

Precarious employment and mental health across European welfare states: a gender perspective

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Abstract

Objective: The aim of this article was to examine the relationship between precarious employment (PE), welfare states (WS) and mental health in Europe from a gender perspective.

Methods: Data were derived from the European Working Conditions Survey 2015. PE was measured through the Employment Precariousness Scale for Europe (EPRES-E), validated for comparative research in 22 European countries, and categorized into quartiles. Countries were classified into Continental, Anglo-Saxon, Scandinavian, Southern and Central-Eastern WS. Mental health was assessed through the WHO-5 Well-Being Index and dichotomized into poor and good mental health. In a sample of 22,555 formal employees, we performed gender-stratified multi-level logistic regression models.

Results: Results showed greater prevalences of PE and poor mental health among women. However, the association between them was deeper among men. Cross-country differences were observed in multi-level regressions, but the interaction effect of WS was only significant among women. More precisely, Central-Eastern WS enhanced the likelihood of poor mental health among women in high precarious employment situations (quartiles 3 and 4).

Conclusions: These findings suggest the interaction between contextual and individual factors in the production of mental health inequalities, both within and across countries. They also call for the incorporation of gender-sensitive welfare policies if equitable and healthy labor markets are to be achieved in Europe.

Key words: Precarious employment, Welfare states, Mental health, Gender, Europe, Multi-level

1 Introduction

Precarious employment (PE) is a key social determinant of health and health inequalities (Bodin et al., 2020). Over the past decades, a growing body of research documented its association with a host of adverse physical and mental health outcomes (Benach et al., 2014; Koranyi et al., 2018; Rönnblad et al., 2019; Utzet et al., 2020). However, limited work has examined cross-national differences in this association, let alone the role of contextual factors such as welfare states (Kim et al., 2012). We know that employment is embedded in and shaped by the broader political, economic and cultural system in which it takes place. Legal and regulatory structures that derive from this all-embracing framework thus determine the various forms employment arrangements can take and what is considered precarious in each national context (Muñoz-Bustillo et al., 2009). At the same time, evidence suggests that welfare states mediate the extent to which employment status impacts people's living conditions and health (Chung & Muntaner, 2006). Briefly, countries that have more developed welfare systems have social protection schemes and labor market regulations that protect workers from the worst consequences of unemployment and non-standard employment arrangements (Kim et al., 2012; Shahidi, et al., 2016a; Shahidi et al., 2016b). Therefore, the negative consequences of PE might also be buffered by protective welfare states. All said, failing to consider welfare states when examining the consequences of PE might obscure a range of social experiences that have a bearing upon the health of workers.

Against this background, the aim of this study is to investigate the relationship between PE and mental health, both among women and men; and to explore whether welfare states interact in this relationship.

1.1 Defining and measuring precarious employment

The Standard Employment Relationship (SER) (i.e. permanent full-time employment with benefits, social guarantees and possibilities for career progression) was coined in the midst of an unprecedented economic, political and ideological scenario that characterized post-industrial societies in the aftermath of the World War II (Kuttner, 2018). By the late seventies, this historically-contingent landscape underwent (and is still undergoing) a profound transformation resulting in the flexibilization of labor markets, the declining influence of unions and the degradation of workers' social protection (Piketty, 2015; Kalleberg, 2018). Consequently, what was once presumed to

have become a standard in high-income countries, eroded progressively, giving rise to various forms of non-standard, flexible, unprotected employment. In this conjuncture, the concept “precarious employment” was introduced to encapsulate the full range of these non-standard employment arrangements (Benach et al., 2016).

The use of this concept originated in the field of social sciences (Rodgers, 1989), but is gaining popularity in other disciplines, including public health and social epidemiology (Bodin et al., 2020). These have engendered several pragmatic definitions and approaches to measure PE (Kreshpaj et al., 2020). Nevertheless, international consensus on a specific measure has not yet been reached, jeopardizing the development of cross-nationally comparative indicators of PE. One of the few extant examples is the Employment Precariousness Scale (EPRES) (Vives et al., 2010). Broadly, EPRES is a multidimensional instrument that emphasizes the asymmetry in power relations between employers and employees, which is measured through the following dimensions: temporariness, low wages, lack of rights, vulnerability (powerlessness against authoritarian treatments), disempowerment (ability to negotiate over employment conditions), and incapacity to exercise workplace rights. To date, it has been validated in Spain (Vives et al., 2015), Chile (Vives et al., 2017) and Sweden (Jonsson et al., 2019), and is currently being tested in Belgium and Finland. However, the challenges and costs associated to the collection of primary data hinder the use of this tool to monitor PE cross-nationally.

To transcend this limitation, the Employment Precariousness Scale for Europe (EPRES-E) was put forth (Padrosa et al., 2021a). As the name suggests, EPRES-E is conceptually grounded on the EPRES construct but is built with proxy-indicators derived from the European Working Conditions Survey (EWCS). By using this data source, indicators can be constructed with harmonized information across a wide range of European countries (Eurofound, 2020), opening up an opportunity to reproduce and compare results at a European-level. The measure is composed of 13 proxy-indicators sorted into the EPRES dimensions stated above except for the one related to low rights. However, EPRES-E incorporates a new dimension that measures the unpredictability of working times (unidirectionally led by employers). The main strength of EPRES-E is that it was empirically validated in 22 countries (i.e. Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden,

Switzerland, UK) and therefore comparisons across them can be performed meaningfully (Padrosa et al., 2021b). On top of that, it was reported to be equally valid among women and men (Padrosa et al., 2021a). This is of particular interest since it allows the assessment of employment-related gender (health) inequalities (Menéndez et al., 2007; Campos-Serna et al., 2013), an insufficiently explored topic (Valero et al., 2020).

1.2 Precarious employment and mental health

The detrimental effects of PE on mental health have been reported in studies from multiple countries (Rönnblad et al., 2019; Utzet et al., 2020). Nevertheless, most of these studies rely on one-dimensional proxy-indicators such as temporary employment (Virtanen et al., 2005) and job insecurity (De Witte et al., 2016). Even if these approaches have provided fruitful information to unravel PE as a social determinant of health, they still over-simplify the myriad forms PE can take (Muntaner, 2016), which might lead to the misclassification of precarious workers as non-precarious and vice-versa (Vives et al., 2020). Consequently, the use of one-dimensional proxy-indicators might prompt inconclusive or even misleading results.

Considering this, researchers are progressively adopting multidimensional approaches that capture PE in a more holistic manner. Yet, only a handful of studies have assessed the association between multidimensional PE and mental health cross-nationally (Van Aerden et al., 2016; Gevaert et al., 2020).

Another key issue that is often neglected in this field of research is the differential effect of PE on mental health according to gender (Menéndez et al., 2007; Valero et al., 2020). Briefly, the dominating male power structure and the gendered division of labor promote occupational segregation alongside gender-lines (Rubery & Fagan, 1995) and other labor market mechanisms that are unfavorable to women, compared to men (O'Campo et al., 2004). As a consequence, women are channeled into precarious forms of employment more frequently than men. Moreover, even if holding the same job as men, women are usually exposed to poorer employment conditions such as low salaries (International Labour Organization, 2018) and low flexibility in determining their working schedule (Puig-Barrachina et al., 2014). This has been argued to boost the negative consequences of PE on mental health among women (Menéndez et al., 2007).

The need for a gender-sensitive perspective is therefore crucial. Nevertheless, gender health inequalities related to PE have gone largely untested (Valero et al., 2020).

1.3 The role of welfare states

The term “welfare state” (WS) is often narrowly used to designate a set of social transfers (e.g. unemployment benefits, pensions) and key services (e.g. healthcare, education) provided by states in an attempt to dilute social stratification (Esping-Andersen, 1990) and contract subsequent health inequalities (Muntaner et al., 2010). However, these social protection schemes stem from wider factors such as the distribution of power resources across the main economic and political actors in (post-industrial) societies, the assembly and development of labor and social movements, and the political tradition of nation states and federations (Esping-Andersen, 1990; Korpi, 2016). Accordingly, legal and institutional regulatory features that forge how the economy is reproduced and redistributed should also fall under the conception of WS (Briggs, 1961).

From this broad perspective, WS substantially determine the configuration, development, distribution and implications of PE in each national context (Benach et al., 2014). For instance, governments of countries with strong class-based worker organizations that have been capable of solidifying their influence in the political sphere, and thereby have been instrumental to policy reforms and redistributive goals, tend to be less prone to deregulate their labor markets in response to pressures related to economic downturns and unemployment growth (Auer & Cazes, 2003). Hence, these countries provide a less favorable environment for the rise of extremely flexible and unprotected forms of employment (e.g. zero-hour contracts) than more liberal countries (Farina et al., 2020). Likewise, they often have more generous and far-reaching income replacement schemes, which create a buffer against low paid employment insofar they decrease competition in the lower spectrum of labor markets (Alsos et al., 2019). On another account, the structure of WS has also a bearing upon the health of the population: countries with more egalitarian and progressive WS tend to achieve better indicators of health and wellbeing (Navarro et al., 2006; Muntaner et al., 2011).

This scenario prompts the question of whether cross-national differences in the effects of PE on mental health also follow WS patterns. Analogue research on other unfavorable labor market outcomes (e.g. unemployment, temporary employment, job

insecurity) suggests that their adverse health effects are mitigated in countries with universal access to key services and strong decommodification and social policies (Kim et al., 2012; Shahidi et al., 2016b). However, when results are stratified by gender, and family policy models are taken into account, this protective effect is less consistent (De Moortel et al., 2014; Mensah & Adjei, 2020). This is also the case with specific labor market policies targeting unemployed or temporary workers, whose protective health effects proved elusive (Shahidi et al., 2016a). Therefore, there is great need for full assessment of the role of WS (in their broader sense) in the relationship between PE and mental health, particularly with a focus on gender.

Hereby we aim to evaluate this topic applying a “WS regime” approach (Dahl & Van der Wel, 2013): countries are sorted into a WS typology according to commonalities in social, political and legal characteristics (Eikemo & Bambra, 2008). This approach gives the opportunity to assess the interconnectedness of these characteristics as opposed to other more specific approaches such as the “institutional” or the “expenditure” approach (Bergqvist et al., 2013).

Currently, a variety of typologies are available (Arts & Gelissen, 2010), but they are rather overlapping despite employing different theoretical and methodological approaches. In the European context, five distinct WS types are commonly identified. Scandinavian WS (also known as Social-democratic or Nordic) are characterized by the principle of universalism, strong interventionism, high decommodification and a dual-earner family model that encourages women’s engagement in (full-time) paid work (Esping-Andersen, 1990; Fritzell et al., 2005; Chung & Muntaner, 2007; Korpi, 2016). Continental WS (Christian-democratic, Bismarckian, Conservative, Corporatist) are also based on generous state interventions but the provision of welfare is organized according to occupational lines, thereby maintaining social stratification (Daly, 2001; Esping-Andersen, 1990). They generally rely on the traditional male breadwinner model, which presumes that women are mainly responsible for unpaid domestic work and enter the labor market mostly as secondary earners (Lewis, 1992; Korpi et al., 2013). In Anglo-Saxon WS (Liberal, Residual) decommodification policies are minimal and the state provision of welfare is usually means-tested or subject to strict entitlement criteria, which reinforces already stark social patterns (Esping-Andersen, 1990; Muntaner et al., 2011). Family policies are also residual and market-oriented (Lewis, 1992; Korpi et al., 2013). Southern WS (Mediterranean, Post-fascist) are rather

undeveloped, fragmented, and rely heavily on the family and voluntary sector, echoing an authoritarian fascist past where any source of social or labor movement was repressed (Navarro & Shi, 2001). Their family model resembles that of Continental WS but with lower levels of social expenditure dedicated to families, children and dependent individuals (Ferrera, 2009; Naldini, 2004). Finally, Central-Eastern WS (Transitional) are mainly found among formerly communist countries that transitioned into market capitalism throughout the 1990s (Cerami & Vanhuyse, 2009). This transition involved extensive social reforms and a shift towards commodification, decentralization and privatization of social protection structures (Fenger, 2007).

2 Methods

2.1 Data and study population

We used data from the sixth wave of the European Working Conditions Survey (EWCS), fielded in 2015 (Eurofound, 2020). In this 2015-wave, a total of 43 850 individuals residing in 35 countries responded to the survey. However, following EPRES-E's criteria (Padrosa et al., 2021b) only respondents residing in Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK were considered in this paper. Other exclusion criteria were being self-employed (n=9 245), not having an employment contract (n=2 478), working in the armed forces (n=149), being 65 years old or over (n=638), and having missing information in the outcome variable (n=87), leading to a final sample of 22 555 individuals.

2.2 Measures

Mental health was measured through the 5-item World Health Organization Well-Being Index (WHO-5) (World Health Organization, 1998). The index consists of 5 positively phrased statements that were rated by interviewees from 0 (none of the time) to 5 (all of the time). The raw score of the scale was the sum of item scores multiplied by 4, therefore ranging from 0 (absence of well-being) to 100 (maximal well-being). Individuals with more than one missing item were excluded from the analyses. Scores of individuals with only one missing item were computed through the rounded mean of the other four items. Final scores were dichotomized into good and poor mental health

using an advised cut-off point of 50: individuals scoring less than 50 were classified as having poor mental health (Topp et al., 2015).

Precarious employment was measured through EPRES-E, which is composed of 13 proxy-indicators sorted into temporariness (2 items); wages (2); exercise of rights (2); disempowerment (2); vulnerability (2); and unpredictable working times (3) (Appendix 1). Response options were 3, 4 or 5-point ordinal or frequency scales where higher values corresponded to more precarious situations. Dimension scores were computed through averaging item scores and transforming the result into a 0-100 scale; and EPRES-E overall score was the arithmetic mean of the six dimension's scores. To deal with missing values in the overall score (18.26%), Little's test of Missing Completely at Random (MCAR) was performed (Li, 2013), which assessed whether a complete case analysis would lead to biased estimates. Characteristics of individuals with missing and non-missing information can be found in Appendix 2. Results from Little's test indicated that missing data were not MCAR (not shown). Accordingly, we carried out 20 multiple imputations using chained equations (White et al., 2011). These consisted of ordered-logistic models including EPRES-E's 13 items as well as the following auxiliary variables: sex (men, women), age, place of birth (country of residence, other), occupational social class (manual, non-manual), sector of economic activity (agriculture, forestry and fishing; industry; construction; services; and public administration and other services), educational attainment according to the International Standard Classification of Education 2011 (high, medium, low), household financial strain (low, medium, high) and country of residence. This procedure reduced the amount of missing EPRES-E values to 1% (n=225). EPRES-E final scores were categorized into quartiles so that individuals with fewer PE features fell into the first quartile, and those in the most precarious employment situation into the fourth.

Individual-level variables used for adjustment in statistical analyses were age (continuous), place of birth (country of residence and other) and educational attainment (low, medium, high).

Finally, countries were distributed into five WS types according to the classification outlined above. That is, Austria, Belgium, France, Germany, Luxembourg, Netherlands and Switzerland were classified as Continental WS; Denmark, Finland, Norway and Sweden as Scandinavian WS; Ireland and the UK as Anglo-Saxon WS; Greece, Italy,

Portugal and Spain as Southern WS; and Croatia, Lithuania, Poland, Slovakia and Slovenia as Central-Eastern WS.

2.3 Statistical analyses

Descriptive analyses were performed to illustrate the characteristics of the sample, and the prevalences of EPRES-E quartiles and of poor mental health across WS. We thereafter applied increasingly complex multilevel logistic regression models (Hox et al., 2017). Firstly, we computed an intercept-only model (M0) without any explanatory variable in order to examine whether there were differences in the odds of poor mental health across countries. Subsequently, we included individual-level (M1) and country-level (M2) explanatory variables to explore variations in the outcome according to these variables. In model 3 we included a random slope for the EPRES-E categorical variable to test whether there was random variation in the relationship between PE and mental health across countries (Heisig & Schaeffer, 2019). To explore this cross-national variation further, in model 4 we included an interaction term between EPRES-E quartiles (individual-level) and WS (country-level). These regression models were also performed for complete cases (Appendix 3).

The analyses were gender-stratified (binary) and performed using Stata/MP 14 (StataCorp, 2015).

3 Results

Overall, the sample was predominantly composed by employees aged between 36 and 55 years old (53.75% men [M], 56.29% women [W]), non-migrant (88.45% M, 89.19% W) and with medium educational attainment (52.12% M, 47.38% W) (Table 1). Slight differences in these distributions across WS can be found in Table 1. The prevalence of poor mental health was higher among women (17.90%) than men (14.39%), which was consistent in all WS types. Aside from that, Anglo-Saxon WS presented the highest prevalences of poor mental health in both genders (19.69% M, 22.22% W), followed by Central-Eastern (17.23% M, 20.28% W), Continental (14.42% M, 17.95% W), Southern (11.87% M, 14.79% W), and Scandinavian WS (10.94% M, 15.74% W). As regards EPRES-E, women also showed higher scores than men in all WS types, mainly due to their greater scores in wages in all WS but especially in Continental, Scandinavian, and

Anglo-Saxon WS. Looking into each gender specifically, among men highest scores were found in Central-Eastern WS (mean 30.82, SD 0.31), followed by Southern (28.81, 0.32), Continental (27.32, 0.32), Anglo-Saxon (27.28, 0.61), and Scandinavian WS (23.95, 0.32). Indeed, Central-Eastern WS showed the greatest scores in disempowerment (32.88, 0.87 vs 23.93, 0.34 overall) and vulnerability (26.74, 0.81 vs 19.80, 0.30 overall) while Scandinavian WS showed particularly low scores in these two dimensions (15.44, 0.61 and 15.11, 0.56 respectively) as well as exercise of rights (31.72, 0.76 vs 43.17, 0.41 overall). The latter was also the case for Anglo-Saxon WS (37.25, 1.29). Contrastingly, women working in Continental WS showed the highest EPRES-E scores (32.31, 0.33), followed by Central-Eastern (32.04, 0.27), Anglo-Saxon (30.76, 0.62), Southern (30.24, 0.31), and Scandinavian WS (27.51, 0.30). In this case, as briefly mentioned above, women in Continental WS were the ones showing the greatest scores in wages (55.26, 0.83 vs 50.09, 0.52 overall). On the contrary, women in Central-Eastern WS showed lower scores than average in this dimension (44.54, 1.21), but scored greater than average in all the other dimensions except for unpredictable working times (17.74, 0.71 vs 19.25, 0.30 overall).

Insert Table 1 about here

Figure 1 depicts the prevalence of poor mental health across EPRES-E quartiles. As observed, there seems to be a gradient, whereby the greater the EPRES-E quartile the greater the prevalence of poor mental health. This is consistent in all genders and WS types. The abruptness of this gradient diverged across WS, though. For instance, among men the total difference in the proportion of poor mental health across EPRES-E quartiles was less than 10 points in Southern WS, while it was over 20 points in Central-Eastern WS. Further, the proportion of poor mental health in quartile 4 of Scandinavian WS doubled that in quartile 3. A steep difference between quartiles 3 and 4 was also observed in Anglo-Saxon WS, although the total proportion numbers were higher. Regarding women, the smallest total difference was observed in Scandinavian WS, and the highest in Anglo-Saxon WS. Again, stark differences between quartiles 3 and 4 were observed in some WS, namely Anglo-Saxon WS and Central-Eastern WS.

Insert Figure 1 about here

This relationship between EPRES-E and mental health was further explored in multilevel models (Table 2). The intercept-only model (M0) showed that the odds of

poor mental health over all individuals of all countries were 0.14 (95% Confidence Interval 0.13, 0.16) among men and 0.17 (0.15, 0.19) among women. Model 0 also added support to the use of random effects, since the estimated individual-level random variance in poor mental health was significantly non-zero in both genders ($\hat{\sigma}_u^2=0.07$ [95%CI 0.03, 0.14] M, 0.07 [0.04, 0.14] W). These estimates remained rather stable when individual-level variables were added in the model (M1) ($\hat{\sigma}_u^2=0.06$ [0.03, 0.13] M, 0.07 [0.03, 0.14] W). Model 1 also confirmed the gradient of poor mental health across EPRES-E quartiles: the odds of poor mental health were gradually greater for individuals in quartiles 2 (OR=1.43 [95%CI 1.20, 1.70] M, 1.22 [1.04, 1.43] W), 3 (2.01 [1.70, 2.38] M, 1.64 [1.42, 1.90] W) and 4 (3.33 [2.83, 3.92] M, 2.40 [2.08, 2.78] W), compared to those in quartile 1. Significance of these gradual associations remained in models 2, 3 and 4, even though their magnitude decreased progressively. Age was the only other individual-level variable that showed a significant (albeit slight) association with mental health in model 1 (1.02 [1.01, 1.02] M, 1.02 [1.01, 1.02] W). Adding country-level variables (M2), a random slope (M3) or interaction effects (M4) to the model caused little change to the effects of this variable. Neither in models 2, 3 or 4, had our country-level variable (i.e. WS types) a significant effect on mental health. However, in model 3 we found the random slope for EPRES-E to be significant (0.05 [0.02, 0.10] M, 0.06 [0.03, 0.12] W), supporting that the association between EPRES-E and mental health varied across countries, both among men and women. Therefore, in model 4 we tested whether WS contributed to this variation through the inclusion of an interaction term between EPRES-E and WS. This interaction term was not significant among men, but it was among women. More concretely, the odds of poor mental health were significantly higher for women in EPRES-E quartiles 3 (OR=1.88 [95%CI 1.16, 3.05]) and 4 (1.79 [1.13, 2.84]) of Central-Eastern WS than for their counterparts in Continental WS.

Insert Table 2 about here

4 Discussion

The aims of this study were twofold: first, to investigate the association between multidimensional PE and mental health in 22 European countries, both among women and men, using a multilevel approach; second, to explore the interaction effect of WS in this potential association, again by women and men separately.

In line with previous research employing multidimensional measures of PE (Julià et al., 2017) the results presented above highlight the gradual association between PE and mental health in both genders, whereby the greater the degree of PE the greater the likelihood of poor mental health. Notwithstanding, the magnitude of these associations was steeper in men than in women. This contrasts with the prevalences of EPRES-E and poor mental health, which were both greater among women. These findings therefore emphasize the need to incorporate a gender-sensitive framework when analyzing and interpreting the consequences of PE on mental health (Valero et al., 2020).

Indeed, gender has extensively been identified as an important determinant of social inequalities (Marmot & Wilkinson, 2005). As such, women experience multiple sources of social disadvantage that place them into a more vulnerable position to access to and successfully perform in labor markets. That is, the cumulative interplay between these social disadvantages translates into several mechanisms that hamper women's opportunities for career progression, including the gendered division of work and employment (Barnett & Hyde, 2001) and the gendered segregation of occupations, both horizontal (Hanson & Pratt, 1991) and vertical (Christofides et al., 2013). Consequently, as seen in our analyses, women fall into precarious jobs more frequently than men (Vosko et al., 2009; Young, 2010). But employment is not the only domain of women's living conditions jeopardized by these social disadvantages (WHO Commission on Social Determinants of Health, 2008), and all these domains combined generate a larger burden on women's mental health (Rosenfield & Mouzon, 2013). Hence, the greater prevalence of both PE and poor mental health observed among women potentially stems from the unfavorable position into which they are socially placed. Because of this same reason, though, women confront many other adversities beyond PE that negatively affect their mental health. This accumulation of social disadvantages might therefore underpin the smaller association between PE and mental health observed among women, compared to men.

Our findings also reveal cross-country variations in the relationship between PE and mental health, insofar as random slopes for the EPRES-E variable were found significant in both genders. However, these variations were only related to WS differences among women. More precisely, the adverse health consequences of PE among women were stronger in Central-Eastern WS than among their equivalents in other WS. Gender equality in Central-Eastern WS is an intricate topic. As mentioned before, the institutional, economic, and cultural structure of these countries is characterized by continued influences from the rapid transition from socialism to market capitalism. Former socialist regimes in these countries were strongly concerned with female labor market participation and gender equality (Pascall & Manning, 2000), involving opportunities for education, gender-specific workplace social protection schemes (e.g. maternity leave), and in-kind benefits such as childcare (Pollert, 2003). However, the traditional roles of gender remained in the private sphere and, generally, the actual capacity of women to actively drive this emancipation process was rather limited (Pascall & Manning, 2000). As a consequence, when market transition started to unfold, women bore most of its economic and social burden. Gender inequalities re-entered the public sphere, showcased by a sharp increase in female unemployment –and those who kept their job were overstaffed in feminized occupations–, in the gender pay gap, and a decrease in their political representation (Pollert, 2003; Plomien, 2006; Kovačević & Šehić, 2015). While similar processes were present in European countries with other WS, including those deemed more egalitarian such as the Scandinavian (Daly, 2020), this back-and-forth experience of women’s emancipation in Central-Eastern WS could potentially have tainted their perceptions and expectations of participation in the labor market (Lokar, 2000). Thus, the stronger consequences of PE on women’s mental health in Central-Eastern WS, compared to other European WS, might be explained by this transition from socialism, which partially suppressed patriarchy in the labor market, to capitalism, which magnified it (Weiner, 2010).

Aside from that, the fact that Scandinavian WS were not found to provide a buffer against the adverse mental health effects of PE, neither in men or women, suggests that their more protective and egalitarian policies are not sufficient for precarious workers, or don’t cover the precarious labor force. This aligns with existing research exploring other unfavorable labor market outcomes such as unemployment or temporary employment (Bambra & Eikemo, 2009; Shahidi et al., 2016a).

There are some limitations in our study that ought to be acknowledged. First, the cross-sectional nature of our data impedes making strong claims on causality. Additionally, we cannot rule out a health selection bias (Bardasi & Francesconi, 2004). Second, we relied on a self-assessed measure of mental health. Even though the EWCS data is rigorously harmonized (Eurofound, 2020), and the WHO-5 questionnaire has been empirically validated in a wide set of countries (Topp et al., 2015), health expectations and thus the criteria by which people assess their mental health might still vary cross-nationally. Third, the relatively small sample size of some welfare states conferred low statistical power to the analyses. This might explain the lack of significance of Anglo-Saxon WS (Table 2), both among women and men, despite the trends observed in Figure 1. Indeed, the confidence intervals of these WS were the largest (Table 2). Future studies should aim to include larger samples to delve deeper into this inquiry. Finally, our findings also indicate that WS (as we approached them) exerted no differential influence in the relationship between PE and mental health among men. Nonetheless, cross-country variations in this relationship were observed. These variations might therefore be driven by specific welfare policies. To elaborate, the use of a typological WS approach allowed us to simultaneously consider the institutional, legal and cultural structures that shape people's working and living conditions. Despite the advantages offered by this approach, it has a major drawback: the clustering of countries with different historical traditions and regulatory frameworks (Bergqvist et al., 2013). A striking example is the Netherlands and its flexicurity framework, which diverges from other Continental countries' treatment of flexible employment (Shahidi et al., 2016a). Such particularities might have been overlooked in our analyses. Future studies should therefore explore this phenomenon from policy-oriented approaches.

Conclusions

In spite of these limitations, this study strongly suggests that contextual factors in general, and welfare states in particular, have a bearing upon processes that occur at the individual-level (i.e., precarious employment, in this case), ultimately impacting the health of workers. Moreover, these processes differ between men and women. This urges national and international decision-makers to embrace policies that minimize precarious forms of employment on the one hand, and that effectively counter the adverse health effects of such forms of employment on the other, while taking into consideration a gender-sensitive perspective in the design, implementation, and

evaluation of these policies. Only by using this holistic approach will we achieve more egalitarian and healthy labor markets.

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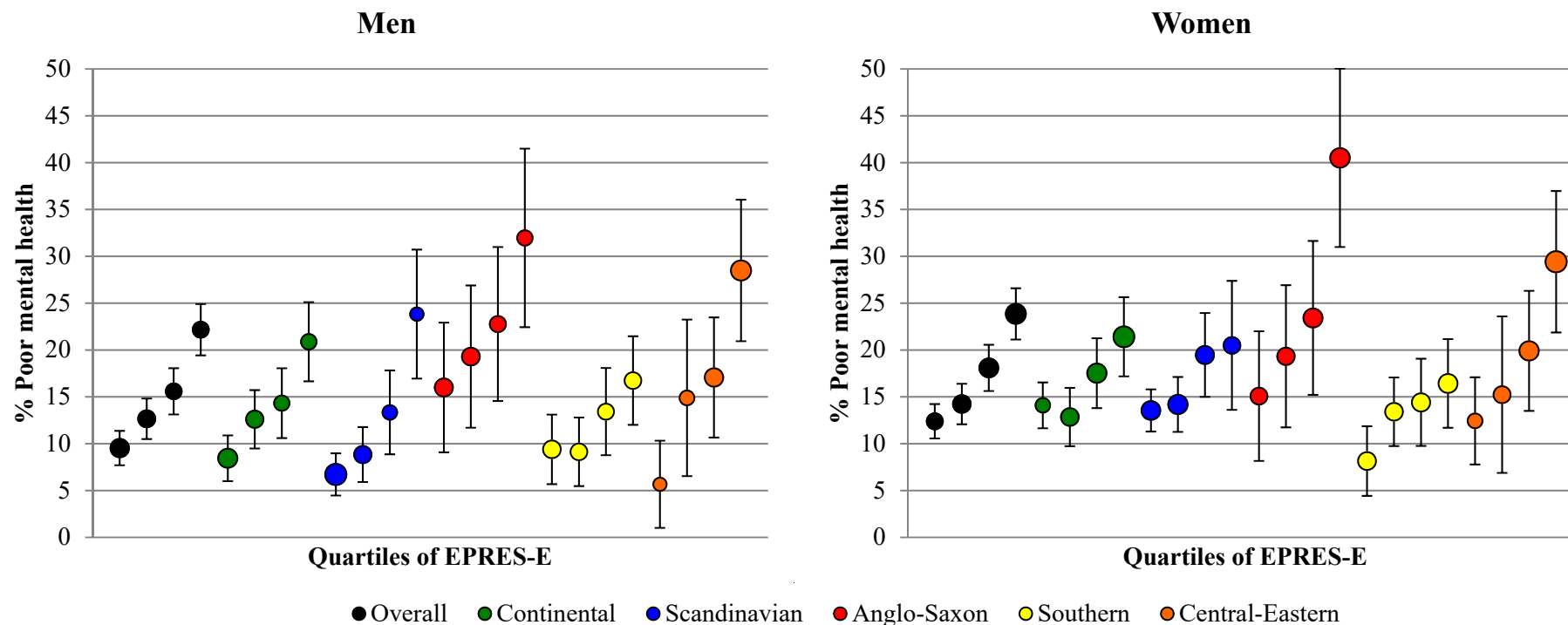
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Figure 1. Prevalence of poor mental health across EPRES-E quartiles (European Working Conditions Survey 2015, selected countries*).



EPRES-E: Employment Precariousness Scale for Europe. Quartiles of EPRES-E from left to right: Q1, Q2, Q3, Q4. The size of bubbles corresponds to the size of each quartile. *Countries included: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.

Table 1. Sample characteristics (European Working Conditions Survey 2015, selected countries*).

	Overall		Continental		Scandinavian		Anglo-Saxon		Southern		Central-Eastern	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Age												
16-25	945 (8.81)	955 (8.07)	373 (9.15)	356 (8.29)	151 (9.61)	182 (10.05)	104 (10.83)	91 (9.19)	141 (6.59)	159 (7.35)	176 (8.92)	167 (6.50)
26-35	2406 (22.44)	2592 (21.91)	929 (22.79)	1011 (23.53)	307 (19.53)	335 (18.50)	212 (22.08)	225 (22.73)	483 (22.58)	464 (21.44)	475 (24.08)	557 (21.68)
36-45	2833 (26.42)	3253 (27.50)	1039 (25.48)	1159 (26.98)	386 (24.55)	418 (23.08)	260 (27.08)	267 (26.97)	650 (30.39)	698 (32.26)	498 (25.24)	711 (27.68)
56-55	2930 (27.33)	3406 (28.79)	1130 (27.72)	1220 (28.40)	448 (28.50)	501 (27.66)	238 (24.79)	288 (29.09)	589 (27.54)	613 (28.33)	525 (26.61)	784 (30.52)
56-64	1607 (14.99)	1624 (13.73)	606 (14.86)	550 (12.80)	280 (17.81)	375 (20.71)	146 (15.21)	119 (12.02)	276 (12.90)	230 (10.63)	299 (15.15)	350 (13.62)
Place of birth												
Country of residence	9416 (88.45)	10483 (89.19)	3416 (83.87)	3639 (84.79)	1434 (91.34)	1639 (90.50)	798 (83.39)	833 (84.23)	1950 (91.16)	2005 (92.74)	1818 (95.33)	2367 (94.72)
Other	1230 (11.55)	1270 (10.81)	657 (16.13)	653 (15.21)	136 (8.66)	172 (9.50)	159 (16.61)	156 (15.77)	189 (8.84)	157 (7.26)	89 (4.67)	132 (5.28)
Educational attainment												
Low	1762 (16.51)	1550 (13.14)	610 (15.01)	573 (13.38)	159 (10.13)	125 (6.91)	257 (27.28)	232 (23.51)	619 (29.02)	492 (22.79)	117 (5.95)	128 (5.00)
Medium	5563 (52.12)	5590 (47.38)	2250 (55.35)	2238 (52.25)	752 (47.93)	673 (37.22)	255 (27.07)	269 (27.25)	956 (44.82)	924 (42.80)	1350 (68.70)	1486 (58.00)
High	3349 (31.38)	4659 (39.49)	1205 (29.64)	1472 (34.37)	658 (41.94)	1010 (55.86)	430 (45.65)	486 (49.24)	558 (26.16)	743 (34.41)	498 (25.34)	948 (37.00)
Mental health												
Good	9178 (85.61)	9713 (82.10)	3489 (85.58)	3525 (82.05)	1400 (89.06)	1526 (84.26)	771 (80.31)	770 (77.78)	1885 (88.13)	1844 (85.21)	1633 (82.77)	2048 (79.72)
Poor	1543 (14.39)	2117 (17.90)	588 (14.42)	771 (17.95)	172 (10.94)	285 (15.74)	189 (19.69)	220 (22.22)	254 (11.87)	320 (14.79)	340 (17.23)	521 (20.28)
Precarious employment. Mean (SD)												
EPRES-E	27.87 (0.20)	31.18 (0.20)	27.32 (0.32)	32.31 (0.33)	23.95 (0.32)	27.51 (0.30)	27.28 (0.61)	30.76 (0.62)	28.81 (0.32)	30.24 (0.31)	30.82 (0.31)	32.04 (0.27)

Temporariness	23.17 (0.45)	24.80 (0.46)	20.33 (0.68)	24.02 (0.77)	24.02 (0.80)	24.22 (0.76)	23.86 (1.28)	24.77 (1.17)	25.51 (0.90)	25.55 (0.93)	27.59 (1.41)	26.40 (1.13)
Wages	35.94 (0.47)	50.09 (0.52)	36.82 (0.77)	55.26 (0.83)	39.10 (0.87)	48.45 (0.80)	35.90 (1.55)	51.52 (1.73)	34.17 (0.84)	43.83 (0.97)	35.44 (1.38)	44.54 (1.21)
Disempowerment	23.93 (0.34)	25.45 (0.34)	20.49 (0.52)	24.71 (0.54)	15.44 (0.61)	14.07 (0.54)	24.87 (0.96)	23.60 (1.00)	27.60 (0.67)	27.73 (0.69)	32.88 (0.87)	31.98 (0.77)
Vulnerability	19.80 (0.30)	18.85 (0.30)	18.83 (0.48)	18.13 (0.47)	15.11 (0.56)	15.64 (0.46)	20.28 (0.97)	18.16 (0.93)	19.95 (0.56)	18.44 (0.56)	26.74 (0.81)	25.80 (0.78)
Exercise of rights	43.17 (0.41)	48.79 (0.42)	44.71 (0.66)	50.40 (0.70)	31.72 (0.76)	40.77 (0.74)	37.25 (1.29)	46.22 (1.27)	44.77 (0.71)	48.93 (0.74)	48.36 (1.04)	50.40 (1.00)
Unpredictable working times	21.72 (0.33)	19.25 (0.30)	23.14 (0.51)	21.45 (0.48)	25.36 (0.59)	25.48 (0.55)	22.77 (1.04)	20.25 (1.01)	17.84 (0.58)	14.49 (0.54)	23.94 (1.01)	17.74 (0.71)

SD: Standard deviation. *Countries included: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.

Table 2. Multilevel models of mental health (European Working Conditions Survey 2015, selected countries*).

Men		M0		M1		M2		M3		M4	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Fixed effects											
Intercept		0.14	(0.13-0.16)	0.03	(0.03-0.05)	0.04	(0.03-0.05)	0.04	(0.03-0.05)	0.05	(0.03-0.07)
EPRES-E	Q1	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Q2	-	-	1.43	(1.20-1.70)	1.42	(1.20-1.69)	1.42	(1.20-1.69)	1.41	(1.08-1.84)
	Q3	-	-	2.01	(1.70-2.38)	2.00	(1.69-2.37)	2.00	(1.69-2.37)	1.77	(1.35-2.32)
	Q4	-	-	3.33	(2.83-3.92)	3.31	(2.81-3.89)	3.31	(2.81-3.89)	3.01	(2.33-3.90)
Age		-	-	1.02	(1.01-1.02)	1.02	(1.01-1.02)	1.02	(1.01-1.02)	1.01	(1.01-1.02)
Place of birth	Country of residence	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Other	-	-	0.93	(0.79-1.10)	0.93	(0.79-1.09)	0.93	(0.79-1.09)	0.96	(0.80-1.14)
Educational attainment	Low	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Medium	-	-	1.05	(0.90-1.21)	1.04	(0.90-1.21)	1.04	(0.90-1.21)	1.00	(0.85-1.18)
	High	-	-	1.11	(0.94-1.30)	1.11	(0.94-1.30)	1.11	(0.94-1.30)	1.09	(0.91-1.30)
Welfare state	Continental	-	-	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Scandinavian	-	-	-	-	0.81	(0.59-1.12)	0.81	(0.58-1.12)	0.65	(0.41-1.03)
	Anglo-Saxon	-	-	-	-	1.24	(0.84-1.84)	1.24	(0.84-1.84)	1.32	(0.78-2.24)
	Southern	-	-	-	-	0.83	(0.61-1.14)	0.83	(0.61-1.14)	0.97	(0.60-1.57)
	Central-Eastern	-	-	-	-	1.00	(0.75-1.34)	1.00	(0.75-1.34)	0.72	(0.41-1.26)
EPRES-E*Welfare states	Q2*Scandinavian	-	-	-	-	-	-	-	-	1.11	(0.66-1.88)
	Q2*Anglo-Saxon	-	-	-	-	-	-	-	-	0.94	(0.55-1.62)
	Q2*Southern	-	-	-	-	-	-	-	-	0.69	(0.40-1.20)
	Q2*Central-Eastern	-	-	-	-	-	-	-	-	1.31	(0.71-2.44)
	Q3*Scandinavian	-	-	-	-	-	-	-	-	1.39	(0.83-2.35)
	Q3*Anglo-Saxon	-	-	-	-	-	-	-	-	1.14	(0.67-1.94)
	Q3*Southern	-	-	-	-	-	-	-	-	0.82	(0.48-1.38)
	Q3*Central-Eastern	-	-	-	-	-	-	-	-	1.52	(0.85-2.73)
	Q4*Scandinavian	-	-	-	-	-	-	-	-	1.40	(0.85-2.32)
	Q4*Anglo-Saxon	-	-	-	-	-	-	-	-	0.87	(0.53-1.45)
	Q4*Southern	-	-	-	-	-	-	-	-	0.75	(0.46-1.22)
	Q4*Central-Eastern	-	-	-	-	-	-	-	-	1.55	(0.89-2.70)
Random effects											

Intercept		0.07	(0.03-0.14)	0.06	(0.03-0.13)	0.05	(0.02-0.10)	-	-	-	-
EPRES-E		-	-	-	-	-	-	0.05	(0.02-0.10)	0.05	(0.02-0.11)
Covariance		-	-	-	-	-	-	0.05	-	0.05	-

Women

Fixed effects

Intercept		0.17	(0.15-0.19)	0.06	(0.05-0.08)	0.06	(0.04-0.08)	0.06	(0.04-0.08)	0.08	(0.05-0.12)
EPRES-E	Q1	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Q2	-	-	1.22	(1.04-1.43)	1.22	(1.04-1.43)	1.22	(1.04-1.43)	1.09	(0.84-1.40)
	Q3	-	-	1.64	(1.42-1.90)	1.64	(1.41-1.90)	1.64	(1.41-1.90)	1.32	(1.03-1.68)
	Q4	-	-	2.40	(2.08-2.78)	2.40	(2.07-2.77)	2.40	(2.07-2.77)	2.02	(1.60-2.55)
Age		-	-	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)
Place of birth	Country of residence	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Other	-	-	1.01	(0.88-1.17)	1.01	(0.88-1.17)	1.01	(0.88-1.17)	0.95	(0.81-1.11)
Educational attainment	Low	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Medium	-	-	0.93	(0.82-1.07)	0.93	(0.81-1.06)	0.93	(0.81-1.06)	0.88	(0.76-1.02)
	High	-	-	1.09	(0.95-1.26)	1.09	(0.95-1.25)	1.09	(0.95-1.25)	1.05	(0.90-1.23)
Welfare state	Continental	-	-	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Scandinavian	-	-	-	-	0.94	(0.67-1.32)	0.94	(0.67-1.32)	0.81	(0.51-1.29)
	Anglo-Saxon	-	-	-	-	1.19	(0.78-1.82)	1.19	(0.78-1.82)	0.98	(0.54-1.77)
	Southern	-	-	-	-	0.92	(0.65-1.29)	0.92	(0.65-1.29)	0.71	(0.42-1.19)
	Central-Eastern	-	-	-	-	1.11	(0.82-1.52)	1.11	(0.82-1.52)	0.66	(0.39-1.11)
EPRES-E*Welfare states	Q2*Scandinavian	-	-	-	-	-	-	-	-	1.07	(0.69-1.66)
	Q2*Anglo-Saxon	-	-	-	-	-	-	-	-	1.07	(0.60-1.91)
	Q2*Southern	-	-	-	-	-	-	-	-	1.26	(0.75-2.14)
	Q2*Central-Eastern	-	-	-	-	-	-	-	-	1.45	(0.87-2.41)
	Q3*Scandinavian	-	-	-	-	-	-	-	-	1.25	(0.82-1.91)
	Q3*Anglo-Saxon	-	-	-	-	-	-	-	-	1.18	(0.69-2.02)
	Q3*Southern	-	-	-	-	-	-	-	-	1.42	(0.87-2.32)
	Q3*Central-Eastern	-	-	-	-	-	-	-	-	1.88	(1.16-3.05)
	Q4*Scandinavian	-	-	-	-	-	-	-	-	1.11	(0.73-1.68)
	Q4*Anglo-Saxon	-	-	-	-	-	-	-	-	1.34	(0.82-2.20)
	Q4*Southern	-	-	-	-	-	-	-	-	1.14	(0.71-1.84)
	Q4*Central-Eastern	-	-	-	-	-	-	-	-	1.79	(1.13-2.84)

Random effects

Intercept	0.07	(0.04-0.14)	0.07	(0.03-0.14)	0.06	(0.03-0.12)	-	-	-	-
EPRES-E	-	-	-	-	-	-	0.06	(0.03-0.12)	0.07	(0.03-0.14)
Covariance	-	-	-	-	-	-	0.06	-	0.07	-

M0: intercept-only. M1: individual-level variables. M2: M1 + country-level variable. M3: M2 + random slope for EPRES-E. M4: M3 + interaction term.
 *Countries included: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.

Appendix 1. Operationalization of the EPRES-E structure.

	Indicator	Operationalisation	Response options
Temporariness	Duration of current contract	Combination of: a) what type of contract do you have; b) what is the duration of your current contract?	0. Permanent contract 1. Temporary, >= 1 year 2. Temporary, no exact duration 3. Temporary, 6 to 11 months 4. Temporary, <6 months
	Tenure	How many years have you been in your company or organization?	0. More than 10 years 1. 10 to 5 years 2. 5 to 3 years 3. 3 to 1 year 4. Less than 1 year
Disempowerment	Trade unions	Does a trade union, works council or a similar committee representing employees exist at your organization?	0. Yes 1. No 2. Don't know
	Meetings	Does a regular meeting in which employees can express their views about what is happening in the organization exist at your organization?	0. Yes 1. No 2. Don't know
Vulnerability	Respect of boss	Your immediate boss respects you as a person	0. Strongly agree 1. Tend to agree 2. Neither agree nor disagree 3. Tend to disagree 4. Strongly disagree
	Fair treatment	You are treated fairly at your workplace	0. Always 1. Most of the time 2. Sometimes 3. Rarely 4. Never
Exercise of rights	Break when you need it	You can take a break when you wish	0. Always 1. Most of the time 2. Sometimes 3. Rarely 4. Never
	Hours off for personal matters	Would you say that for you arranging to take an hour or two off during working hours to take care of personal or family matters is...	0. Very easy 1. Fairly easy 2. Fairly difficult 3. Very difficult
Uncertain working times	Schedule unpredictability	Do changes to your working time arrangements occur regularly? If yes, how long before are you informed about these changes?	0. No 1. Yes, several weeks in advance 2. Yes, several days in advance 3. Yes, the day before 4. Yes, the same day
	Work at short notice	How often have you been requested to come into work at short notice?	0. Never 1. Less often 2. Several times a month 3. Several times a week 4. Daily
	Working times regularity	Combination of: do you work a) the same number of hours every day; b) the same number of days every week; c) the same number of hours every week; d) fixed starting and finishing times?	0. Very high (yes on all) 1. High (no on at least one) 2. Medium (no on at least two) 3. Low (no on at least three) 4. Very low (no on all)

Wages	Net earnings per month	Net monthly earnings from your main paid job	<ul style="list-style-type: none"> 0. High earnings (more than 1.5 of the median population)¹ 1. Medium-high earnings (between the median and high earnings) 2. Medium-low earnings (between the median and low earnings) 3. Low earnings (less than 0.6 of the median population)
	Net earnings per hour	Combination of: a) net monthly earnings from your main paid job; b) how many hours do you usually work per week in your main paid job?	<ul style="list-style-type: none"> 0. High earnings (more than 1.5 of the median population) 1. Medium-high earnings (between the median and high earnings) 2. Medium-low earnings (between the median and low earnings) 3. Low earnings (less than 0.6 of the median population)

EPRES-E: Employment Precariousness Scale in the European Working Conditions Survey; ^a Item discarded after further analysis

¹ Operationalization according to the wage levels defined by the Organisation for Economic Co-operation and Development (OECD, 2020b)

Appendix 2. Characteristics of complete and incomplete cases (European Working Conditions Survey 2015, selected countries^x)

	Overall			Continental			Scandinavian			Anglo-Saxon			Southern			Central-Eastern		
	C n=18435	I n=4120	χ^2	C n=7092	I n=1282	χ^2	C n=3170	I n=214	χ^2	C n=1597	I n=354	χ^2	C n=3105	I n=1199	χ^2	C n=3471	I n=1071	χ^2
Gender																		
Men	8737 (47.40)	1984 (48.16)	-	3445 (48.58)	632 (49.30)	-	1472 (46.45)	100 (46.73)	-	789 (49.44)	171 (48.31)	-	1555 (50.10)	584 (48.71)	-	1476 (42.52)	497 (46.41)	*
Women	9694 (52.60)	2136 (51.84)		3646 (51.42)	650 (50.70)		1697 (53.55)	114 (53.27)		807 (50.56)	183 (51.69)		1549 (49.90)	615 (51.29)		1995 (57.48)	574 (53.59)	
Age																		
16-25	1543 (8.37)	358 (8.69)	-	606 (8.54)	124 (9.67)	-	288 (9.09)	45 (21.03)	*	159 (9.96)	36 (10.17)	-	229 (7.38)	71 (5.92)	-	261 (7.52)	82 (7.66)	-
26-35	4152 (22.52)	847 (20.56)		1674 (23.60)	266 (20.75)		614 (19.37)	28 (13.08)		367 (22.98)	71 (20.06)		694 (22.35)	253 (21.10)		803 (23.13)	229 (21.38)	
36-45	4942 (26.81)	1146 (27.82)		1872 (26.40)	326 (25.43)		767 (24.20)	38 (17.76)		434 (27.18)	93 (26.27)		973 (1.34)	376 (31.36)		896 (25.81)	313 (29.23)	
56-55	5153 (27.95)	1183 (28.71)		1966 (27.72)	384 (29.95)		902 (18.90)	47 (26.17)		429 (26.86)	97 (27.40)		836 (26.92)	366 (30.53)		1020 (29.39)	289 (26.98)	
56-64	2645 (14.35)	586 (14.22)		974 (13.73)	182 (14.20)		599 (18.90)	56 (26.17)		208 (13.02)	57 (16.10)		373 (12.01)	133 (11.09)		491 (14.15)	158 (14.75)	
Place of birth																		
Country of residence	16218 (88.55)	3685 (90.16)	*	5962 (84.14)	1094 (85.47)	-	2883 (91.00)	191 (89.25)	-	1344 (84.32)	288 (81.59)	-	2838 (91.43)	1118 (93.32)	*	3191 (94.86)	994 (95.39)	-
Other	2098 (11.45)	402 (9.84)		1124 (15.86)	186 (14.53)		285 (9.00)	23 (10.75)		250 (15.68)	65 (18.41)		266 (8.57)	80 (6.68)		173 (5.14)	48 (4.61)	
Educational attainment																		
Low	2682 (14.58)	630 (15.44)	-	976 (13.79)	207 (16.30)	-	252 (7.96)	32 (14.95)	*	390 (24.62)	99 (28.61)	-	873 (28.15)	238 (19.97)	*	191 (5.51)	54 (5.10)	-
Medium	9107 (49.50)	2047 (50.17)		3830 (54.10)	658 (51.81)		1326 (41.91)	100 (46.73)		422 (26.64)	102 (29.48)		1352 (43.60)	528 (44.30)		2177 (62.76)	659 (62.29)	
High	6608 (35.92)	1403 (34.39)		2273 (32.11)	405 (31.89)		1586 (50.13)	82 (38.32)		772 (48.74)	145 (41.91)		876 (28.25)	426 (35.74)		1101 (31.74)	345 (32.61)	
Mental health																		
Good	15460	3434	-	5920	1095	-	2748	179	-	1254	287	-	2715	1015	*	2823	858	-

Fair	(83.86)	(83.35)	(83.47)	(85.41)	(86.69)	(83.64)	(78.52)	(81.07)	(87.44)	(84.65)	(81.33)	(80.11)
	2975	686	1172	187	422	35	343	67	390	184	648	213
	(16.14)	(16.65)	(16.53)	(14.59)	(13.31)	(6.36)	(21.48)	(18.93)	(12.56)	(15.35)	(18.67)	(19.89)

C: Complete cases. I: Incomplete cases. χ^2 Chi-squared test, * p-value < 0.005. ^xCountries included: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.

Appendix 3. Multilevel models of mental health, complete case analysis (European Working Conditions Survey 2015, selected countries*).

Men		M0		M1		M2		M3		M4	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Fixed effects											
Intercept		0.14	(0.13-0.16)	0.04	(0.04-0.16)	0.04	(0.03-0.06)	0.03	(0.01-0.10)	0.03	(0.01-0.10)
EPRES-E	Q1	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Q2	-	-	1.39	(1.16-1.67)	1.39	(1.60-1.67)	1.39	(1.16-1.67)	1.41	(1.08-1.85)
	Q3	-	-	1.94	(1.63-2.33)	1.94	(1.62-2.32)	1.94	(1.62-2.32)	1.77	(1.35-2.32)
	Q4	-	-	3.20	(2.68-3.81)	3.16	(2.66-3.77)	3.17	(2.66-3.78)	3.03	(2.34-3.92)
Age		-	-	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)
Place of birth	Country of residence	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Other	-	-	0.95	(0.80-1.13)	0.95	(0.80-1.13)	0.94	(0.79-1.12)	0.95	(0.80-1.13)
Educational attainment	Low	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Medium	-	-	1.03	(0.86-1.21)	1.02	(0.87-1.20)	1.02	(0.87-1.20)	1.01	(0.86-1.18)
	High	-	-	1.10	(0.92-1.32)	1.10	(0.92-1.31)	1.10	(0.92-1.31)	1.10	(0.91-1.30)
Welfare state	Continental	-	-	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Scandinavian	-	-	-	-	0.79	(0.56-1.09)	0.82	(0.54-1.24)	0.68	(0.40-1.14)
	Anglo-Saxon	-	-	-	-	1.29	(0.86-1.93)	1.41	(0.85-2.34)	1.44	(0.78-2.65)
	Southern	-	-	-	-	0.76	(0.55-1.07)	0.78	(0.44-1.37)	0.98	(0.51-1.89)
	Central-Eastern	-	-	-	-	1.02	(0.75-1.38)	1.16	(0.62-2.16)	0.81	(0.37-1.77)
EPRES-E*Welfare states	Q2*Scandinavian	-	-	-	-	-	-	-	-	1.11	(0.66-1.87)
	Q2*Anglo-Saxon	-	-	-	-	-	-	-	-	0.94	(0.54-1.62)
	Q2*Southern	-	-	-	-	-	-	-	-	0.69	(0.40-1.20)
	Q2*Central-Eastern	-	-	-	-	-	-	-	-	1.31	(0.70-2.44)
	Q3*Scandinavian	-	-	-	-	-	-	-	-	1.39	(0.83-2.34)
	Q3*Anglo-Saxon	-	-	-	-	-	-	-	-	1.14	(0.67-1.93)
	Q3*Southern	-	-	-	-	-	-	-	-	0.82	(0.48-1.38)
	Q3*Central-Eastern	-	-	-	-	-	-	-	-	1.52	(0.85-2.73)
	Q4*Scandinavian	-	-	-	-	-	-	-	-	1.39	(0.84-2.31)
	Q4*Anglo-Saxon	-	-	-	-	-	-	-	-	0.87	(0.53-1.44)
	Q4*Southern	-	-	-	-	-	-	-	-	0.75	(0.46-1.21)
	Q4*Central-Eastern	-	-	-	-	-	-	-	-	1.54	(0.89-2.69)

Random effects

Intercept		0.07	(0.03-0.14)	0.07	(0.04-0.16)	0.05	(0.02-0.12)	-	-	-	-
EPRES-E		-	-	-	-	-	-	0.03	(0.02-0.11)	0.04	(0.02-0.10)
Covariance		-	-	-	-	-	-	-	-	0.04	(0.01-0.08)

Women

Fixed effects

Intercept		0.17	(0.15-0.19)	0.07	(0.05-0.09)	0.07	(0.05-0.10)	0.06	(0.03-0.12)	0.03	(0.01-0.09)
EPRES-E	Q1	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Q2	-	-	1.20	(1.02-1.42)	1.20	(1.04-1.41)	1.20	(1.02-1.41)	1.09	(0.84-1.47)
	Q3	-	-	1.62	(1.38-1.90)	1.61	(1.51-1.89)	1.62	(1.38-1.90)	1.32	(1.03-1.68)
	Q4	-	-	2.39	(2.04-2.80)	2.38	(2.51-2.79)	2.39	(2.04-2.80)	2.03	(1.61-2.56)
Age		-	-	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)	1.01	(1.01-1.02)
Place of birth	Country of residence	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Other	-	-	0.95	(0.81-1.11)	0.95	(0.78-1.11)	0.94	(0.80-1.10)	0.94	(0.81-1.10)
Educational attainment	Low	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Medium	-	-	0.89	(0.77-1.04)	0.89	(0.73-1.03)	0.89	(0.77-1.04)	0.88	(0.76-1.03)
	High	-	-	1.05	(0.90-1.23)	1.05	(0.89-1.22)	1.05	(0.90-1.23)	1.06	(0.90-1.23)
Welfare state	Continental	-	-	-	-	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
	Scandinavian	-	-	-	-	0.91	(0.53-1.31)	0.79	(0.51-1.22)	0.70	(0.42-1.17)
	Anglo-Saxon	-	-	-	-	1.17	(0.58-1.84)	1.58	(0.91-2.73)	1.32	(0.68-2.56)
	Southern	-	-	-	-	0.86	(0.49-1.24)	1.12	(0.62-1.99)	0.91	(0.46-1.78)
	Central-Eastern	-	-	-	-	1.09	(0.68-1.52)	1.94	(0.99-3.80)	1.18	(0.55-2.55)
EPRES-E*Welfare states	Q2*Scandinavian	-	-	-	-	-	-	-	-	1.07	(0.69-1.66)
	Q2*Anglo-Saxon	-	-	-	-	-	-	-	-	1.07	(0.60-1.91)
	Q2*Southern	-	-	-	-	-	-	-	-	1.27	(0.75-2.15)
	Q2*Central-Eastern	-	-	-	-	-	-	-	-	1.45	(0.87-2.42)
	Q3*Scandinavian	-	-	-	-	-	-	-	-	1.25	(0.81-1.91)
	Q3*Anglo-Saxon	-	-	-	-	-	-	-	-	1.18	(0.69-2.02)
	Q3*Southern	-	-	-	-	-	-	-	-	1.43	(0.87-2.33)
	Q3*Central-Eastern	-	-	-	-	-	-	-	-	1.89	(1.16-3.05)
	Q4*Scandinavian	-	-	-	-	-	-	-	-	1.10	(0.72-1.68)
	Q4*Anglo-Saxon	-	-	-	-	-	-	-	-	1.34	(0.82-2.20)
	Q4*Southern	-	-	-	-	-	-	-	-	1.15	(0.71-1.85)
	Q4*Central-Eastern	-	-	-	-	-	-	-	-	1.79	(1.13-2.84)

Random effects

Intercept	0.07	(0.04-0.14)	0.08	(0.04-0.16)	0.07	(0.04-0.14)	-	-	-	-
EPRES-E	-	-	-	-	-	-	0.06	(0.03-0.12)	0.06	(0.03-0.12)
Covariance	-	-	-	-	-	-	-	-	0.06	(0.01-0.10)

M0: intercept-only. M1: individual-level variables. M2: M1 + country-level variable. M3: M2 + random slope for EPRES-E. M4: M3 + interaction term. *Countries included: Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the UK.