wage, job security and the social recognition it offers. Thus, a certain level of insecurity about the future of one's job fails to provide employees with the status-related reward they need not to experience an imbalance, and it could determine a stressful situation (Siegrist 1996; Siegrist and Li 2017). The locus of control model is concerned with the life features that are out of our control, since the feeling of not being in control of our decision has been proven to influence negatively mental well-being (Rotter 1954; Sennett 1998; Kirkcaldy et al. 2002). For the concern of this study, by potentially threatening the workers' internal locus of control, thus causing a sense of impotence with respect to their work life (Argentero and Vidotto 1994), job insecurity could negatively impact on workers' mental well-being.

Finally, the paper considers in its analysis cross-national differences in welfare state regimes. To achieve this purpose, following the Ferrera model, we chose eight countries, two for each type of welfare state regime, specifically: the United Kingdom and Ireland for the liberal regime, Germany and France for the Bismarckian regime, Denmark and Sweden for the social-democratic regime and, finally, Italy and Spain for the Southern regime (Ferrera 1996). Given the limited number of countries available, the model applies a fixed-effects approach, which is a valuable alternative to the application of conventional multi-level models in country-comparative analysis.

2 Background

Some pivotal quantitative studies on the relation between mental and physical well-being and employment conditions have been led by the GREDS-EMCONET research group which, to fulfil the existing gap in the scientific literature, analysed the way in which the increasing precariousness of work can be considered to be a social determinant in the production of health inequalities. The group also started to investigate the pathways and mechanisms which explain the higher morbidity of precarious workers (Artazcoz et al. 2005; Vives et al. 2013;). To pursue this aim, the GREDS-EMCONET research group built a multidimensional measurement instrument, called the Employment Precarious Scale (EPRES), which counts using six different dimensions: employment instability, low wages, erosion of workers' rights, disempowerment, vulnerability towards undesirable treatment, and incapacity to exercise workplace rights (Vives et al. 2013). Even though the EPRES scale was explicitly designed to tackle the limitations of the rigid dichotomy between permanent and temporary workers, and Benach and Muntaner (2007) previously underlined the importance of the role played by job insecurity as a chronic stressor for workers, the scale tends to focus almost exclusively on objective indicators regulated by the relations between the employer and the employees, and overlooks more subjective ones such as self-perceived job insecurity.

2.1 Job Insecurity: A Threefold Concept

The concept of job insecurity—defined as the subjectively perceived and undesired possibility of losing one's employment in the near future (Vander Elst et al. 2014)—began to gain scholars' attention in the late eighties because of 'chronic stressors' often related to poorer physical and mental health outcomes (Dooley et al. 1987; Ferrie et al. 1998, 2005).

In the literature, the notion of job insecurity is usually considered to be a threefold conceptual framework based on ‘cognitive job insecurity’ (self-perceived probability of losing one’s current job), ‘affective job insecurity’ (personal fear of losing current job) and ‘labour market insecurity’ (self-perceived probability of finding equally remunerated employment in the case of a job loss)¹ (Anderson and Pontusson 2007; Reyneri 2013; Lübke and Erlinghagen 2014). All three dimensions of the concept should be considered subjective; nevertheless, job insecurity is fed by social factors, such as labour market performance (Chung and Van Oorschot 2011) and, in particular, the unemployment rate (Reyneri 2013). Indeed, a persistent high national unemployment rate has been proven to have a deep impact on cognitive job insecurity, where an abrupt rise in the unemployment rate tends to negatively impact labour market insecurity (Anderson and Pontusson 2007).

Lübke and Erlinghagen (2014) stated that job insecurity characteristics vary significantly across Europe due to social security in different welfare state regimes (i.e. active and passive labour market policies) (Esping-Andersen 1990) and even the degree and the speed of socio-economic changes (Evers et al. 1987). Indeed, political science scholars, such as Anderson and Pontusson, stemming from the hypothesis that job insecurity generates demand for social protection, have investigated the relationship between OECD welfare state countries’ and workers’ job insecurity, finding that employment protection and active labour market programmes moderate the impact of the national unemployment rate on cognitive job insecurity and on labour market insecurity respectively (Anderson and Pontusson 2007).

Perceived job insecurity causes health impairments along with a large range of personal and family problems. It is also associated with reduced well-being (Lübke and Erlinghagen 2014: 320); in other words, being insecure about one’s job does not just threaten a worker’s material life conditions but also their health, social relationships and thus their quality of life as a whole (Spyridakis 2016).

2.2 Mental Health Well-being

The concept of well-being has increasingly attracted the attention of social sciences over the past two decades. On one hand, this is because Western biomedicine has shifted its aim from making individuals ‘not ill’ to keeping them ‘healthy’ in a wider sense, but mostly this is because psychology redefined its object of study as ‘mental health’ instead of ‘mental illness’ (Mathews and Izquierdo 2009). On the other hand, this is also because of the growing interest from economists, who started to use subjective well-being measures as indicators of how well a society is doing (Diener and Tov 2012).

Mental well-being could be defined as ‘the presence of positive emotions and moods (e.g. contentment, happiness), the absence of negative emotions (e.g. depression, anxiety), satisfaction with life, fulfilment and positive functioning’ (Bosmans et al. 2016: 251). This definition concerns both the hedonic aspect, by considering feelings and emotions such as happiness or anxiety, and the eudemonic aspect, related to the experience of a sense of meaning and purpose (Diener and Tov 2012).

¹ The concept of ‘labour market insecurity’ could be considered quite similar to what some scholars have defined as ‘subjective employability’, which Silla et al. described as ‘employees’ perception of the available alternatives in labour market’ (2009: 741).

There is a general consensus among social scientists that mental well-being depends on both external conditions and personal resources (Thompson and Marks 2008). Scholars have posited a large variety of theories which present the impact of external conditions such as economic status (Diener and Seligman 2004; Howell and Howell 2008), degree of freedom (Robeyns 2017) and social inequality (Wilkinson and Pickett 2009). Some attention has also been paid to the link between both working and employment conditions and well-being. The Jahoda theory of ‘latent deprivation’ (1982), for instance, points out how, other than gaining an income, there are important needs that are fulfilled by working, such as acquiring a social network, being able to structure oneself during the daytime and, most importantly, developing as an individual. Nevertheless, unemployment has been widely discussed as a factor which causes mental health impairment (Murphy and Athanassou 1999; Paul and Moser 2009). Meanwhile, just recently, the relation between precarious employment and mental well-being has been investigated by sociologists (Bosmans et al. 2016; Juliá et al. 2017).

Among employment conditions, job insecurity has been discussed as having a negative impact on well-being by enhancing the worker’s sense of unpredictability because the idea of losing one’s job brings with it the fear of an uncertain or unclear future (De Witte 1999) and the already mentioned sense of lack of agency—i.e. feeling powerless with respect to the risk of becoming unemployed (Sennett 1998). Lack of agency has also been described by some psychologists as a feeling of uncontrollability: ‘due to the insecurity about job loss in the future, employees lack control to deal with the insecure situation, which in turn may result in poor well-being’ (Vander Elst et al. 2014: 366).

3 Data

Drawing on the last two waves of the European Quality of Life Survey (EQLS) data, the following analysis focuses on whether and how both self-perceived job insecurity and labour market insecurity affect workers’ mental health well-being. The EQLS is a well-established tool for monitoring and analysing the quality of life in European Union countries. It currently consists of four waves, conducted respectively in 2003, 2007, 2011 and 2016. It includes both subjective measures (such as health self-assessment) and objective measures (such as type of contract) and investigates attitudes and preferences in social living, such as resources and experiences.

For the purpose of this article, we chose to analyse the third and fourth waves—specifically the one carried out between 2011 and 2012 and the one carried out in 2016—because some of the variables we focus on (i.e. how likely or unlikely is it that the interviewee will find a job with a similar salary) were only integrated into the survey in 2011.

To increase the sample size, we pooled the two waves and conducted the analysis on this pooled sample in order to make the results more reliable. Moreover, we applied the WCalib weight (Eurofound 2017),² which is useful when calculating confidence intervals or significance at country level for analysis within the EU and with a view to comparing European countries.

² The WCalib weight generated is recommended for analysis of within-the-EU data (Eurofound 2017). It is used for improving the calculation of confidence intervals or significance at country level.

We selected eight countries, two for each of the four different welfare regimes considered; respectively, the United Kingdom and Ireland for the liberal regime, Germany and France for the Bismarckian one, Denmark and Sweden for the social-democratic one and Spain and Italy for the Southern one (Ferrera 1996). After deleting observations for which there are missing cases for the variables of interest, the final data set contained 10,230 cases. (The size of the samples used in the analysis, by country, are shown in Appendix Table 3).

4 Method

This paper investigates two dimensions of job insecurity: specifically, cognitive job insecurity and labour market insecurity. The first dimension is measured through the question: ‘How likely or unlikely do you think it is that you might lose your job in the next six months?’ The second dimension is measured by the question: ‘If you were to lose or had to quit your job, how likely or unlikely is it that you will find a job with a similar salary?’ For both questions, respondents were given five possible answers (coded respectively from 1 to 5): ‘very likely’, ‘rather likely’, ‘neither likely nor unlikely’, ‘rather unlikely’ and ‘very unlikely’. Starting from these two dimensions, we constructed an insecurity typology. First, we computed two dichotomous variables: a) the risk of losing one’s job, where 0 is a low-risk condition (codes 3 to 5 of the original variable) and 1 is a high-risk variable (codes 1 and 2); and b) the risk of not finding a similar job, where 0 is a low-risk condition (codes 1 and 2 of the original variable) and 1 is a high risk variable (codes 3 to 5). Second, by crossing these new variables, we obtained a typology with four types of job insecurity: (i) not at all insecure; (ii) insecure, risks losing job; (iii) insecure, risks not finding a similar job; and (iv) totally insecure. This typology, called an ‘insecurity index’ is the independent variable used in regression models.³

Our dependent variable is mental health well-being, measured using the 5-item World Health Organization Well-Being Index (WHO-5), which is a self-reported health scale validated by several studies and internationally adopted for measuring psychological well-being (Topp et al. 2015). The scale covers, according to ICD-10 (International Statistical Classification of Diseases and Related Health Problems, 10th Revision), the three main areas of depression: mood, interests and energy (World Health Organization 1993), and it consists of five items (specifically, five statements) which the interviewees use to evaluate how they have been feeling in the past 2 weeks according to a range that spans from 5 (all the time) to 0 (at no time).⁴ The WHO-5 only contains positively phrased items, i.e. characteristics which have been proven to decrease the ceiling effect (Bech et al. 2003; Topp et al. 2015).⁵ The items are: (1) I have felt cheerful and in good spirits; (2) I have felt calm and relaxed; (3) I have felt active and vigorous; (4) I woke up feeling fresh and rested; and (5)

³ As a robustness check, we replicated the models by coding differently the variables of risk of losing job and risk of not finding a similar job. Specifically, we examined how sensitive the analysis is to setting the answer ‘neither likely nor unlikely’ as high risk (code 1) instead of low risk (code 0) for both variables. Results (not shown here) are very similar to the baseline specification in models presented later.

⁴ The WHO-5 has a coefficient of homogeneity of 0.63 and a Cronbach coefficient alpha of 0.88 (Zierau et al. 2002; Bech et al. 2003).

⁵ A Danish general population study compared psychometrically the mental health subscale from the SF-36 questionnaire with the WHO-5 and found that the latter has a significant lower ceiling effect than the first (Bech et al. 2003).

my daily life has been filled with things that interest me. The WHO-5 index rates respondents on a scale from 0 to 100, where people with a score of 50 or lower are considered at risk of depression (Topp et al. 2015).

For our multivariate models, we used a set of control variables to obtain parameter estimates. First, we included a measure of perceived health. Respondents' self-assessed health was rated originally according to a 5-point scale from very good to very bad, and participants were subsequently dichotomised as healthy individuals if they declared a 'very good,' 'good' or 'fair' health status, or unhealthy if they declared a 'bad' or 'very bad' health status. Second, we included three variables as predisposing factors: age in years, gender and household structure (single; couple; couple with children; single with children; other). The third type of confounder was enabling factors, which included four variables. Specifically, these were: educational attainment, rated in three categories, 'lower secondary or below', 'upper secondary or post-secondary', and 'tertiary'; a measure of subjective financial circumstances (i.e. household difficulty in making ends meet), originally rated according to six categories from 'very easily' to 'with great difficulty' and subsequently categorised into two levels of 'easily' and 'with difficulty'; the respondents' current occupation aggregated into nine categories (manager, professional, technician, clerical support, service, sales, craft, elementary, other); and the respondents' employment contract which was rated originally in seven categories and subsequently dichotomised into 'unlimited permanent contract' and 'fixed-term or temporary'.

Finally, to control for country-level heterogeneity, two macro-level variables were considered: the type of welfare regime and employment protection. First, as noted above, our study categorised the eight countries into four welfare regimes based upon Ferrera's (1996) classification. Second, we used the EPL GAP (Employment Protection Legislation, the last available data are for 2013), which is an OECD indicator measuring the difference between employment protection legislation of open-ended contract and temporary or fixed-term jobs, which is designed to keep track of disparities in protection (in terms of access to fringe benefits, protection in cases of termination of the contract, salary and prospects of upward mobility) across contract types (OECD 2014). In particular, we used a measure of the strictness of employment protection for regular contracts related to individual or collective dismissal. In theory, EPL ranges from 0 (no protection) to 5 (maximum protection), but in the analysed countries, it varies from 1.10 to 2.68. Therefore, we distinguished three levels of job protection: low (values from 1.10 to 1.80), medium (from 1.81 to 2.40) and high (from 2.41 to 2.68).

Descriptive statistics for the dependent variable series and predictor variables are shown in Appendix Table 4.

5 Analysis

To analyse the data, given its hierarchical nature with individuals nested in countries, the obvious choice would be to use multilevel regression models. However, multilevel models are associated with some problems when the estimated models have a small number (i.e. $N < 30$) of macro-level units (Bryan 2013). Specifically, first, a small sample size at level two leads to biased estimates of second-level standard errors (Cora et al. 2005). Second, because of the low number of degrees of freedom at the country level, only a small number of macro-indicators can be controlled for. Therefore, country-level estimators of these models are affected by omitted variable bias (Möhring 2012).

We used the fixed-effects approach (Allison 2009) as an alternative to the application of multilevel methods for country comparisons when the number of second-level units is small. Compared with a multilevel model, in a fixed-effects estimation, a country-specific error term is explicitly estimated, and it belongs to the fixed part of the equation.

Formally:

$$y_{ij} = \gamma_{00} + \beta_1 x_{1ij} + \dots + \beta_k x_{kij} + \delta_1 x_{1ij} u_{j1} + \dots + \delta_{N-1} x_{1ij} u_{jN-1} + \alpha_1 u_{j1} + \dots + \alpha_{N-1} u_{jN-1} + e_{ij}$$

with y_{ij} being the individual-level dependent variable of observation i in country j ; γ_{00} is the intercept over all countries (note that the country-specific intercept γ_{0j} equals $\gamma_{00} + u_j$); x_{kij} is the independent individual-level variable number k ; β_k is the coefficient on the individual-level variable number k ; u_j is the error term for each country j ; and e_{ij} is the error term for observation i within country j .

Four models have been estimated.

Model 1 (M1) was calculated to test how much variance is explained from the second level. To do this, M1 only includes $N - 1$ dummy variables for countries. The coefficient of determination (R2) indicates the percentage of variance that is due to country-level variation. Model 2 (M2) added the independent variable (insecurity index) and micro-level predictors (individual variables). Model 3 (M3) tested whether the effects of insecurity vary across countries (i.e. what is called the 'slope effect' in multilevel models). Interaction terms of insecurity and country dummies were added to M3.

Finally, Model 4 (M4) added the cross-level interaction effect (i.e. interactions between micro and macro variables). The fixed-effects estimation technique does not include the main effect of macro variables because the country dummies use all the variance at the country level; thus, no variance remains to be explained by additional country-level variables. In this respect, the use of macro-cross-level interaction terms allows for the estimation of a moderator effect of macro variables on individual characteristics.

6 Results

In Fig. 1, we report the standardised rate of the WHO-5 Well-Being Index as being less than 50, which is indicative of reduced well-being (Topp et al. 2015), adjusted for age by country. We found significant differences across countries.

The United Kingdom had the worst well-being condition (i.e. an adjusted rate of 30.4, confidence interval (CI)=28.4–32.4), followed by Italy (26.3; CI 24.6–28.1) and France (25.3; CI 23.5–27.2). In contrast, the proportion of people in Denmark with a WHO-5 Well-Being Index lower than 50 is 13.1 (CI 11.4–15.0) and in Sweden was 20.3 (CI 18.1–22.6). In general, we can state that individuals who live in northern countries (plus Ireland) claim to have the highest well-being.

Moreover, significant differences in perceived job insecurity among countries were found (Fig. 2): in this case, Scandinavian countries (Sweden 1.26, CI 1.23–1.29; Denmark 1.39, CI 1.42–1.46) also showed the lowest level of insecurity, whereas Southern countries (Spain 1.72, CI 1.68–1.76; Italy 1.66, CI 1.63–1.68) and Ireland (1.62, CI 1.58–1.66) displayed the highest level of job insecurity.

Within this framework, the next step was to estimate whether and to what extent subjective job insecurity affects people's mental well-being. The estimated multivariate M1 (data not shown) includes $N - 1$ dummy variables to represent individual countries. The

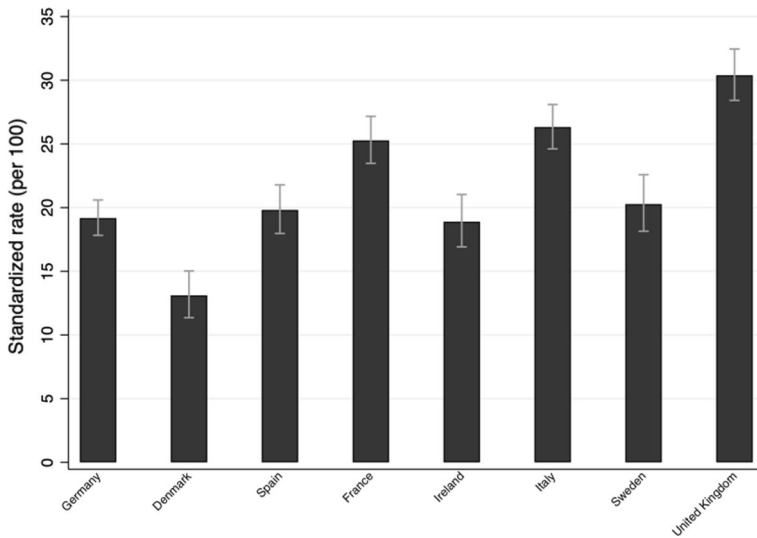
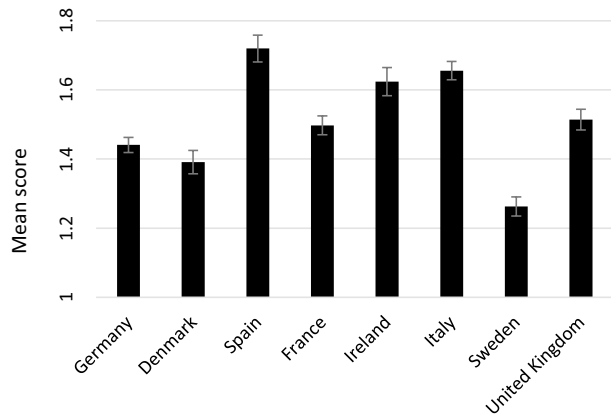


Fig. 1 Individuals' WHO-5 Well-Being Index and 95% confidence intervals adjusted for age by country. *Note.* WHO-5 Well-Being Index variable was dichotomised: reduced well-being = score ≤ 50 ; age is a continuous variable between 18 and 85 years

Fig. 2 Perceived job insecurity and 95% confidence intervals by country. *Note.* Job insecurity variable was codified here into three modalities: 1 = secure (no risk of losing job and not finding a similar job); 2 = partially insecure (risk of losing job or not finding a similar job); 3 = insecure (risk of losing job and not finding a similar job)



variance explained by country level as indicated by the R^2 value was very low: 2.4%. In M2, which also includes individual-level variables, the explained variance increased appreciably: 12.8%. We tested whether micro-level variables introduced in M2 significantly improved the fit of the model compared with M1. For this purpose, the Bayesian information criterion (BIC) was used. According to this test, M2 improved the prediction relative to M1 (see Table 2).

The effect of variable of interest—specifically, our measure of job insecurity—is shown in Table 1. We found that the higher the degree of insecurity, the worse the well-being of people. Even after controlling for confounders, individuals coded as totally insecure displayed a level of mental well-being that was about seven points lower than

Table 1 Fixed effects estimation of Model 2—the impact of job insecurity on WHO-5 Well-Being Index in eight European countries

Model 2	Beta	SE	CI
<i>Country fixed effect</i>			
Germany	Ref.		
Denmark	4.47	0.71	3.08; 5.86
Spain	6.05	0.75	4.58; 7.51
France	- 1.18	0.62	- 2.39; 0.04
Ireland	2.71	0.77	1.20; 4.21
Italy	- 0.64	0.61	- 1.84; 0.56
Sweden	- 3.93	0.71	- 5.32; - 2.55
United Kingdom	- 3.33	0.63	- 4.56; - 2.11
<i>Insecurity typology</i>			
Secure	Ref.		
Losing job	- 5.00	0.76	- 6.5; - 3.51
Finding job	- 2.69	0.40	- 3.47; - 1.91
Insecure	- 6.81	0.88	- 8.53; - 5.09
<i>Education</i>			
Lower secondary or below	Ref.		
Upper secondary or post- secondary	0.32	0.49	- 0.64; 1.27
Tertiary	- 0.13	0.59	- 1.28; 1.03
<i>Gender</i>			
Male	Ref.		
Female	- 3.09	0.38	- 3.83; - 2.36
<i>Respondent age</i>			
Self- perceived health	- 0.01	0.02	- 0.04; 0.02
<i>Employment contract</i>			
Good	Ref.		
Bad	- 17.69	1.07	- 19.8; - 15.59
<i>Employment contract</i>			
Unlimited			
Fixed- term	0.93	0.45	0.05; 1.81
<i>Occupation</i>			
Manager	Ref.		
Professional	- 0.80	0.77	- 2.3; 0.71
Technician	0.64	0.80	- 0.93; 2.21
Clerical support	0.82	0.82	- 0.8; 2.43
Service	0.77	0.83	- 0.85; 2.38
Sales	0.63	0.93	- 1.2; 2.46
Craft	0.78	0.95	- 1.08; 2.65
Elementary	0.06	0.97	- 1.85; 1.97
Other	1.54	1.00	- 0.4; 3.5
<i>Making ends meet</i>			
Easily	Ref.		
With difficulty	- 8.59	0.41	- 9.39; - 7.78
<i>Household structure</i>			
Single	Ref.		
Couple	1.84	0.52	0.82; 2.87

Table 1 (continued)

Model 2	Beta	SE	CI
Single with children	-1.76	0.86	-3.43; -0.08
Couple with children	0.65	0.51	-0.35; 1.66
Other	0.66	0.57	-0.45; 1.77
<i>Wave</i>			
2011	Ref.		
2016	0.67	0.36	-0.03; 1.37
<i>Constant</i>	70.21	1.26	67.75; 72.67
<i>Observations</i>	10.173		
<i>Log-likelihood</i>	-43,505.48		
R^2	0.128		
<i>BIC</i> ($df=31$)	87,296.909		

Table 2 BIC statistics and likelihood-ratio test to compare models

	M2-M1	M3-M2	M4_WEL-M2	M4_EPL-M2
<i>BIC</i>				
Difference	-902.06	165.79	72.9	45.48
<i>Likelihood-ratio test</i>				
Difference	1114.30	27.99	10.15	9.88
Df	23	21	9	6
Sig.	0.00	0.14	0.34	0.13

the level of well-being of those who were secure. Job insecurity, as we have defined it, therefore, had a significant effect on people's well-being.

Self-assessment health has a strong association with well-being. Individuals with bad health conditions scored about 18 points less than those in good health.

Also, predisposing factors are related to mental well-being, but the direction and magnitude of association differ based on the variables considered. In particular, age was not associated with the WHO-5 index. On the other hand, only couples without children showed a statistically significant increase in well-being above single people, whereas singles with children revealed a lower level, though in both cases, the differences were very low (less than two points). Moreover, females had lower well-being, by around three points, than males.

A final set of variables included in the model is related to the enabling factors. Neither education, occupation, nor type of contract was associated with mental well-being. On the contrary, people who claimed to make ends meet with difficulty saw their well-being index reduced by nine points.

Next, we evaluated whether the effect of job insecurity varies across countries. While in M2 the impact was found to be the same for each country, this was not necessarily true and therefore should be tested. For this purpose, we estimated a new model, M3 (data not shown), which included interaction effects of the country dummies and the measure of individual job insecurity. These interaction effects (i.e. the so-called 'slope effect' in multilevel models) allowed for assessment of differences in the impact of insecurity across

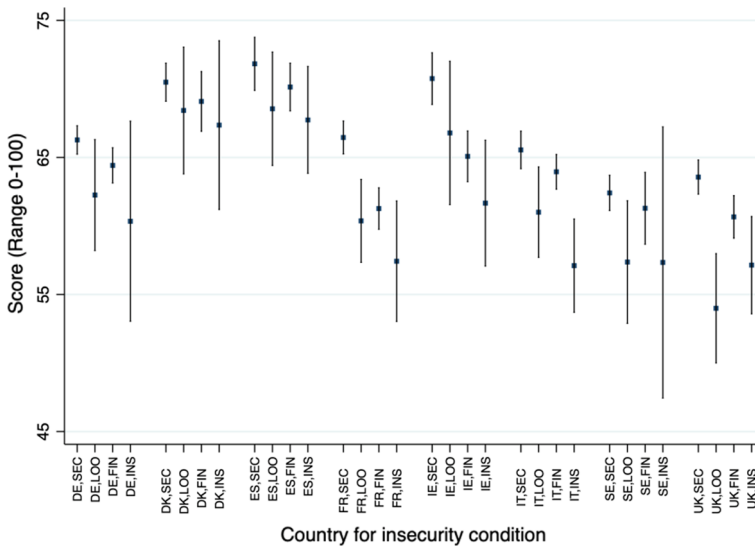


Fig. 3 Fixed-effects estimation of Model 3, well-being in European countries. Predictive margins and 95% confidence intervals of interaction between job insecurity and country. *Note.* Country: DE, Germany; DK, Denmark; ES, Spain; FR, France; IE, Ireland; IT, Italy; SE, Sweden; UK, United Kingdom. Job insecurity: SEC, Not at all insecure; LOO, Insecure, risks losing job; FIN, Insecure, risks not finding a similar job; INS, totally insecure

countries. First, we compared M3 with M2 through the BIC statistics. Differences in the BIC statistics (Table 2) showed evidence that M2 (i.e. models without interaction effects between the insecurity index and country dummy variables) was preferred over M3 (i.e. models with interaction effects). From a substantive point of view, this means that the impact of job insecurity on the outcomes we considered was similar in each of the countries analysed in this study. In other words, the more insecure people were, the more their well-being was reduced to a similar extent in all countries considered.

To visualise this result, Fig. 3 illustrates the predictive margins of job insecurity and country interaction as indicated by M3. As we can see, the effect of job insecurity differed slightly among countries where the outcome was studied. In general, we observed that more insecure individuals had a lower score on the WHO-5 Well-Being Index than those with a higher degree of security. However, in a picture of otherwise substantial homogeneity, we observed some variations in the relationship between job insecurity and well-being. On one side, we noted that in Germany, Denmark, Spain and Sweden, people who considered their job to be insecure did not show mental well-being that was statistically lower than people who evaluated their job as secure; on the other side, in France, Italy, Ireland and the United Kingdom, a clear gradient was found. People with higher insecurity showed significant differences (although with some disparities among countries) in their levels of well-being compared to more secure individuals. Specifically, in France secure people had a higher level of well-being than insecure individuals, who showed, independent of their category, the same grade of well-being. This pattern was found also in the UK, whereas in Italy the significant difference in the WHO-5 Well-Being Index was only between secure and totally insecure people. However, interaction effects contributed very slightly to explain the differences in the level of mental well-being. The increase of explained variance in passing from M2 to M3 was very modest, from 12.8 to 13.0%.

These small disparities could reflect social, economic and/or public policy differences—what we call context—across the countries. In this perspective, we tested the moderator effect of context (i.e. the welfare regime and employment protection) on the relationship between job insecurity and well-being. Thus, specific welfare state regimes could have different capacities to reduce dependency on the market, guaranteeing the right to revenue and social protection, no matter the participation in the (labour) market (Esping-Andersen 1990). If so, one could expect that job insecurity would have a lower impact on well-being due to welfare state arrangements, considering that well-being changed considerably across the countries and that Northern countries with a social-democratic or Scandinavian welfare regime, such as Sweden and Denmark, were shown to perform better on the WHO-5 well-being index on a cross-national basis. On the other hand, it was found that countries with high insider protection (i.e. greater EPL) were not associated with a lower level of job insecurity on a cross-national basis (Anderson and Pontusson 2007).

To investigate this dilemma, two further models were developed: M4_WEL includes the interaction between job insecurity and the welfare regime, while M4_EPL includes the interaction between job insecurity and employment protection. Also in this case, we initially compared the BIC statistics of M4_WEL and M4_EPL with those from M2. The differences detected in BIC statistics show that the goodness-of-fit of both M4 models were lower than that of M2 (see Table 2). It can be stated that there was no evidence that different welfare regimes and employment protection legislation were able to mitigate to different extents the effect of job insecurity on well-being. However, looking at Fig. 4, which displays the predictive margins of interaction between job insecurity and the type of welfare regime (Panel a) and between job insecurity and the level of work protection (Panel b), we see a small dissimilarity in the capacity of welfare models and EPL to reduce the negative impact of insecurity.

In particular, the magnitude of inequalities seems to be lower for the model that considered countries belonging to the Scandinavian regime, whereas the liberal regime had a not significant moderating effect on job insecurity with respect to well-being (with the exception of insecure people regarding the probability of finding a similar job if they lose their current position). Finally, Bismarckian and Southern models are in the middle position: they appear to have alleviated the effects of insecurity for people at risk of losing their job and of not finding a similar job but not for those who were totally insecure.

Regarding employment protection, we can state that countries with high protection showed a (slightly) greater level of well-being, in particular for people at risk of not finding a similar job, than countries with low or medium protection. Moreover, between countries with medium and low EPL, no substantive difference was found.

7 Sensitivity Analysis

To examine how the baseline results change when different specification and estimation scenarios are applied, we conducted three types of robustness checks.

The first related to the value of the WHO-5 index threshold as an indicator of reduced well-being. Topp et al. (2015) report numerous studies in which a WHO-5 cut-off score of < 50 is used to indicate a clinically relevant condition. Therefore, we examined how sensitive the analysis is to use a dichotomous variable for WHO-5 instead of a continuous one. The results (here not presented) were very similar to the baseline specification in Table 1 when we used a continuous dependent variable. Considering ‘not at all

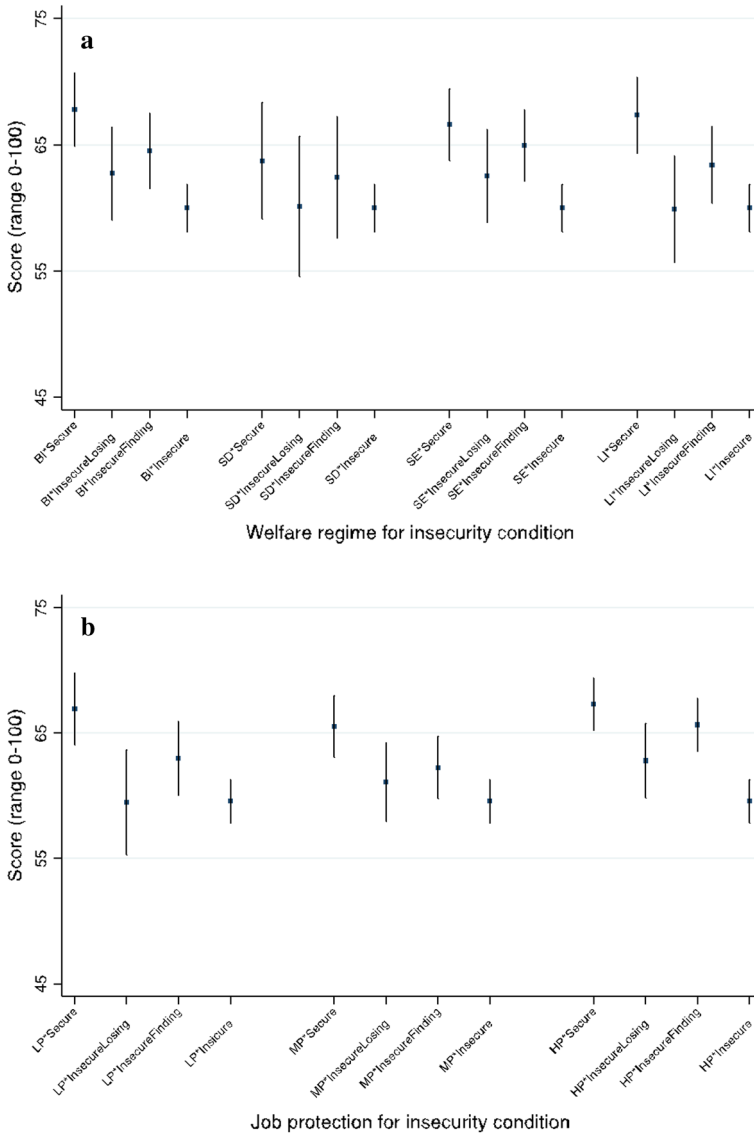


Fig. 4 Fixed-effects estimation of Model 4_WEL (Panel a) and Model 4_EPL (Panel b) well-being in European countries. Predictive margins and 95% confidence intervals of interaction between job insecurity and **a** welfare regime and **b** employment protection legislation. *Note.* Types of welfare regime: SC Scandinavian; BI Bismarckian; SE Southern; and PS post-socialist. Level of employment protection: low (values from 1.10 to 1.80), medium (from 1.81 to 2.40) and high (from 2.41 to 2.68). Employment protection: LP, low protection; MP, medium protection; HP, high protection

insecure’ as the reference category, the odds ratio of the self-perceived probability of losing one’s current job was 1.70 (CI 1.38–2.10), the odds ratio of the self-perceived probability of finding equally remunerated employment in the case of a job loss was 1.39 (CI 1.23–1.56) and the odds ratio of totally insecure was 2.00 (CI 1.59–2.51).

These findings confirm the relevant impact of perceived insecurity on individuals' mental health.

The second type of sensitivity analysis assessed whether the effect of the insecurity index differed between the third (2011) and the fourth wave (2016), instead of using pooled data. First, we employed two linear regressions, one for each wave. Second, we combined the estimation results, both parameter estimates and associated (co)variance matrices, into one parameter vector and simultaneous (co)variance matrix of the robust type (*suest* command in Stata). Third, we computed a Wald test about the difference between estimated parameters (data not shown) to evaluate the hypothesis that results are different by wave. Results show that there were not significant differences between waves, with the only exception of the parameters associated with three countries: Spain, France and Ireland, which have seen their mental health increase considerably with respect to Germany (as a reference category). However, it is notable that the impact of insecurity index categories remained stable over time (2011 versus 2016).

Finally, we conducted a heterogeneity analysis to assess whether and to what extent the effect of the main explanatory variables (age, education, gender, employment contract, occupation and make ends meet) varied within a country (see Fig. 5 in Appendix).

We replicated the original Model 3, adding interaction variables between explanatory variables and countries. We did not observe statistically significant differences in estimated parameters among the countries, with only a few exceptions. For example, we found significant differences in mental health well-being between male (higher) and females (lower) in the UK, whereas in other countries, no difference was observed. On the other hand, as concerns financial circumstances (the make-ends-meet variable), in Denmark and Ireland the difference between the mental health well-being of people who experience economic difficulties and that of people who do not was higher in comparison with what happens in other countries. In general, these results suggest that the impact of explanatory variables on mental health well-being can vary between countries. This means that there is a growing need to conduct country-specific analyses.

8 Discussion

According to the recently published International Labour Organization's World Employment Social Outlook 2015 report entitled, 'The Changing Nature of Jobs', which covers 180 countries and about 84% of the global workforce, only 42% of employed people can count on a permanent contract (International Labour Organization 2015). This suggests that 'nonstandard employment', a definition that is used to regroup under a common denomination non-open-ended contracts, seasonal and casual work, temporary work and informal work, is becoming standard after all—or at the very least it concerns more than half of the global workforce. Scholars have thus started to research the pathways and mechanisms linking the precariousness of the contemporary labour market to the health and well-being of the growing flexible workforce (Artazcoz et al. 2005; Vives et al. 2013; Bosmans et al. 2016; Juliá et al. 2017). Those research studies have shown so far that, although a higher gradient of poor mental health cannot be found among all groups of precarious employees, significant differences have been found among specific categories of the precarious workforce: for instance, among lower occupational social classes (Juliá et al. 2017); non-manual female workers and manual male workers (Artazcoz et al. 2005); among workers with lower educational attainment, those who had been previously unemployed, and immigrant

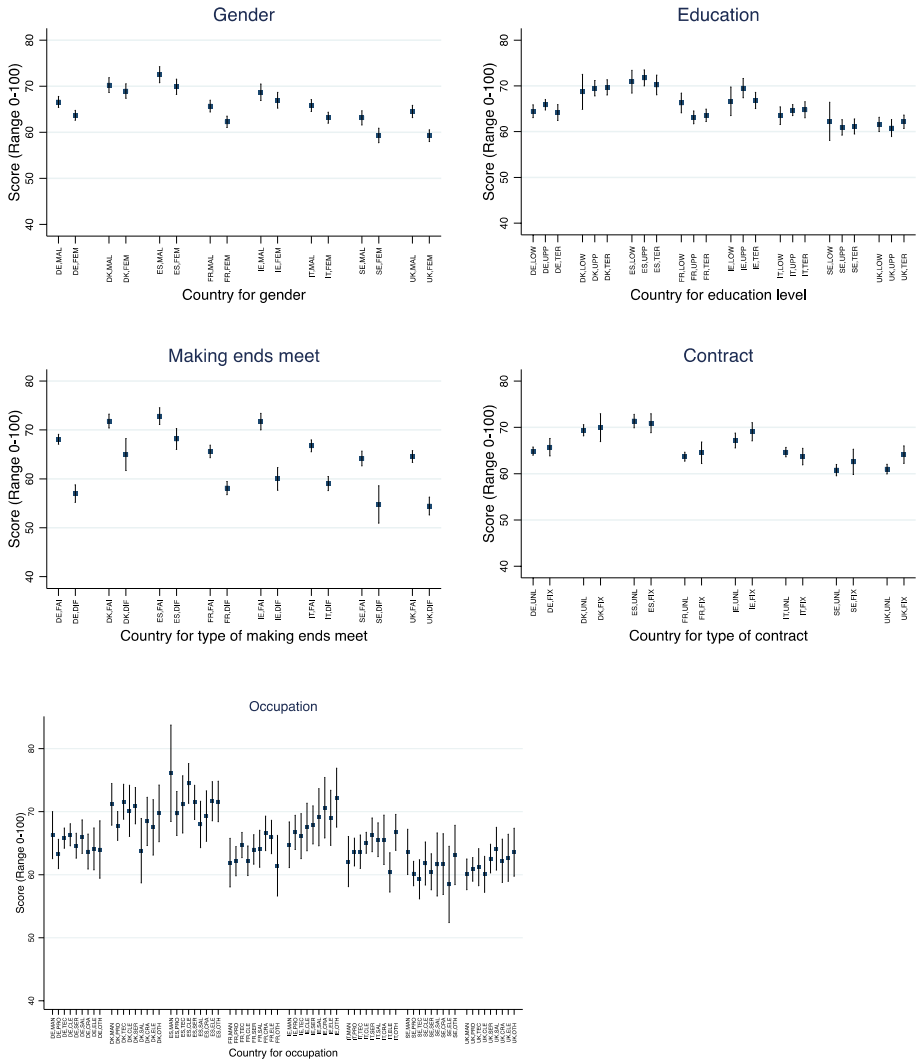


Fig. 5 Fixed-effects estimation of Model 3, well-being in European countries. Predictive margins and 95% confidence intervals of interaction between education, gender, type of contract, occupation, financial circumstances and country. *Note.* Education: LOW=Lower secondary or below; UPP=Upper secondary or post-secondary; TER=Tertiary. Gender: MAL= male; FEM=Female. Contract: UNL=Unlimited; FIX=Fixed-term. Occupation: MAN=Manager; PRO=Professional; TEC=Technician; CLE=Clerical support; SER=Service; SAL=Sales; CRA=Craft; ELE=Elementary; OTH=Other. Making ends meet: FAI=Fairly; DIF=With difficulty

workers (Vives et al. 2013); and among workers who generally lack coping skills (Bosmans et al. 2016).

Our study, which aims to disentangle the concept of precariousness from the dichotomy of the open-ended/non-open-ended contract and to include in its analysis subjective categories such as self-perceived job insecurity and labour market insecurity, has found that the higher the level of self-perceived insecurity, the lower the level of well-being, with

the latter being measured by the validated WHO-5 Well-Being Index. Our findings suggest that the type of contract, the level of education, and the occupational category do not directly impact mental well-being, not because they are not relevant but because these characteristics already contribute to shape workers' perceived level of job insecurity. The latter is defined by Sverke and Hellgren (2002: 39) in their integrated model 'as a subjectively experienced multidimensional phenomenon which may arise as a function of the interaction between the objective situation (...) and subjective characteristics'. Therefore, the level of job insecurity reported by workers is related to a set of plausible objective variables which include certain characteristics of the job currently held and which are typically associated with fragile employment. Despite this, there remains significant variation in job insecurity not explained by characteristics of the present job. This unexplained variation could reflect the fact that individuals hold private information relating to their chances of becoming unemployed in the future (Green et al. 2001).

As Cuyper and De Witte state, 'traditional psychological explanations for the consequences of temporary employment cannot account (...) for the absence of a clear-cut contract-based differences' (2006: 396). Job insecurity has been described as 'an internal event reflecting a transformation of beliefs about what is happening in the organisation and its environment' (Jacobson 1991: 15) which comes along with a general sense of powerlessness when faced with these seemingly uncontrollable events (De Witte 1999; Vander Elst et al. 2014). The lack of control, along with low social participation, have been proven to have a powerful influence on health because both factors enhance one's feeling of being left out of the community and losing/not deserving one's status quo. Facing a lack of control in the work environment increases the risk for both health and mental health issues (Marmot 2006) since the internal worker's locus of control is threatened (Rotter 1954). Stemming from those premises, it seems understandable that a subjective variable such as self-perceived job insecurity could have more influence on worsening a worker's psychological well-being than an objective variable such as the type of contract and occupational category.

Two other variables that play a role in moderating/worsening the influence of job insecurity on psychological well-being are the gender of the respondent along with their ability to make ends meet. Discussing the latter variable, if we consider the ability to make ends meet as a proxy variable for the economic level of a household, our findings are coherent with the literature on the vastly researched link between economic poverty and mental health issues. Haushofer and Fehr (2014) collected 18 studies investigating the pathways in which the level of income affects psychological well-being and found in all of them that lower levels of income were positively associated with lower levels of psychological well-being both across countries and within countries.

Another debated topic is the gender gap; this finds that female workers are more likely to experience distress resulting from their precariousness than their male counterparts, which, according to the existing literature, has been found to be true among different social groups, such as immigrant workers, previously unemployed people (Vives et al. 2013) and non-manual workers (Artazcoz et al. 2005). This result could be linked to work-related gender inequality, which concerns not only wage gap, gender stratification and labour force participation (Cotter et al. 2004) but also gender inequalities to accessing health resources, which is considered a cause for the gender disparity in depression (Pacheco et al. 2019).

Finally, one of the most interesting results concerns the impact of job insecurity on well-being across countries and, most importantly, across the four different welfare regimes taken into consideration. Following our findings and contrary to expectations linked to the fact that welfare institutions seem to have an impact on well-being (as shown in Table 2),

the EPL gap does not significantly affect the relation between our two main variables. Lübke and Erlinghagen (2014) explain the low impact of EPL on self-perceived job insecurity with the so-called ‘security paradox’ from the work of Evers et al. (1987), which states that ‘people have the tendency to get used to a certain level of security so that different levels of objective (in)security may lead to the same levels of subjective insecurity’ (Lübke and Erlinghagen 2014: 321). In other words, because workers tend to calibrate their expectations to their given situation in terms of EPL and generally to the welfare regime to which they are accustomed, a sudden disinvestment in social protection programmes is more likely to affect workers than the regulation per se, although—as the quoted scholars admit—an elaborated theory about this correlation has not yet been formulated (Lübke and Erlinghagen 2014).

It would be interesting for further studies to explore whether the countries where job insecurity is determined to have a deeper impact on well-being (France, Italy, Ireland and the UK) have recently experienced important changes in terms of their EPL and more generally in the organisation of their welfare regimes.

9 Conclusion

The findings of our study suggest that self-perceived job insecurity is negatively associated with mental well-being for both permanent and temporary workers, making this stressor an important feature in predicting the emergence of psychological distress (i.e. feelings of anxiety or depression) among the workforce.

There are four main drawbacks to this study. First, the sample size of the countries under study was small in some cases (i.e. Ireland, Spain, Denmark), and this can lead to biased estimates. Second, data are repeated in cross-sectional surveys, and the study did not use a longitudinal panel; therefore, we cannot establish how the respondents’ work-life changes impacted on their well-being over time. Third, the data set we used for the study does not contain a second validated scale for health and well-being such as, for instance, the SF-36. Having a second scale would make possible a comparison of results and an examination of the concept of well-being from a different perspective. Finally, the data set contains only qualitative survey questions (or verbal expectations) about job insecurity which, as Binelli (2019) has argued, by restricting the range of possible answers of the respondents, could potentially represent a source of bias.

Despite the aforementioned limitations, this study furthers the debate on job insecurity and its influence on psychological well-being, and it suggests some moderation measures for policymakers and employers. For instance, resources should be dedicated to employees’ well-being at work, not only because it has been proven that doing so improves the level of production (Gavin and Mason 2004; Schütte et al. 2014) but also because in the mental health field early intervention is often more effective and less invasive (Jorm and Griffiths 2006). Finally, a wider measure could include some psychological well-being-related policies among employment protection programmes, with an aim to moderate the impact of job loss and precariousness on workers’ mental health.

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Appendix

See Tables 3 and 4; Fig. 5.

Table 3 Samples used in analysis and missing cases by country

Country	Missing cases (n)	Missing cases (%)	Total cases (without missing)
Germany	333	14,5	1,965
Denmark	114	10,6	964
Spain	233	21,4	857
France	178	10,2	1,563
Ireland	149	16,0	783
Italy	421	20,7	1,614
Sweden	137	12,2	984
UK	333	14,5	1,443

Table 4 Descriptive statistics of variables employed in the multivariate models (N=10.173)

Variable	Mean	SD	Min.	Max.
WHO-5 Index	65.1	18.7	0	100
Insecurity typology	1.9	1.0	1	4
Education	2.1	0.7	1	3
Gender	1.5	0.5	1	2
Respondent age	43.1	11.3	18	95
Self-perceived health	1.0	0.2	1	2
Employment contract	1.2	0.4	1	2
Occupation	4.7	2.9	1	11
Making ends meet	1.3	0.5	1	2
Household structure	3.0	1.4	1	5

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