Risk and resilience: health inequalities, working conditions and sickness benefit arrangements: Analysis from the 2010 European Working Conditions Survey.

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Abstract

In this article we ask whether the level of sickness benefit provision may protect the health of employees, particularly those who are most exposed to hazardous working conditions and those who have a lower education. The study uses the European Working Condition Survey 2010, with information on 20,626 individuals from 28 countries. Health was measured by self-reported mental well-being and self-rated general health. Country-level sickness benefit provision was constructed using spending data from Eurostat. Group specific associations were fitted using cross-level interaction terms between sickness benefit provision and physical and psychosocial working conditions respectively, as well as with low education. The mental well-being of employees exposed to psychosocial job strain and physical hazards, or who had low education, was better in countries with more generous sickness benefit provision. These results were ~~similar for men and~~stronger for women than men ~~women~~ and robust to the inclusion of GDP and country fixed effects. In the analyses of self-reported general health, few group specific associations were found. This paper concludes that generous sickness benefit provision may strengthen employee's resilience against mental health risks at work and risks associated with low education. Consequently, generous sickness benefit provision also contribute to reduce social inequalities in mental health.

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Introduction

The work environment has long been considered a major determinant of health and health inequalities. Even if occupational change and de-industrialisation may have changed the level of exposure to traditional physical working conditions and introduced new psychosocial hazards instead (Siegrist and Theorell 2006), both play an important part in shaping inequalities in health (Bambra 2011; Toch et al. 2014). Consequently, improving working conditions is a major policy measure to reduce health inequalities.

However, the wider societal structure may also influence the relationship between working conditions and health. Notably, the welfare state, which distributes collective resources and provides social protection, may cushion the influence of work hazards on health (Dragano et al. 2011; Bambra et al. 2014). Welfare states provide individuals with coping resources, such as money, work-life flexibility, health and care services, and also strengthen worker's bargaining power by providing out-of-work benefits. These resources may strengthen employee's autonomy, including their ability to manage their health and well-being in the face of work hazards.

Similarly, welfare provision available to the employed population may also cushion general health risks associated with low socioeconomic standing, not only those related to poor working conditions. Comparative evidence indicate that redistributive social policies are associated with smaller health inequalities (Wilkinson and Pickett 2009; Dahl and van der Wel 2013). ~~self-reported general health among individuals with low education is better in~~

~~countries that have high social protection expenditure (Dahl and van der Wel 2013). This study, however, could not control for working conditions and studied the entire population.~~

In the current article, we further investigate these ideas by studying whether the association between hazardous working conditions and ill health differs according to level of sickness absence provision in the employed European population. We also study whether the association between low education and health is moderated by sickness absence provision independently of working conditions.

Theoretical background and hypotheses

Being in control of one's life, and being able to have influence on important conditions that affect happiness, well-being and health, underpin ideas of social justice (Daniels 2008; Venkatapuram 2011), well-being (Sen 1992) and welfare (Fritzell & Lundberg 2007:5). The resources necessary to obtain control of one's circumstances are largely produced by the individual or by families, but they are also structured by society, e.g. by welfare state institutions (Lundberg 2009:25). 'Collective resources' provided by welfare states may compensate for lack of individual resources, as they are often directed towards vulnerable life stages or towards specific conditions of need, such as unemployment or illness. In Sen's terms, welfare states may increase 'capabilities' (the freedom to achieve desired goals) through the provision of 'functionings' (the resources necessary to do so) (Sen 1992). Hence, these resources provided by society may constitute important pre-conditions for the 'capability to be healthy', to which all human beings have a moral right (Venkatapuram 2011:143-4). 'Health is a meta-capability, an overarching capability to achieve or exercise a cluster of inter-related and basic capabilities to be and do things' (Venkatapuram 2011:233). Health represent both an intrinsic and an instrumental value. Relevant to the idea that sickness benefit provision represent a 'supportive environment' or 'collective resources', the capability

to be healthy includes the opportunity to avoid impairments (2011: 234) as well as the ability sustain or restore health .

~~Collective~~ Hence, collective resources may ~~also~~ be important to individuals' *resilience* towards health threatening circumstances. Resilience has been defined as 'the process of avoiding adverse outcomes or doing better than expected when confronted with major assaults on the developmental process' (Schoon and Bartley 2008:24). Resilience processes can work in different ways. Fergus and Zimmerman (2005) distinguish between three models of resilience: the compensatory model, the protective model and the challenge model. In the compensatory model, resources have a cumulative effect on health, regardless of the specific risk exposure. The protective model assumes that resources can cushion the influence of a particular risk factor in an interactive matter, so that the protective factor may not have any health effect among those not exposed to the risk. Finally, the challenge model implies that limited exposure to a risk may be beneficial; if the experience is not overwhelming, individuals may become more resilient through successful coping and mobilisation of resources. In this paper we consider only the first two models of resilience, as they explicitly address the role of resources.

In line with the protective resilience model, we hypothesise that a generous and accessible sickness benefit scheme may represent an important source of control for employees facing adverse working conditions (see also Dragano et al. 2011 and Bambra et al. 2014) or other risks associated with low education. Having the opportunity to take time off work when feeling ill or staying away until fully recovered without significant loss of income might prevent deterioration of health among workers facing poor working conditions. Such a

'buffering' effect was found in a study of work time control, work stress and sickness absence, where the association between work stress and sickness absence was weaker among those who exerted control over their work time (Ala-Mursula et al. 2005). On the other hand, if workers are denied this opportunity because of economic penalties, it is likely that the association between health and poor working conditions will become more pronounced – perhaps due to presenteeism. Low education groups generally have fewer coping resources and a higher probability of poor health, even independently of occupational class and income (Geyer et al. 2006). A generous and accessible sickness benefit scheme may also be beneficial for the health of these groups for instance through providing the freedom to adjust their work effort according to subjective physical and mental energy not related to work per se. Furthermore, there may be psychosocial health benefits for everyone, in line with the compensatory model of resilience and the thesis put forward by Wilkinson and Pickett (2009) on the association between income inequality and health. As Bartley et al. (1997:1196) discuss, redistributive social policies may mitigate the anticipation of adversity, which is in itself a health risk. Generous out-of-work benefits may also strengthen employee's autonomy more generally through strengthening employee's bargaining power and participation in decisions – particularly in terms of return to work after illness.

Based on this, we investigate two hypotheses;

1) In line with the compensatory model of resilience, we expect that health and mental well-being is better for everyone in countries that have more generous sickness benefit provision.
2) In line with the protective model of resilience, we expect that particularly individuals who have poor working conditions or low education have better health and mental well-being in countries that have more generous sickness benefit provision.

Previous studies

Work is an important social determinant of health and health inequalities (Bambra 2011; Marmot et al. 2006; Toch et al. 2014). Hazardous physical working conditions (e.g. ergonomic problems), stressful psychosocial work environments (e.g. high job demands and low job control), and some elements of the organisation of working life (e.g. long working hours, poor job security and shift work) have all been associated with adverse health outcomes, including psychological ill health, coronary heart disease and musculoskeletal problems (Bambra 2011). Similarly, work-related psychosocial structures can influence health such as time pressure, social reciprocity, job control, fairness, and work demands. Jobs with high psychological demands (e.g. time pressure, high work load and conflicting demands) coupled with low levels of control (control over workload, the variety of work, skill development and utilization) - 'high strain' jobs - lead to an increased risk of stress-related morbidity and mortality (Marmot et al. 2006); coronary heart disease and associated risk factors (Kivimäki et al. 2012); musculoskeletal pain as well as psychological ill health (Stansfeld et al. 1999) .

Few studies have addressed how the association between working conditions and health may be modified by social policies. Dragano et al. (2011:794) hypothesised that 'social protection might function as personal resources which facilitate coping with stressful life events (..)'. In their study of stressful psychosocial work environment and the health of older employees, they found that work stress is more strongly associated with depressive symptoms in the least generous European welfare states. Lunau et al. (2013) also investigated the association between work stress and depressive symptoms in older employees. They found a more pronounced association between effort-reward imbalance and depressive symptoms in countries who had less developed national labour and social policies. Further studies of this

association, however, do not show similar results. For example, a comparative study of the association between psychosocial and organisational working conditions and physical and mental functioning in Britain, Finland and Japan did not find smaller associations in Finland (Sekine et al. 2009). Salavecz et al.'s. (2010) study of the association between effort-reward imbalance and self-rated general health in Europe also did not find any stronger associations in less generous welfare systems. Finally, Bambra et al's (2014) study - which used the European Working Condition Survey 2010 to analyse the modifying impact of welfare state regimes on the associations between poor self-rated general health and a wide range of physical, organisational and psychosocial working conditions - did not find weaker associations in the more generous Scandinavian welfare states. One reason for the lack of an association in the studies using self-rated general health as an outcome may be the employment of welfare state regime clusters as a dependent variable. Such an approach may significantly reduce variability between countries and may obscure the association because welfare state regimes differ on several dimensions. In health inequality research, studies using continuous representations of specific welfare state dimensions (e.g. Dahl and van der Wel 2013), has so far yielded results more in line with theoretical expectations and previous findings from individual level studies.

In the current study, we investigate whether the association between poor working conditions and health – or low education and health - varies between countries with different generosity levels of sickness benefit provision. We include physical and psychosocial working conditions in our analyses. The study advances on previous research in the following ways: by studying a theoretically more precise and limited social policy question, i.e. whether the association between poor working conditions and health is different at different levels of sickness benefit provision, rather than by welfare state regime; by studying both mental and

self-rated general health in the same manner; by controlling the analyses for country wealth; and finally by including sensitivity analyses that control for country fixed effects.

Data and methods

We use data from the fifth wave of the European Working Condition Survey (EWCS) collected in 2010. The EWCS is conducted every five years by the European Foundation for the Improvement of Living and Working Conditions (EUROFOUND). The EWCS interviews random samples of the workforce about their occupational situation, working conditions and health. In 2010 the overall response rate was 44 per cent (ranging from 31 per cent in Spain to 74 per cent in Latvia). The country specific sample sizes ranged between 1000 and 4001 realised interviews. Country-level data were provided by Eurostat and covered 28 of the countries included in the EWCS. Luxembourg was excluded from the analysis because of possible overestimation of the social spending per capita measure (because many people have rights to social benefits in Luxembourg without being residents, the numbers are exaggerated). The sample was further restricted to individuals aged between 25 to 60 years. In addition, we excluded those who were self-employed, those who worked less than 15 hours per week and those in military service. The effective sample size for this analysis was 10 751 men and 11 753 women.

Individual level variables

We use two measures of health; self-rated general health (SRH) and the World Health Organization 5-item well-being index (WHO5). SRH was measured by the question 'How is your health in general? Would you say it is very good, good, fair, bad, very bad?' The variable was coded as an indicator variable taking the value 1 if health was rated less than 'good'.

WHO5 is a five-item index of positive mental well-being. The measure was designed for survey research and has been validated (McDowell 2010). Respondents were asked to rate the appropriateness of five different statements about how they had been feeling the last two weeks. The statements were: *Cheerful and in good spirits; Calm and relaxed; Active and vigorous; Woke up feeling fresh and rested; My daily life has been filled with things that interest me.* Possible responses were: *All of the time; most of the time; more than half of the time; less than half of the time; some of the time; at no time.* The index was coded in the conventional way, theoretically ranging from 0-100, with higher numbers indicating higher levels of mental well-being. Cronbach's alpha for the five items was 0.877.

Education was measured using ISCED-97 codes. Because very low proportions or no observations at all were found in in the no education / primary education category in some countries, a binary variable was constructed to indicate less than tertiary education.

The work environment was measured using indicators of physical and psychosocial hazard. Respondents who reported that they were exposed to three or more of the following physical/ergonomic hazards at work half of the time or more were given the value 1 on an indicator variable*: vibrations from hand tools, machinery, etc.; tiring or painful positions; lifting or moving people; carrying or moving heavy loads; repetitive hand or arm movements.* Psychosocial exposures were measured using indicators of the demand/control-model (Karasek and Theorell 1990). The control-dimension was measured by the questions/statements: '*Are you able to choose or change your order of tasks?'; 'Are you able to choose or change your methods of work?'; 'Are you able to choose or change your speed or rate of work?'; 'You have influence over the choice of your working partners'; 'You can*

take your break when you wish'; 'You are able to apply your own ideas in your work'; 'Does your main paid job involve: learning new things?'. Cronbach's alpha for the control dimension was 0.728. The demand-dimension was measured by two questions: '*Does your job involve working at very high speed?'; 'Does your job involve working to tight deadlines?'.* Cronbach's alpha for the demand dimension was 0.768. On each dimension respondents were assigned the value 1 if their additive score was higher than the median value in their country. Finally, if the mean score was above the mean on both dimensions, they were given the value 1 on the variable job strain.

We also controlled for chemical working conditions as well as working hours and age. Chemical/organic exposures were measured the dimensions *breathing in smoke, fumes, powder or dust etc.; breathing in vapours such as solvents and thinners; handling or being in skin contact with chemical products or substances; - tobacco smoke from other people; handling or being in direct contact with materials which can be infectious*. Respondents who reported being exposed to three or more factors half of the time or more were given the value 1 on an indicator variable. Age and working hours per week were both centred on the sample mean.

Contextual variable: Sickness benefit provision

Social expenditure data on cash benefits provided to individuals in order to replace income loss during temporary inability to work because of sickness or injury were retrieved from Eurostat's social expenditure data base (Eurostat 2013), the spr_exp_ppsh table. Payments to pregnant women and disabled people were not included, but benefits provided by employers in the case of sickness were taken into account (Eurostat 2011:40). Both means-tested and non-means-tested cash benefits are included.

The social expenditure data were expressed in power purchasing standards per capita and averaged across the years 2003-2008. The reason for not using expenditure data for 2010, the year of the EWCS, was that the data for this particular year may be influenced by the financial crisis and by political responses to the crisis, and thus may not be typical for all countries. For instance, Ireland doubled the minimum required contribution payments needed to qualify for Illness Benefit in 2009 (Dukelow 2011:423) and cutbacks have been introduced in Lithuania (Aidukaite 2014:61) and Latvia (Matos 2010:33). Also, it seems reasonable that the assumed protective effect of sickness benefits may be dependent on the generosity level over a period of some length, rather than merely in one single year.

Because sickness benefits are only granted to people who are employed, the raw expenditure data to some extent reflect the employment rate. For instance, a high employment country and a low employment country that have similar absence rates and similar levels of sickness benefit generosity will have different levels of spending on sickness benefits because the pool of people having rights to sickness benefits is different. In such a case, raw expenditure data will not be a valid proxy for benefit generosity. Therefore, we divided the expenditure data on the employment rate (same time period) in each country. This way, the expenditure data for each country are adjusted for the size of the population 'at risk', and come closer to measuring the actual generosity of sickness benefits.

We also obtained information on GDP per capita in power purchasing standards from Eurostat for the same time period as above. GDP has previously been shown to be an important predictor of subjective health (Olsen and Dahl 2007). GDP and Sickness benefit provision were centred at their mean. The correlation between GDP and Sickness benefit provision was 0.8, which indicate a strong correlation. As this may introduce problems with

multicollinearity in our analyses, we ran the 'collin' routine in Stata. The results gave little reason for concern.

Analytical approach

We use linear and logistic multilevel regression analyses to inspect the association between sickness benefit provision and health, as well as risk group-specific associations by means of cross-level interactions. The analyses are performed separately for men and women. In Model 1, individual level associations with health are estimated, while sickness benefit provision is introduced in Model 2. Models 3 to 5 add cross-level interaction terms to Model 2, which are analysed separately. Models 6 to 8 repeat the analyses in Model 3 to 5, but introduce GDP per capita as a contextual control variable. To evaluate each model, log likelihood estimates and country level variances are reported.

The models in which statistically significant cross-level interaction terms could be obtained were repeated in a model including country fixed effects. In such a model, all country-level variables are omitted, but interactions between level 2 and level 1 variables can be estimated. This method, arguably, is a simple way of controlling the analyses for 'everything' at the country level, for instance GDP, health care systems, labour market conditions, cultural differences, etc (Möhring 2012).

To evaluate the strength of the associations we present predictions based on the regression results. Predicted values for specific groups at different levels of sickness benefit provision is found by using the regression equation to multiply the relevant variable values with the relevant regression coefficients, and adding them all together. For instance, the maximum effect of Sickness benefit provision for a certain group is simply the difference by the predicted values when Sickness benefit provision equals its lowest observed value and its

highest observed value. Additionally, the discrete change can be informative because it reflects a more typical difference between countries. It is calculated in the same way as the maximum effect but computes the differences in mental well-being associated with one standard deviation change on the Sickness benefit provision variable. Because Norway might be considered an extreme case, we also present maximum effects were the value for Norway is excluded.

Results

Table 1 shows the distribution of the dependent and independent variables across countries and for men and women separately. The table is sorted by sickness benefit provision level. The Eastern European countries occupy the lower end of the distribution on this variable. Portugal also has a low level of sickness benefit provision. Germany, Sweden, The Netherlands and Norway have the most generous sickness benefit provision. Norway, which clearly has the most generous sickness benefit provision, seems to be a special case as its value is twice as large as number two, The Netherlands.

While the theoretical range of the mental well-being variable ranges from 0 (poor) to 100 (excellent), the sample mean is 66 for men and 63 for women. The proportion reporting less than good health is 24 per cent among men and 26 per cent among women. In men, 71 per cent do not have tertiary education, and are classified in the 'low education' category. The corresponding number for women is 64 per cent. The proportion experiencing high demands and low control at work, i.e. job strain, is 32 per cent in men and 33 per cent in women.

Mental Wellbeing

Table 2 displays the results from multilevel analyses of mental well-being. The coefficients for the individual-level variables in Model 1 show that mental well-being decreases with age

and weekly working hours. Educational level is not related to mental well-being among women, and among men the effect is near significant but in the opposite direction than would be expected. This, however, is because working conditions are controlled for. When working conditions are not included in the model the association between education and mental well-being is statistically significant and in the expected direction. All measures of working conditions are clearly associated with lower mental well-being in women and men. In Model 2, sickness benefit provision is introduced. Mental well-being increases with higher levels of sickness benefit provision.

In the null model (not reported), the intraclass correlation coefficient (ICC) showed that the share of the total variation in mental well-being found at the country-level was 5.8 per cent among women and 5.1 per cent among men. The inclusion of sickness benefit provision in Model 2 reduced the country level variance found in Model 1 by 42 per cent among women, and by 35 per cent among men. The model fit, indicated by the significant reduction of the -2LL, is better in Model 2 compared to Model 1.

Model 3 to Model 5 include cross-level interaction terms between sickness benefit provision and specific risk groups; those who have low education or poor working conditions. In line with expectations, mental well-being is particularly favourable in all risk groups when sickness benefit provision is higher. The coefficient for the interaction effect with job strain in men were not statistically significant at the conventional level, but still below a p-value of 0.1. In general, the interaction effects were stronger for women than for men, and particularly for those who experienced exposure to poor physical working conditions. In all models, the main effect, i.e the association between sickness benefit provision and mental well-being for those who are not in the specific risk group analysed, is also higher at higher levels of benefit

provision. Model fit is further reduced in all models. The country level variance estimates do not change much in these models, however.

Next, in order to test whether these associations are robust, we included GDP per capita. The results are shown in Model 6 to Model 8. GDP increases mental well-being in all models, and leaves all main effects of sickness benefit provision insignificant. Hence, the association found in the previous models seem to be confounded by GDP.

Importantly, none of the group-specific effects seem to be much affected by the inclusion of GDP. Hence, the beneficial association between sickness absence provision and mental well-being appear to be independent of the level of wealth. To further evaluate the persistence of these group-specific effects, we added country dummies to our models to control for everything else that varies between countries which could affect our results (not shown). Also in these analyses, the coefficients maintained their strength and statistically significance.

Self-reported health

Table 4, reports a similar analysis for less than good self-reported general health. The individual level associations with self-rated health do not differ much between men and women. All coefficients are in the expected direction and are statistically significant, except working hours. Notably, exposure to chemical hazards is not related to the probability of reporting less than good health among women, and only very weakly associated to self-reported general health among men. Again, sickness benefit provision appears to have a beneficial effect on health in Model 2, but the effect is stronger for women than for men. This is also evident from the relative reduction in the country level variance, which is more pronounced among women. An important difference to the analysis of mental well-being is

that very few of the group-specific effects in Model 3 to Model 5 are statistically significant. In women, there is a weak tendency that those with low education have better self-reported health. Among men, those who are exposed to physical hazards seem to gain *less* from the reduction in the risk of less than good health associated with more generous sickness benefit provision, as can be seen from the opposite directions of the main effect and the interaction effect in Model 5. In fact, the main effect and the interactions effects in these models seem to even each other out. As in Table 2, including GDP as a control eliminates the previous beneficial main effect of sickness benefit provision, but has almost no impact on the group-specific coefficients.

Evaluation of the strength of the associations

To assess the importance of the cross-level interaction effects found in the GDP-controlled analyses of mental well-being in Table 2, predicted effects are presented in Table 6. As all main effects of sickness benefit provision were non-significant in the GDP-controlled analyses, the predictions are based only on the coefficients for the cross-level interaction terms. In men, the discrete change – a difference similar to the one between the Netherlands and Germany, or between Sweden and Finland – varies between 0.78 and 1.00, with the strongest effect found for those who experience physical strain. In women, the discrete change varies between 0.93 and 2.28, again the physical strain effect being the strongest. The maximum effects vary between 3.95 and 5.24 among men, and 4.87 and 11.97 among women. These effects are stronger than most individual level predictors of mental well-being found in Model 1, Table 2. Excluding the value for Norway approximately halves the maximum effects, but they are still nearly as strong as for instance the individual-level effect of being exposed to physical hazards at work. The predicted maximum effects are also displayed in Figure 1.

Discussion

In this article, we hypothesised that health and mental well-being were better in the work force in countries that have higher level of sickness benefit provision (hypothesis 1), in line with the compensatory model of resilience. Additionally, in line with the protective model of resilience, we hypothesised that this would also be true for employees exposed to health risks at work or with low education (hypothesis 2). In relation to hypothesis 1, once country wealth was taken into account, no overall association between sickness benefit provision and health could be found. This shows that wealth is a stronger predictor of population health than sickness benefit provision, which parallels the findings of Olsen and Dahl (2007). Even so, w~~W~~e found partial support for hypothesis 2, as the mental well-being of employees exposed to psychosocial job strain and physical hazards was better in countries with more generous sickness benefit provision, even after control for GDP and in country fixed effects models. The low education group seemed to benefit in the same way. ~~These results were robust to the inclusion of GDP and remained in models with country fixed effects.~~ In the analyses of self-reported general health, however, few group specific associations were found, and those who were found were either not significant or in the opposite direction than expected. Hence, our findings are in keeping with the previous research which has also found stronger evidence for mental health than for self-rated general health (Bambra et al. 2014; Dragano et al. 2011; Lunau et al. 2013; Salavecz et al. 2010; Sekine et al. 2009).

As shown in Table 6, the strength of the association between sickness benefit provision and mental well-being was substantial. Even when excluding the value for Norway, the gain in mental well-being associated with living in the most generous welfare state compared to the least generous welfare state was larger than most individual level associations. In fact, the mental well-being of those who were exposed to poor working conditions and who lived in

the most generous welfare state was similar to the mental well-being of those who were not exposed to poor working conditions and lived in the least generous welfare state.

The mental health improvement among vulnerable employees associated with more generous sickness benefit provision was generally stronger among women than among men, particularly for physical exposure. To test these gender differences, three-way interaction terms between gender, sickness benefit provision and the three vulnerable states; severe physical working conditions, job strain and low education, were fitted and analysed separately. We found a positive and statistically significant gender difference in the effect of sickness benefit provision for physical working conditions and for low education, but not for job strain.

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Potential explanations for these gender differences in the association between sickness benefit provision and mental well-being could be that female employees are particularly vulnerable in some ways, and therefore have even larger mental health gains than men from a labour market context which provides adequate social protection and opportunities to restore health. The 'double burden' hypothesis states that employed women are more prone to illness as they are carrying a bigger work load in the domestic sphere compared to men (Väänänen et al. 2005). However, the evidence for the hypothesis from sickness absence studies is mixed (Mastekaasa 2013). Another mechanism could be that vulnerable women have greater needs compared to men for social security and economic predictability. These questions cannot be solved here and should be addressed by future research.

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Our analysis partly supports the idea that individual risks can be moderated by the wider welfare structure. More specifically, this study suggests that sickness benefit programmes have the potential to buffer against lack of individual-level resources and hazardous working conditions (Dragano et al. 2011; Bambra et al. 2014) in the production of mental well-being. This is in line with the protective model of resilience (Fergus and Zimmerman 2005) and the more general welfare resources perspective, which stresses the importance of collective resources for individual's autonomy and well-being (Fritzell & Lundberg 2007; Lundberg 2009). ~~In this way, generous sickness benefit compensation may contribute to strengthen social justice by increasing the level of capability (Sen 1992) and dampen social inequalities in mental well-being (Daniels 2008; Venkatapuram 2011).~~ As individuals differ in their underlying health resources as well as in their physical and social circumstances, generous sickness benefit provision may increase people's opportunity to avoid impairment, as well as to sustain or improve their mental health. Hence, sufficient sickness benefits may reduce social inequality in the capability to be healthy (Venkatapuram 2011). As generous sickness benefit provision may have a redistributive income effect, these findings also have some relevance to the idea that small income inequalities are associated with smaller health inequalities (Wilkinson and Pickett 2009). Our study did not however support the related idea that redistributive policies are more important than wealth to the health of everyone.

A question that arises is why we do not find the expected association in the analysis of self-reported general health. There could be many reasons for this, some are methodological and some are substantial. First, the lack of an association could be a result of the loss of information due to the coding of self-rated health into a binary variable. Sensitivity analyses using a continuous variable did not however alter the results. Another possibility is that the association is too weak to be detected in the current data, and that it could have been in data

with more countries or a larger N. In women, all the interaction term coefficients were in the expected direction, but this was not the case in men, so this cannot be the full explanation. Second, the sampling design of the EWCS, including only current members of the work force, may have selection effects that could counteract the expected effect. Some of the most generous countries are also high employment countries, where a larger proportion of those who have health limitations are included in working life (van der Wel et al. 2011). This increases the risk that employees in low-end jobs in these countries more often have poorer health than in low employment countries. ~~Related to this, the level of de-industrialisation could also cause the composition of groups exposed to particularly physical exposures to vary between countries.~~ Again, as we did find significant results in the mental well-being analysis, it seems reasonable to assume that the association is in fact different for self-rated health for reasons not exclusively methodological. Therefore, substantive explanations need to be considered.

The most obvious substantial interpretation for the lack of association is that self-rated health and mental well-being are different aspects of health, that relate differently to the hypothesised 'buffering effect' of sickness benefit provision. Our measure of mental well-being taps positive well-being, such as positive mood, vitality and being interested in things, but it is also a strong predictor of depression (McDowell 2010). Self-ratings of health, on the other hand, 'are produced in a cognitive process that is inherently subjective and contextual, and (..) the basis of self-rated health lies in the biological and physiological state of the individual organism (..)' (Jylhä 2009:314). A recent study assessing the association between dimensions in the SF-36 and self-rated health concluded that physical dimensions were more strongly related to self-rated health than was mental health dimensions. Vitality, however, an important part of the WHO-5 measure of mental well-being, was also strongly related to self-

rated health. The correlation between less than good self-rated health and mental well-being in our study was r=0.32, indicating a moderate association. Therefore, our measures are not fundamentally separate concepts, but it is clear that self-rated health also to a large extent captures physical health. We also added self-rated general health to the final WHO-5 models, but this did not alter the results significantly. Given this, ~~this~~ our study suggests that people with poor working conditions or low education *feel better* when they live in a country with generous sickness benefit provision, although they may not necessarily *do better* in terms of physical health.

Limitations

One could argue that using institutional sickness benefit data would be preferable to using expenditure data as we did in this article, because you would then avoid the problem of adjusting for need and taking any behavioural effects into account. However, sickness benefit arrangements vary greatly across countries, and several dimensions would have to be considered, such as replacement rate, coverage, waiting days, benefit ceilings or flat rate benefits, which could pose a challenge for creating a comparable measure. Social expenditure data are more easily available, and, when used as in this paper, arguably more comparable across countries as it measures the actual amount spent relative to the size of the work force. An assumption of this approach, which may be questioned, however, is that the actual use of sickness benefits is mostly legitimate. Moral hazard, i.e. that people are more inclined to use sickness benefits when they are generous irrespective of the actual need (Allebeck and Mastekaasa 2004:39), could in principle lead to overuse of sickness benefits within generous institutional settings. However, a study using the EWCS 2005, found that coverage rather than replacement rate increased absence days (Frick and Malo 2008). Actually, replacement rate

alone contributed to *reduce* absence days. This suggests that entitlement is also an important component of any expenditure-based measure of sickness benefit provision.

Another possible limitation is that sickness benefit provision serves as a proxy for the wider welfare state context, including health services, social protection, and so on. To check this we included a measure for social expenditure per capita in our final regression models, but this did not alter our conclusions. The cross-level interaction effects in the mental well-being analysis remained comparable to our previous results.

As this study is based on cross-sectional data, health selection into poor working conditions could not be accounted for. This health selection may be linked to sickness benefit generosity if this makes tiring jobs more feasible to poor health groups. However, this would contribute to an underestimation rather than an overestimation of the associations found here. ~~Finally, the low response rate in the EWCS may be problematic.~~

As in most surveys, non-response in the EWCS was not random. The EWCS includes weights that accounts for differences between the EWCS and the European Labour Force Survey on the variables age, gender, geographic region, economic activity and occupation. These weights were used in the reported descriptive statistics, and important variables were controlled for in multivariate analysis. Even so, non-response may have affected our findings. For instance, if low SES individuals were less likely to respond, the association between sickness benefit provision and health may have been underestimated. Non-response also varied greatly between countries. The correlation between the response rate and sickness benefit provision was 0.41, indicating a moderate correlation. As a simple test of the influence

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of the response rate on our results, we added the response rate to our final models. This did not lead to different conclusions.

~~As a simple test, we added the response rate as a variable at level 2 in our final models, but this did not lead do different conclusions.~~

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Conclusion

This paper shows that mental well-being is better among high-risk groups in countries characterised by generous sickness benefit provision, and particularly among women. This supports the protective model of resilience (Fergus and Zimmerman 2005). No support was found for the compensatory model~~,~~ of resilience, i.e. that there should be health gains for everyone, once country wealth had been taken into account. Sickness benefit provision is not related to health inequalities in self-rated general health in this study.

With mental health being a major cause of disability and also being one of the fastest growing diagnosis groups among new incapacity benefit recipients in many European countries (OECD 2013), this paper may be of relevance to social policy makers. Although no causal links can be inferred from the study, our findings indicate that generous sickness absence schemes are important to the mental well-being of exposed or vulnerable members of the work force. This implies that cutbacks in sickness benefit provision could have counterproductive effects.

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Tables

Table 1 Distribution of dependent and independent variables by country and gender. Mean values and proportions.

Country	SBP*	Mental well-being		Self-reported general health (Less than good)		Low education		Job strain		Physical exposure	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Romania	-3.10	66.36	61.00	0.27	0.39	0.84	0.73	0.33	0.40	0.24	0.18
Bulgaria	-2.79	65.38	60.26	0.19	0.23	0.80	0.73	0.25	0.28	0.23	0.14
Slovakia	-2.46	60.62	62.45	0.40	0.36	0.84	0.83	0.24	0.27	0.24	0.07
Latvia	-2.44	59.87	56.70	0.56	0.57	0.76	0.60	0.33	0.29	0.23	0.14
Lithuan.	-2.40	57.56	54.47	0.36	0.38	0.59	0.41	0.30	0.22	0.28	0.14
Portugal	-2.38	67.38	59.40	0.34	0.42	0.89	0.80	0.35	0.31	0.29	0.18
Estonia	-2.03	65.45	62.43	0.46	0.47	0.69	0.61	0.37	0.37	0.29	0.20
Poland	-1.87	64.40	63.42	0.23	0.24	0.75	0.65	0.32	0.29	0.22	0.10
Hungary	-1.67	60.68	57.57	0.30	0.37	0.77	0.72	0.39	0.35	0.32	0.17
Croatia	-1.65	59.61	57.32	0.28	0.28	0.83	0.78	0.23	0.32	0.23	0.14
Greece	-1.41	66.94	63.75	0.13	0.11	0.62	0.46	0.41	0.34	0.29	0.11
Italy	-1.24	62.74	60.55	0.23	0.20	0.86	0.81	0.36	0.33	0.23	0.12
United K.	-1.21	66.55	63.16	0.13	0.16	0.64	0.67	0.30	0.28	0.17	0.08
Czech R.	-0.49	58.77	55.52	0.24	0.24	0.81	0.84	0.41	0.40	0.20	0.09
France	-0.48	66.08	64.26	0.23	0.27	0.64	0.57	0.37	0.30	0.28	0.20
Slovenia	-0.30	64.15	60.66	0.28	0.32	0.74	0.64	0.35	0.36	0.22	0.16
Ireland	0.18	74.31	71.92	0.08	0.07	0.59	0.62	0.31	0.35	0.16	0.10
Denmark	0.33	73.24	71.12	0.14	0.13	0.64	0.52	0.26	0.32	0.09	0.04
Spain	0.61	71.91	71.35	0.15	0.15	0.69	0.60	0.32	0.34	0.25	0.13
Belgium	0.76	68.95	66.14	0.18	0.18	0.58	0.44	0.32	0.29	0.19	0.14
Austria	0.85	64.74	66.85	0.26	0.22	0.89	0.86	0.37	0.29	0.21	0.12
Finland	1.15	67.98	68.31	0.23	0.24	0.58	0.42	0.26	0.35	0.16	0.16
Cyprus	1.48	66.97	61.95	0.15	0.16	0.63	0.64	0.32	0.42	0.26	0.15
Malta	1.89	69.44	69.34	0.15	0.18	0.68	0.70	0.45	0.34	0.24	0.13
Germany	2.01	68.17	66.01	0.22	0.25	0.70	0.68	0.27	0.26	0.21	0.10
Sweden	3.68	71.12	68.28	0.19	0.21	0.69	0.54	0.31	0.40	0.14	0.17
Netherl.	4.35	69.90	67.65	0.17	0.15	0.59	0.60	0.28	0.34	0.09	0.04
Norway	10.30	72.43	69.89	0.24	0.19	0.57	0.49	0.27	0.36	0.13	0.10
Mean	*0.00*	*66.13*	*63.63*	*0.24*	*0.26*	*0.71*	*0.64*	*0.32*	*0.33*	*0.22*	*0.13*

Source: EWCS, 2010. Weighted data.
** SBP=sickness benefit provision*

Table 2 The association between sickness benefit provision and mental well-being in men (N=10 638) and women (N=11 660). Multilevel regression analyses. Regression coefficients and their p-values.

	Women		*Men*	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Age	-0.170 (0.000)	-0.171 (0.000)	-0.127 (0.000)	-0.128 (0.000)
Working hours per week	-0.050 (0.023)	-0.049 (0.028)	-0.104 (0.000)	-0.103 (0.000)
Low education	0.017 (0.967)	0.039 (0.924)	0.646 (0.136)	0.671 (0.122)
Job strain	-4.554 (0.000)	-4.563 (0.000)	-3.744 (0.000)	-3.744 (0.000)
Chemical exposure	-5.992 (0.000)	-5.977 (0.000)	-0.255 (0.757)	-0.251 (0.762)
Physical exposure	-3.842 (0.000)	-3.837 (0.000)	-3.874 (0.000)	-3.855 (0.000)
Sickness ben. prov.		1.134 (0.000)		0.941 (0.000)
Constant	65.394	65.388	67.981	67.964
-2LL[1]	103110	103096***	92994	92982***
Variance level 2	23.336	13.599	19.453	12.730

[1] Compared to Model 1. Statistical significance of the change indicated by *(p< 0.1), **(p<0.05) and ***(p<0.01)

Table 3 The association between sickness benefit provision and mental well-being in men and women. Cross-level interaction effects and control for GDP. Multilevel regression analyses. Regression coefficients and their p-values.

	Low education	*Job strain*	*Physical exposure*
Women	**Model 3**	**Model 4**	**Model 5**
Sickness ben. prov.	0.874 (0.002)	1.009 (0.000)	1.030 (0.000)
Cross level interaction	0.473 (0.001)	0.362 (0.016)	0.895 (0.000)
-2LL[2]	103086***	103090**	103080***
Variance level 2	13.437	13.736	13.518
Men	**Model 3**	**Model 4**	**Model 5**
Sickness ben. prov.	0.744 (0.006)	0.860 (0.001)	0.882 (0.001)
Cross level interaction	0.313 (0.043)	0.294 (0.069)	0.394 (0.057)
-2LL[2]	92978**	92980*	92980*
Variance level 2	12.554	12.705	12.554
Women	**Model 6**	**Model 7**	**Model 8**
GDP per capita	0.373 (0.007)	0.381 (0.006)	0.376 (0.006)
Sickness ben. prov.	0.028 (0.944)	0.143 (0.719)	0.176 (0.654)
Cross level interaction	0.470 (0.001)	0.364 (0.015)	0.894 (0.000)
-2LL[3]	103080***	103084***	103072***
Variance level 2	10.381	10.549	10.423
Men	**Model 6**	**Model 7**	**Model 8**
GDP per capita	0.310 (0.024)	0.317 (0.021)	0.314 (0.022)
Sickness ben. prov.	0.046 (0.909)	0.140 (0.722)	0.171 (0.662)
Cross level interaction	0.305 (0.048)	0.295 (0.068)	0.391 (0.059)
-2LL[3]	92974**	92974*	92974*
Variance level 2	10.444	10.486	10.402

[2] Compared to Model 2 [3] Compared to Model 2, including GDP. Statistical significance of the change indicated by *(p< 0.1), **(p<0.05) and ***(p<0.01)

Table 4 The association between sickness benefit provision and self-reported general health in men (N= 10 751) and women (N= 11 753). Multilevel regression analyses. Logistic regression coefficients and their p-values.

	Women		*Men*	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Age	0.051 (0.000)	0.051 (0.000)	0.059 (0.000)	0.059 (0.000)
Working hours per week	-0.003 (0.248)	-0.003 (0.222)	0.002 (0.463)	0.002 (0.477)
Low education	0.351 (0.000)	0.348 (0.000)	0.335 (0.000)	0.333 (0.000)
Job strain	0.546 (0.000)	0.547 (0.000)	0.300 (0.000)	0.300 (0.000)
Chemical exposure	0.161 (0.246)	0.160 (0.250)	0.182 (0.065)	0.181 (0.066)
Physical exposure	0.717 (0.000)	0.717 (0.000)	0.636 (0.000)	0.634 (0.000)
Sickness ben. prov.		-0.112 (0.006)		-0.073 (0.073)
Constant	-1.760	-1.758	-1.795	-1.793
-2LL[1]	11958	11951***	10474	10471*
Variance level 2	0.424	0.326	0.376	0.334

[1]Compared to Model 1. Statistical significance of the change indicated by *(p< 0.1), **(p<0.05) and ***(p<0.01).

Table 5 The association between sickness benefit provision and self-reported general health in men and women. Cross-level interaction effects and control for GDP. Multilevel regression analyses. Logistic regression coefficients and their p-values.

	Low education	*Job strain*	*Physical exposure*
Women	**Model 3**	**Model 4**	**Model 5**
Sickness ben. prov.	-0.096 (0.023)	-0.119 (0.004)	-0.109 (0.007)
Cross level interaction	-0.028 (0.144)	0.017 (0.350)	-0.020 (0.404)
-2LL[2]	11949	11950	11950
Variance level 2	0.326	0.325	0.327
Men	**Model 3**	**Model 4**	**Model 5**
Sickness ben. prov.	-0.090 (0.038)	-0.081 (0.051)	-0.084 (0.043)
Cross level interaction	0.024 (0.246)	0.024 (0.238)	0.055 (0.023)
-2LL[2]	10470	10470	10466
Variance level 2	0.336	0.334	0.338
Women	**Model 6**	**Model 7**	**Model 8**
GDP per capita	-0.065 (0.002)	-0.065 (0.002)	-0.065 (0.002)
Sickness ben. prov.	0.052 (0.387)	0.028 (0.636)	0.039 (0.507)
Cross level interaction	-0.027 (0.148)	0.017 (0.362)	-0.021 (0.402)
-2LL[3]	11940	11942	11942
Variance level 2	0.239	0.238	0.239
Men	**Model 6**	**Model 7**	**Model 8**
GDP per capita	-0.053 (0.018)	-0.052 (0.019)	-0.053 (0.018)
Sickness ben. prov.	0.029 (0.652)	0.038 (0.550)	0.036 (0.573)
Cross level interaction	0.025 (0.234)	0.024 (0.241)	0.055 (0.023)
-2LL[3]	10465	10465	10461**
Variance level 2	0.277	0.277	0.280

[1] Compared to Model 1[2] Compared to Model 2[3] Compared to Model 2 + GDP. Statistical significance of the change indicated by *(p< 0.1), **(p<0.05) and ***(p<0.01)

Table 6 Predicted effects of sickness benefit provision on mental well-being. Based on models 6-8, Table 3.

	Low education		Job strain		Physical exposure	
	Men	Women	Men	Women	Men	Women
Discrete change	0.78	1.20	0.75	0.93	1.00	2.28
Maximum effect	4.08	6.29	3.95	4.87	5.24	11.97
Maximum effect, ex. Norway	2.27	3.50	2.20	2.71	2.91	6.66

Figures

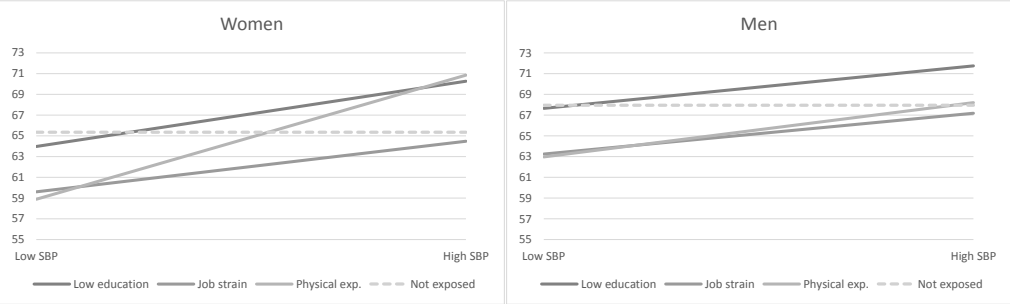

Figure 1 The association between sickness benefit provision and mental well-being by risk group. The comparison group equals the constant. Predictions based on models 6-8, Table 3.