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Working-time regulation, long working hours, overemployment and mental health

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ABSTRACT

Using nationally representative panel data from Australia and Germany, this article investigates the relationships between working-time regulation, long working hours, overemployment and mental health, as measured by the Mental Component Summary score from the 12-item Short Form Health Survey (SF-12). Fixed effects and dynamic linear models are estimated, which, together with the longitudinal nature of the data, enable person-specific traits that are time invariant to be controlled for. Drawing on the Varieties of Capitalism literature it is hypothesized that the system of collective regulation of working time in Germany will be more effective in limiting the incidence of overemployment than the more individualized system of regulation in Australia so that the prevalence of working time related mental ill health is lower. Results do not support this hypothesis. Overemployment is similarly common in both countries and is also associated with lower levels of mental health in both countries.

KEYWORDS

Longitudinal data; mental health; overemployment; working hours; working-time regulation

Introduction

Long working hours are now a feature of many advanced industrial economies (Lee et al., 2007), and the idea that long hours are a cause of stress and poor mental health is a regular fixture in more popular accounts of working life (e.g., Bunting, 2004; Galinsky et al., 2001; Schor, 1991). But does empirical evidence support the popular perception that long working hours cause poorer mental health? While there is a large body of evidence demonstrating an association between long hours of work and poorer mental health, this evidence is not robust enough to demonstrate a causal relationship. Further research based on household panel survey data suggests that it is only when hours diverge from preferences that any strong associations between long hours and measures of job satisfaction and life satisfaction are obvious. Whether such findings also extend to health outcomes, and in particular psychological health, is less clear. Recent analysis of a very large UK population sample suggests a highly significant (though arguably quite small) relationship between working-time mismatch and the likelihood of workers reporting depression, but with the magnitude of this relationship about twice as large for 'underemployment' than for 'overemployment' (Bell & Blanchflower, 2019). Existing longitudinal evidence, on the other hand, is far less conclusive, with two studies (Angrave & Charlwood, 2015; Robone et al., 2011), again using data for the UK (and from the same data source), reaching quite different conclusions.

The lack of cross-national or comparative evidence is particularly significant given theory leads us to expect a country's production regime to shape aspects of job quality, including working time, in ways that affect the psychological health of workers (Gallie, 2007: 87). Simply put, we expect that more extensive collective regulation of labour markets will result in a lower incidence of overemployment so that there is less working time related mental ill health. In this context, the novel contribution of this article is to investigate whether different systems of working-time regulation located within contrasting production regimes result in

different patterns of long hours working, overemployment and long hours related mental health problems.

A second contribution is to provide a more rigorous and convincing test of the hypothesis that long hours working has a causal impact on the mental health of workers than most previous studies that have investigated this issue. We do this through analysis of nationally representative household panel data from Australia and Germany. We select these countries for both theoretical and practical reasons. From a theoretical perspective, Germany is an exemplar of a coordinated market economy while Australia is an example of a liberal market economy, and this is reflected in diverging approaches to working-time regulation. From a practical perspective, both countries have high-quality and long-running nationally representative household panel datasets — the German Socio-Economic Panel (SOEP) and the Household, Income and Labour Dynamics in Australia (HILDA) Survey — which allow us to investigate these questions using rigorous and appropriate methods.

Theory and evidence

Previous research

Long working hours are likely to cause depletion of physical and mental energy and resources. Such depletion is likely to be a stressor, interfering with sleep and increasing the risks of mental health problems. Long working hours may also increase the risk of work-family interference, which may also be a stressor (Golden & Wiens-Tuers, 2008). Despite these theoretical expectations, the existing empirical evidence (summarized in: Bannai & Tamakoshi, 2014; Theorell et al., 2015; van der Hulst, 2003) is inconclusive. Most previous research, however, suffers from at least one of three limitations: (i) reliance on cross-sectional data, making it difficult to draw inferences about causality; (ii) the absence of controls for potentially confounding variables that may affect both propensities to work long hours and to suffer

symptoms of psychological ill-health; and (iii) use of samples drawn from specific occupations or industries. Only two studies (Angrave & Charlwood, 2015; Robone et al., 2011) avoid all of these problems, in both cases by drawing on nationally representative panel data and using panel econometric methods to control for time-invariant omitted variables.

These two studies also stand out because they examine the relationships between long hours and mental health while also considering the fit between working time and working-time preferences. Working-time preferences are important because physiological and psychological differences between individuals mean that different individuals will have different thresholds at which work becomes a stressor. If individuals are free to choose their hours of work, they will typically stop working when the disutility of stress from long working hours exceeds the utility provided by income. If this is the case, there might be little or no relationship between long working hours and mental health. However, power imbalances within the employment relationship and wider societal norms and values mean that workers may not be free to choose their hours of work (Böheim & Taylor, 2004; Drago et al., 2009; Otterbach, 2010; Pollman-Schult & Reynolds, 2017; Reynolds & Aletraris, 2006, 2010). Logically then, overemployment is more likely to act as a stressor causing risks to mental health than long hours working.

Angrave and Charlwood (2015) find evidence that overemployment (working more hours than the individual prefers) is associated with increased risk of symptoms of mental ill-health, but that long working hours (50 or more hours of employment a week) are not associated with increased risk if workers' hours are in line with their preferences. In contrast, Robone et al. (2011) find no such relationships. This study lags mental health measures by one year, allowing stronger inferences about causality to be drawn but at the expense of identifying shorter-run relationships. Associations between overemployment and mental health may therefore be understated given respondents are likely to adapt both working-time preferences and their

psychological outlook to cope with the hours they are required to work (Angrave & Charlwood, 2015; Golden, 2009; Reynolds & Aletraris, 2006, 2010).

In summary, the evidence suggests that there is likely to be a short-run relationship between long working hours and lower levels of mental health. However, this evidence is from a single country. There are good reasons to suppose that relationships might vary between countries.

Production regimes, working-time regulation and mental health

Production regime theory is based on the premise that there are institutional differences between countries in the way economic activity is organized and coordinated, and that these institutional differences result, among other things, in differences in the quality of work (Gallie, 2007). Specifically, the VoC literature (Hall & Soskice, 2001) argues that there are two broad approaches to coordinating economic activity; the first based on hierarchies within firms and competitive market arrangements (liberal market economies), and the second based on more extensive non-market coordination between firms and the state at the level of the industry sector (coordinated market economies).

Following the logic of VoC analysis, we expect the regulatory approach of coordinated market economies to result in less overemployment than in liberal market economies. This is because coordinated market economies provide channels for collective negotiation and agreement of working time which should result in outcomes more likely to reflect workers preferences. If there is less over-employment, we would expect to see less over-employment related mental health problems (given that the theory and evidence discussed above suggests over-employment is a cause of mental health problems). An alternative theoretical viewpoint comes from the power resource perspective (Korpi, 1978), which suggests that the broad approach to economic coordination at the centre of VoC theory is less important than the relative power and organizing capacity of labour and capital. These differing theoretical

perspectives lead to different predictions about the likely incidence of overemployment within coordinated market economies. Our development of hypotheses will be guided by the VoC approach, but we will return to the power resources perspective in the discussion section below. We illustrate this by comparing working-time regulation in liberal market Australia and coordinated market Germany.

Working-time regulation in Australia

In Australia, national employment standards stipulate a maximum working week of 38 hours but with additional hours allowed so long as they are 'reasonable'. This national standard is incorporated into the statutory awards that regulate employment in specific industries and occupations. This 38-hours limit is this not an upper limit on total hours worked. That instead is dependent on how many additional hours are considered 'reasonable', which in turn depends on a large range of factors, including: business need; usual patterns of work in an industry; the nature of the employee's role; the employees' personal circumstances and responsibilities; and worker health and safety considerations. In essence, how many hours are worked is largely left to employers and employees to sort out themselves. If workers feel they are being asked to work overtime unreasonably they can complain to the Office of the Fair Work Ombudsman (FWO). However only a small number of complaints result in investigations (Fair Work Ombudsman, 2016). This then is an essentially individualistic approach to the regulation of working time; employees must individually approach the FWO to seek redress if they feel they are being asked to work unreasonably long hours, and in practice few do. In these circumstances, we might expect overemployment to be relatively common.

Working-time regulation in Germany

Germany adopted a statutory eight-hour working day based on a six-day working week in 1994 when the European Working Time Directive was transposed into German working-time law. However, this can be extended to ten hours (i.e., 60 hours within a six-day working week) as long as the daily average over six months does not exceed eight hours. These legal maxima provide a framework for more detailed regulation of the distribution and extent of working time through industry-level collective bargaining. Collective agreements cover about 57% of German employees, with an additional 21% of employees on individual contracts that mirror collective agreements. Usually, these collective agreements do not exploit the legal maxima, and typically stipulate a standard working week of between 34 and 40 working hours (Bispinck, 2017). However, individual opt-out of the weekly maximum of 48 hours is possible if collective agreements exist which provide for such deviations. This focus on working-time regulation through collective bargaining should, in theory, limit the ability of firms to require workers to work longer than their preferences, while also giving workers a stronger mechanism for expressing their working-time preferences to management.

Hypotheses

In the light of the foregoing, we offer two hypotheses about relationships between working time, overemployment and workers' mental health:

H1: The system of collective working-time regulation in the German coordinated market economy will result in less overemployment compared to the individualized system of working-time regulation in the liberal market Australian economy.

H2: Overemployed workers (those who work longer hours than preferred) will be at greater risk of poor mental health than workers whose working hours match their preferences.

Data

Samples

The data for this study are drawn from the German Socio-Economic Panel (SOEP) (Wagner et al., 2007) and the Household, Income and Labour Dynamics in Australia (HILDA) Survey (Watson & Wooden, 2012). These surveys have many common features. Notably, both commenced with nationally representative samples of households and then sought to re-interview all adult members of those households (together with any other co-residents) every year thereafter. Critical for this analysis, both surveys collect data on usual and preferred working hours, and in recent waves, provide a common mental health measure.

While the SOEP commenced in 1984, in this analysis we only make use of observations from six survey waves: 2002, 2004, 2006, 2008, 2010 and 2012. This is because our key mental health measure was only available in these years. After restricting the sample to respondents aged 17 to 64 years and excluding any cases with missing observations on the mental health outcome variable, we are left with an initial sample comprising 96,847 observations covering 32,500 individuals. The HILDA Survey, commenced in 2001, but provides information on mental health states in all waves. Applying the same sample restrictions as those applied to the SOEP data, but covering all 12 survey waves between 2001 and 2013, gives an initial sample comprising 125,174 observations covering 22,416 individuals. Further restricting the sample to only include observations from the same six survey years available for the SOEP analysis leaves 56,268 observations from 18,661 individuals.

Measurement of mental health

The outcome variable for this analysis is the Mental Component Summary (MCS) score from the 12-item version of the Medical Outcomes Study Short Form Health Survey (SF-12). The short form SF-12 health questionnaire (as well as its longer 36-item parent, the SF-36) has been

applied in a myriad of international studies on clinical and health policy subjects, and is widely acknowledged as a reliable and internationally applicable tool for measuring health related quality of life.

MCS score values range from 0 to 100 with higher scores denoting better mental health. The mean value and standard deviation in the base year (which in this analysis is 2004) are set to 50 and 10 respectively.[1] The measured average level of mental health is thus constrained to be the same in both countries in the base year. This might be problematic if in fact population-wide levels of mental health in the two countries are very different. Evidence compiled by the Global Health Data Exchange (http://ghdx.healthdata.org/gbd-results-tool), however, suggests this is not so, with the average rate of prevalence of anxiety disorders being almost identical in the two countries over our observation period (6.6%), and the rate of prevalence of depressive disorders being similar (but slightly higher in Australia; 4.9% vs 3.9%).

The HILDA Survey administers the SF-12 through a separate self-completion instrument. In contrast, the SOEP administers the SF-12 as part of its main interview, which, in turn, is delivered by a variety of different modes, but with slightly more than half involving interviewer administration. This may lead to some overstatement of mental health in the SOEP relative to the HILDA Survey given evidence that respondents tend to provide more favourable (i.e., upwardly biased) assessments of their health when responding to an interviewer relative to what is recorded on a paper or online instrument by the respondent themselves (Lyons et al., 1999). To control for such effects we include a dummy variable indicating whether the data were collected by an interviewer.

Measurement of working hours and working-time mismatch

Working hours are based on self-reports of the number hours worked in a week. In the HILDA Survey the question relates to a usual week, covers both paid and unpaid overtime, and relates

to all jobs currently held. In the SOEP the relevant question refers to "average working hours including possible over-time". This question does not specify whether unpaid hours are included, but a subsequent question about whether overtime hours are compensated for makes it clear that the intent is that all hours are to be included. Also unclear is whether the working hours relate to only one job or all jobs. Again, subsequent questions imply that the intent here is only to measure hours worked in the main job, and hence hours of work will be under-counted relative to the HILDA Survey.

Employed respondents to both surveys are also asked about the number of hours they would prefer to work each week, after taking into account any effects on income. In the SOEP this question reads: 'If you could choose your own working hours, taking into account that your income would change according to the number of hours, how many hours would you want to work?' In the HILDA Survey, respondents are first asked: 'If you could choose the number of hours you work each week, and taking into account how that would affect your income, would you prefer to work … fewer hours than you do now? about the same hours as you do now? or more hours than you do now?' Those indicating a preference for either more or less hours are then asked: 'In total, how many hours a week, on average, would you choose to work? Again, take into account how that would affect your income.'

Similar to previous research (Angrave & Charlwood, 2015; Bell et al., 2012; Wooden et al., 2009), our main specification (specification 1) includes a series of dummy variables that interact usual weekly working hours categories with mismatch status (underemployed, matched, or overemployed). Following Bell and Freeman (2001) and Bell et al. (2012), in this specification we only classify someone as mismatched if the discrepancy between actual and desired hours is at least four hours per week. We also retain respondents who are not employed at the time of interview by setting their working hours to zero and including two dummy

variables identifying, respectively, those who are unemployed (i.e., actively looking for a job) and those who are not in the labour force.

We also consider an alternative specification (specification 2) where, following Wooden et al. (2009), we include separate measures of the extent of underemployment and of overemployment (and in this case there is no minimum threshold to be classified as underemployed or overemployed). In this specification we also include controls for usual hours worked (three categorical dummy variables).

Covariates

Given the fixed-effects estimation approach set out below, our set of covariates is limited to time-variant variables. We further restrict attention to variables available in both data sets. These measure: age (four categorical dummies); marital / relationship status; the number of dependent children (under 17 years of age); the presence of a disability; the log of real annual equivalized net household income (where the equivalence scale applied is the square root of household size); and, if employed, occupation (27 two-digit occupation dummies using the 1988 International Standard Classification of Occupations). We also include a set of survey year dummies. In addition, and as noted earlier, the SOEP specifications include a control for interview mode. While this list is relatively short, it is very similar to that employed in previous studies using the same data sources as employed here (i.e., Angrave & Charlwood, 2015; Bell et al., 2012; Wooden et al., 2009).

While we have attempted to ensure that variables are comparable across the two datasets, differences in questionnaire design and in institutional arrangements mean this is not always possible. Notably, there are marked differences in the measurement of disability. In the SOEP the disability measure is based on whether respondents have been 'legally assessed as handicapped' or partially incapable of work, and on the extent of that reduced capability. In

the HILDA Survey data disability has been determined by respondents reporting the presence of a long-term health condition or disability that restricts every day activity, has lasted (or is expected to last) six months or more, and limits the type of amount of work that can be done. Relative to the SOEP measure, this will mean more workers being classified as disabled.

Descriptive statistics for all our covariates, as well as the mental health and working hours variables, are provided in an Appendix Table A1.

Methods

In this study, we use two different estimation methods. First, and following the approach used by Angrave and Charlwood (2015), Bell et al. (2012) and Wooden et al. (2009), we estimate a model that includes an individual-specific effect. This takes the form:

$$y_{it} = \beta x_{it} + \gamma z_{it} + \phi_t + \alpha_i + \varepsilon_{it;} \qquad i = 1, \ldots, N; t = 1, \ldots, T \qquad (1)$$

where y_{it} is a measure of mental health, x_{it} is a vector of time-varying variables capturing working-time mismatch, z_{it} is a vector of other time-varying exogenous variables, α_i are individual-specific constants, ϕ_t captures time-specific effects, and ε_{it} is a random error term.[2] It is estimated in STATA using the 'xtreg' command with the 'fe' option.

As argued by Robone et al. (2011), an obvious criticism of this specification is that it may be affected by endogeneity bias; in particular, desired working hours may be a function of mental health status. To address such concerns, we allow current mental health status to be a function of mental health status in the previous period, and estimate a dynamic panel data model with correlated random effects, as set out in equations 2a and 2b.

$$y_{it} = \delta y_{it-1} + \beta x_{it} + \gamma z_{it} + \phi_t + \alpha_i + \varepsilon_{it;} \qquad i = 1, \ldots, N; t = 1, \ldots, T \qquad (2a)$$

$$\alpha_i = \alpha_0 + \alpha_1 y_{i1} + \alpha_2 \overline{z}_{i} + \mu_i \qquad (2b)$$

The rationale behind this specification is that present health status depends on previous health status and that past influences on mental health, including health shocks, and

individuals' reaction to such shocks, affect current state of mental health (Contoyannis et al., 2004). If individuals' ability to cope with such health shocks is not (fully) covered by unobserved (and time-invariant) personal traits (Jäckle & Himmler, 2004), inclusion of previous mental health is essential to reduce concerns of endogeneity.

Estimation of equation (2a) with conventional fixed-effects (or random-effects), however, will produce biased estimates because the values of the lagged dependent variable will not be independent of α_i. We therefore adopt the approach recommended by Wooldridge (2005) and model the distribution of the unobserved individual-specific effects (α_i) in equation (2b) as a function of both the initial value of the outcome variable, which is proxied by the first observed value of the mental health variable within the panel for each individual (y_{i1}), and the within-person means of all exogenous time-varying variables ($\overline{z}_i$). Equation (2b) is then substituted into equation (2a). Following Rabe-Hesketh and Skrondal (2013), we also omit the initial-period explanatory variables from the within-person means. This model is then estimated with the Generalized Least Squares random-effects estimator.

Results

We begin with an inspection of the distribution of usual work hours in Germany and Australia, stratified by gender. As shown in Figure 1, which reports data for the years at the beginning and end of our sample period, both data sources exhibit heaping, which is typical for self-reported recall data on work hours (Otterbach & Sousa-Poza, 2010). In both countries and for both genders, the mode is 40 hours. As expected, this spike at 40 hours is more pronounced among men than women, reflecting the greater incidence of part-time employment among the latter. Somewhat more surprising, it also more prominent in Germany than in Australia, where, reflecting the standard work week specified in awards, 38 hours is also a common response.

Further descriptive data on both overemployment and the distribution of working hours for the employed sub-samples, disaggregated by sex, are presented in Table 1. For the sake of completeness, this table also shows descriptive data on underemployment (those who would like to work longer hours). Focusing first on the final column of this table, both samples are characterized by relatively high levels of long hours working (defined as 50 hours or more per week). Just over 30% of Australian men and almost 10% of Australian women report working 50 hours a week or more. The equivalent figures for Germany are 26% and 7.5%. Table 1 also shows that overemployment is common in both countries. In the Australian sample about 28% of employed men and 25% of employed women report usually working more hours than preferred. The comparable numbers for the German sample are considerably larger; 48% of employed men and 38% of employed women. It appears that German workers are much more sensitive to being asked to work more than a 40-hour working week than their Australian counterparts.

Table 1 also highlights that over and underemployment occur at different levels of the usual hours distribution for men and women. In both countries, part-time work is not only more common among women, but the share of women satisfied with part-time work (<35 hours) is larger than that of men. Compared to women, men tend to be more prone to be underemployed when working part-time. On the other hand, the share of women satisfied with their hours when working full time (35-40 hours) and long (>40) hours is smaller than that of men, whereas the share among women working full time (35-40 hours) or long (>40) hours who prefer fewer hours is larger than that of men. This is the case in both countries.

These figures suggest an immediate challenge to our first hypothesis. Despite a collective approach to working-time regulation that might be expected to limit long hours working and associated overemployment, long working hours are nearly as common in Germany as in Australia, and overemployment is more likely in Germany than in Australia.

To formally test our second hypothesis, we turn to the results of our regression models.[3] Our second hypothesis was that overemployed workers will be at greater risk of poor mental health than workers whose hours and hours preferences are matched. Focusing first on specification 1 (Table 2), we find that the estimated coefficients of interactions between working hours and working-time mismatch exhibit a similar pattern across both countries, and for both men and women. Compared with the reference category — employed persons who usually work 35 to 40 hours each week and report that these are their preferred hours — it is the overemployed who stand out as most different. Among men, those working full-time hours who report working more hours than desired have significantly lower mental health scores than workers in the reference category, and these effects appear to be somewhat larger in Germany than in Australia. The magnitudes of these negative effects are even larger among women, and are not just restricted to those working full-time hours. The sizes of these effects are also larger in Germany than in Australia, especially among women working more than 40 hours a week.[4] However, in contradiction to our second hypothesis, German men who work 41 to 49 hours a week are more likely to report poor mental health even if their hours match their preferences.

In Table 3 we report the results of our alternative specification where we replace the interactions between actual hours worked and mismatch status with two continuous measures of the extent of working-time mismatch — one for overemployment and one for underemployment (specification 2). Consistent with the results reported in Table 2, we find that in both samples, hours of overemployment are negatively associated with mental health scores, and the magnitude of this effect is larger among women than men. The results presented in Table 3 also highlight more clearly cross-country differences, with the negative associations between overemployment and mental health being about twice as large in Germany than in Australia. Once again, a 41 to 49 hour work week also seems to be associated with greater risk of poor mental health in Germany, but not in Australia.

We next report results of correlated random effects models that include previous mental health lagged one period as well as the first observation of mental health within our panels. The results from the estimation of specifications 1 and 2 are reported in Tables 4 and 5, respectively. Again we draw the conclusion that it is only the size of the coefficients that are affected by the choice of estimation method and not their signs or significance. Overemployment thus again emerges as a significant negative influence on mental health. Estimation of specification 2 using the dynamic correlated random effects model (see Table 5) continues to suggest that overemployment has harmful consequences for mental health. And again we emphasize that the negative effects of overemployment are much larger in Germany (about double the magnitude of the effect in Australia). Overall, the evidence does not support our second hypothesis. Despite a collective system of working-time regulation that might be expected to reduce the scope for employers to require long hours working against the wishes of workers compared to the individualized Australian regulatory framework, there is more overemployment in Germany and the relationship between long hours and poor mental health seems to be greater in Germany than in Australia.

What is the practical meaning of the statistical associations described above? For the overemployed working very long hours (50 or more per week), the estimated coefficients fall in the range of -.9 to -1.5 for men and -1.3 to -1.7 for women. When judged against a standard deviation of 10 in the outcome variable, these magnitudes might be considered relatively small. But given fixed-effects estimation, a better comparison is with the standard deviation in the within-person mean, which is considerably smaller — around 5.6 (Australia) and 5.9 (Germany). Further, the coefficients are relatively large when compared with the estimated coefficients on covariates; the onset of a long-term health condition or disability, for example, is only associated with coefficients in the range of -1.5 to -2.5.

For the sake of completeness, it is interesting to note relationships between underemployment and mental health. We find evidence that underemployment is associated with worse mental health, but only in our Australian sample (perhaps reflecting the fact that underemployment is rare in Germany) and this finding is sensitive to the approach used to measure underemployment.

To summarize our key findings, we find evidence that overemployment is associated with an increased risk of mental health problems in both Germany and Australia. Surprisingly in the light of our initial hypotheses, overemployment is similarly common in Germany as in Australia. We consider why this might be in the discussion below, but before we do this we report the findings of additional robustness checks and sensitivity analyses.

Robustness checks and sensitivity analyses

We checked the robustness of our results by repeating the analyses on a number of modified samples and using a range of different specifications.[5] First, we tested whether use of biennial rather than annual data had any impact on our findings. We thus replicated the Australian results after including all 13 available waves of the HILDA Survey data. Key results were unchanged.

Second, we examined whether the results were sensitive to sample selection, and more specifically the inclusion of younger individuals, who are both numerically very important for underemployment (because of their over-representation in part-time jobs) and very different to other workers (because of the importance of time spent studying). The concern, therefore, was that this group might be driving the effects of underemployment. We thus replicated the fixed-effects estimation of specification 1 after excluding observations from respondents aged less than 25. Comparison of these results with those reported in Table 2 revealed no differences of note.

Third, it might be argued that our analysis suffers from selection bias given people with poor mental health will be less likely to obtain and maintain employment (van Rijn et al., 2014). We deal with this problem in several ways. To begin, in the fixed-effects models we control for respondents moving in and out of (un)employment. Similarly, in the correlated random effects models we account for the effect of those being non-employed in all waves. Nevertheless, a bias might still be present, so we also checked whether results would be any different if the sample was restricted to employed persons. A comparison of results from fixed-effects models with and without non-employed respondents revealed only slight differences with respect to the size of coefficients, and no differences in their direction. Thus, we conclude that time-variant unobservable traits which potentially determine selection into employment can be safely ignored.

Fourth, it might be argued that occupation is not necessarily exogenous since people will select into jobs which are more/less stressful and demand more/fewer hours, leading to potential sorting by mental state and desire for hours. We thus checked whether our results were sensitive to the exclusion of the occupational dummies, but again the results revealed no differences of note compared to those reported in Table 2.

Fifth, we included partner's employment status (being employed, not in the labour force, unemployed) in our regression models to investigate whether it has a spillover effect on respondent's own mental health (Wunder & Heineck, 2013). The results showed that having a partner affects respondents' mental health positively irrespective of partner's employment status.

Sixth, while data availability prevents us from including controls for working conditions in both countries, we are able to include a measure of the type of employment contract; i.e. whether a respondent is an employee or self-employed, and among the former, whether employed on a permanent or fixed-term contract basis, and in Australia's case, whether

employed casually. Although marked institutional differences, particularly the prevalence of casual employment in Australia, prevent any simple comparison, the inclusion of controls for contract type had relatively little impact on our coefficients of interest.[6]

Seventh, it could be argued that our covariates are too highly collinear; in particular, the disability variable might be capturing some of the effect of our variables of interest. An inspection of the correlation matrix for both the HILDA Survey and the SOEP samples, did not indicate any obvious collinearity problem. Furthermore, estimation of our models after excluding the disability variable did not reveal any substantive differences.

Eighth, it might also be argued that the assumption of a linear relationship between the number of hours of overemployment and mental health in specification 2 is inappropriate. We therefore estimated an alternative specification where the continuous measures of working-time mismatch were replaced with a series of dummy variables identifying whether the extent of overemployment (or underemployment) was less than 5 hours, 5 to 9 hours, 10 to 14 hours, 15 to 19 hours, or 20 hours or more. The results from the fixed-effects estimation of this alternative specification for the German sample are entirely consistent with those reported in Table 3. In contrast, the estimates for the Australian sample suggest a different pattern. Among men the penalty for overemployment kicks in at quite low levels of mismatch (at least 5 hours per week) and does not grow with the extent of mismatch. A similar pattern is found for Australian women, though in their case the penalty for overemployment exists even when the extent of mismatch is very small.

Finally, a potentially major issue for all survey-based analyses, but especially those using longitudinal data, is the possibility of bias arising from non-random response and attrition (only 42% of our SOEP sample, and 40% of our HILDA Survey sample participated in all 6 waves). As a check for such biases we re-estimated the fixed effects models after applying the

recommended longitudinal weights provided with the data (resulting in a balanced panel). These weighted results do not suggest any marked change in our conclusions.

Discussion

This article makes two key contributions. First, it provides compelling evidence that overemployment leads to greater risk of mental ill health. As explained in the literature review, although many previous studies have addressed this relationship, most suffer from important limitations, while the two studies that address these limitations appear to provide contradictory results (Angrave & Charlwood, 2015; Robone et al., 2011). Our results suggest very clearly that popular accounts (Bunting, 2004; Galinsky et al., 2001; Schor, 1991), which suggest a link between overemployment and mental ill health, are essentially correct. Second, motivated by the Varieties of Capitalism approach (Hall & Soskice, 2001), we hypothesized that the collective system of employment regulation in Germany might limit the prevalence of overemployment so that fewer workers were exposed to the associated mental health risks. This prediction proved erroneous. Why might this be? In the literature review we noted the alternative power resources perspective (Korpi, 1978), which argues that institutions are less important for determining job quality than the balance of power between labour and capital. In the light of this theory, it is worth noting evidence of the erosion of the system of collective regulation in Germany in the face of declining union power (Hassel, 1999; Doellgast & Greer, 2007). Our results suggest that the coordinated German system does not give workers the power to align their working time with their working time preferences to any greater extent than is the case in liberal market Australia. This raises the question of whether different systems of working time regulation are more or less successful in limiting overemployment or whether the relative strength of labour and capital are more important? A simple two-country comparison, like that presented in this paper, is limited in its ability to isolate the relative

importance of labour market institutions from the many other differences between the two countries. Comparative analysis of overemployment and institutional arrangements in a larger number of countries could help provide answers to this question.

That said, a key strength of the research is that our results are based on comparable nationally representative longitudinal data from two countries with quite different approaches to the regulation of employment. This suggests that our results can likely be generalized to other contexts. We have also refined the econometric approach to our analysis to address a number of potential limitations in previous studies.

Against these strengths it is important to note a number of limitations. First, our study is based on observational data. Therefore, as with any study of this type, we need to be cautious about inferring causality. The longitudinal design of our study allows us to draw stronger causal inferences than a study based on data from a single point in time. Nevertheless, experimental or quasi-experimental evidence is needed to be able to establish whether the relationships this study has identified are in fact causal.

Second, it would be desirable to investigate whether additional time-variant characteristics have moderating effects on mental health (i.e., whether certain groups are more or less susceptible to changes in mental health because of overemployment) but this would require interactions with these characteristics and our complex variable of interest (working hour categories interacted with working hours mismatch). Although our nationally representative data sets both provide a large number of observations, sample sizes are still not large enough to provide robust estimates of such interactions. Data limitations also mean that other potentially significant, and possibly confounding, variables cannot be included. Most notable here are measures of working conditions other than working hours (e.g., measures of environmental hazards in the workplace).

Third, while the SF-12 Mental Component Summary scale used in this study has been successful in discriminating between the presence and severity of mental disorders in clinically defined groups of adults (Ware et al., 1996), and has performed adequately as a valid measure of depressive disorders in both Australian (Gill et al., 2007) and European (Vilagut et al., 2013) samples, it still relies on subjective self-reported data. This is particularly problematic for cross-country studies given the possibility that people from different populations interpret questions differently and thus respond differently. It would instead be desirable to have a measure based on clinical diagnoses of specific psychiatric disorders.

Fourth, the study did not include a detailed analysis of overtime compensation and compensation differences. German evidence points to the decreasing use of monetary compensation for overtime and an increase in unpaid overtime, with a substantial amount of hours in work-time accounts expiring instead of being reconverted into leisure (Anger, 2006). Thus, further investigation into the links between unpaid overtime, working hours constraints, and mental health could be an interesting avenue of future research.

Finally, and relatedly, this study has not considered the role of work effort and intensity in determining subjective experiences of overemployment. Another area for future research would, therefore, be to investigate relationships between work intensity and working time, and especially overemployment, and the implications for mental health.

One interesting aspect of our study is that while Australian results are similar to the results of a similar study from the UK, the size of the relationship appears greater in Germany. Why might this be? One possibility is that cross-country differences may reflect differences in data collection methods. In particular, and as noted earlier, the mode of survey delivery may cause the level of mental health in Germany to be overstated. However, it is not clear why this would also lead to bigger changes in mental health scores in response to changes in working time and overemployment. Another possibility is that the German system of regulation provides workers

with a set of expectations about the appropriate length of the working week which are not present in Australia, with the result that German workers are more likely to believe that they are overemployed and more likely to experience psychological stress because their expectations about appropriate working hours are not being met. This is speculation. Further research to investigate the role of labour market regulation in shaping worker expectations and psychological consequences of unmet expectations would be fruitful.

To conclude, we hypothesized that the collective system of working-time regulation in coordinated market Germany will result in less overemployment than is the case in liberal market Australia. Contrary to expectations, German workers are actually more likely to be overemployed than their Australian counterparts. This suggests that the power resources perspective provides a more compelling account of how production regimes shape job quality than the VoC approach, echoing the findings of Gallie (2007). We expected overemployment to be associated with reports of poorer mental health. Results supported this hypothesis. In fact, we found similar relationships between overemployment and mental health in both countries. There is now compelling and methodologically robust evidence from Australia, Germany and the UK which suggests that overemployment causes mental health to worsen.

Notes

1 The algorithm used to construct the MCS variable when using SOEP data is described in Andersen et al. (2007). We have applied the same algorithm to the HILDA Survey data. In both cases, and in line with the findings and recommendations of Hawthorne et al. (2007), country-specific scoring weights are applied.

2 A Tobit might might be considered a more appropriate estimator given the principal outcome variable is constrained to lie in the range 0 to 100, but we are unaware of any estimation routine that enables use

of fixed effects in combination with a Tobit. Further, a Tobit is not really required given relatively few of our observations are at or near the limits of the outcome variable.

3 With the only exception of our final robustness check, all regression models are unweighted.

4 To test whether the size of the coefficient is statistically different, we pooled SOEP and HILDA data and interact a dummy variable for being a HILDA respondent (instead of being a SOEP respondent) with the set of dummy variables of interest; i.e., work hours categories interacted with mismatch status (specification 1). This estimation reveals that the coefficients for workers in the 41-49 hours category being matched or overemployed are statistically different for German and Australian respondents. This is the case for both men and women. In addition, among men working 50+ hours who are unconstrained and among women working 50+ hours who are overemployed we also find that the coefficients in our German and Australian samples are statistically different in magnitude.

5 While not reported in detail here, regression results for all additional estimations undertaken are provided in an additional technical appendix available on request from the authors.

6 Likewise, inclusion of union membership, which due to data availability is only possible for the HILDA sample, does not result in any marked changes to our results.

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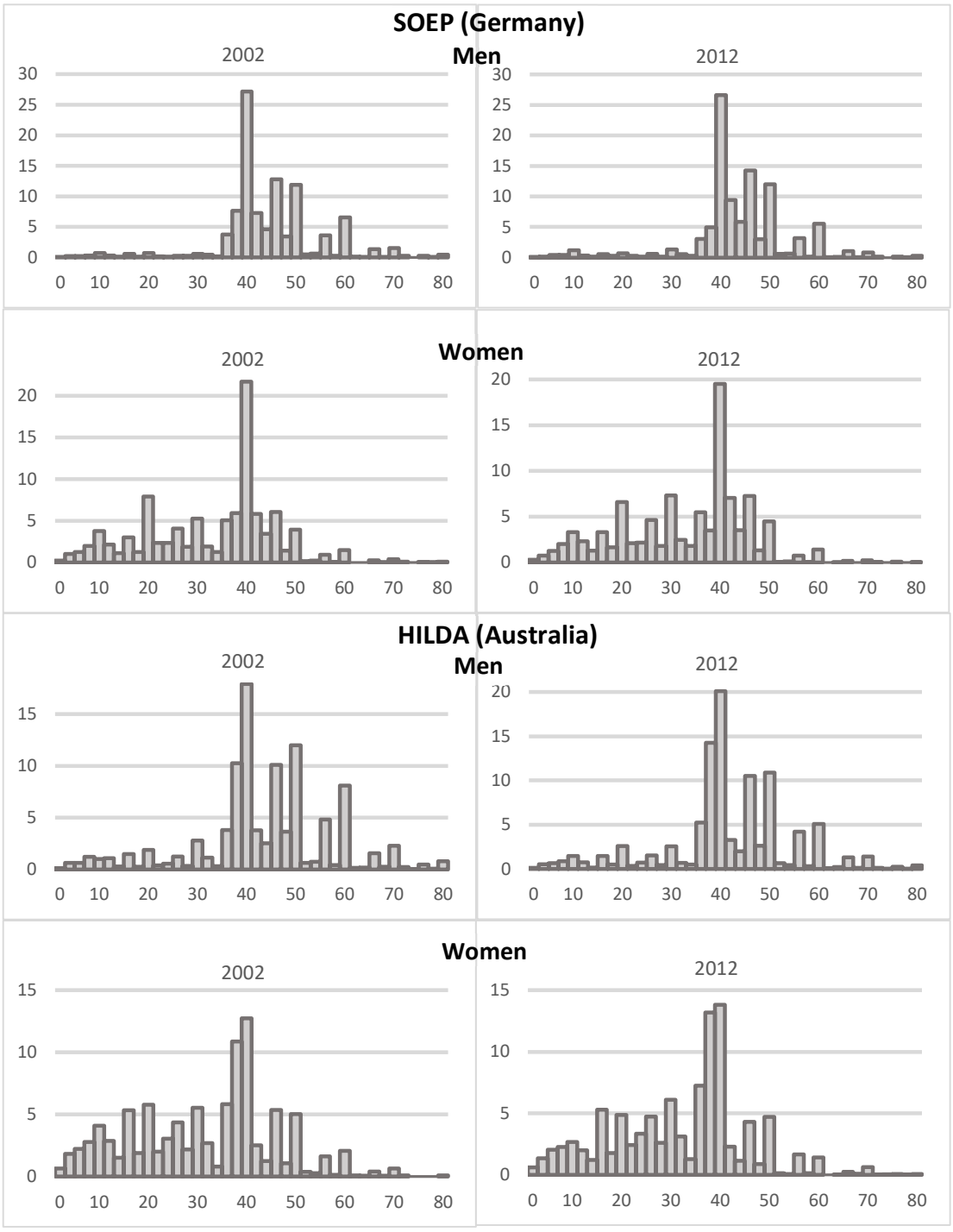
Figure 1. Distribution (%) of usual weekly work hours, Germany and Australia, 2002 and 2012



Note*:* Figure shows the relative frequency distribution in % (vertical axes) of usual work hours (horizontal axes).

Table 1. Working-time mismatch by usual weekly hours worked and sex, HILDA Survey and SOEP samples compared (% of employed persons aged 17 to 64)

Usual weekly hours worked	Type of mismatch			% distribution
	Under-employed	Matched	Over-employed	
HILDA Survey (Australia)				
Men				
<20	43.3	53.8	3.9	6.4
20-34	40.0	53.3	6.7	8.4
35-40	12.6	72.2	15.2	36.2
41-49	6.9	60.2	32.9	18.8
50+	3.0	44.6	52.4	30.2
Sub-total	12.9	58.8	28.3	100.0
Women				
<20	35.0	62.1	2.9	20.8
20-34	22.3	65.4	12.3	26.6
35-40	4.8	66.1	29.1	33.1
41-49	1.7	48.3	50.0	9.7
50+	1.1	32.6	66.4	9.8
Sub-total	15.1	60.1	24.9	100.0
SOEP (Germany)				
Men				
<20	55.8	40.9	3.2	3.5
20-34	47.4	39.9	12.7	3.8
35-40	7.3	72.4	20.4	36.1
41-49	4.4	34.4	61.2	30.3
50+	2.2	15.5	82.3	26.3
Sub-total	8.3	43.6	48.1	100.0
Women				
<20	46.3	49.0	4.8	18.0
20-34	25.0	54.0	21.0	27.1
35-40	4.1	56.6	39.2	30.0
41-49	1.7	24.9	73.4	17.6
50+	1.0	9.2	89.8	7.5
Sub-total	16.7	45.4	37.9	100.0

Table 2. Fixed-effects estimates of the impact of working-time mismatch on mental health (SF-12): specification 1

	SOEP (Germany)				HILDA Survey (Australia)			
	Men		Women		Men		Women	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Not in labour force	-0.343	0.276	-0.364	0.263	-2.175**	0.374	-0.956*	0.391
Unemployed	-0.921**	0.318	-0.918**	0.314	-1.683**	0.417	-1.215**	0.468
Employed [Ref group = 35-40h x Matched]								
< 35h x Underemployed	0.523	0.308	-0.062	0.236	0.201	0.288	-0.319	0.251
<35h x Matched	0.428	0.356	0.123	0.221	0.369	0.265	0.025	0.209
<35h x Overemployed	0.000	0.697	-0.891**	0.289	-0.249	0.652	-0.975**	0.358
35-40h x Underemployed	-0.307	0.319	0.241	0.524	-0.277	0.311	0.209	0.556
35-40h x Overemployed	-0.552**	0.213	-0.748**	0.220	-0.708**	0.272	-0.818**	0.255
41-49h x Underemployed	-0.169	0.450	-0.091	0.979	0.449	0.514	2.834	1.688
41-49h x Matched	-0.546**	0.189	-0.504	0.305	0.003	0.207	0.232	0.333
41-49h x Overemployed	-1.118**	0.165	-1.466**	0.225	-0.651*	0.258	-0.704*	0.327
50+ h x Underemployed	-0.177	0.668	-1.903	1.861	-0.776	0.681	-2.241	2.588
50+ h x Matched	-0.414	0.293	-0.148	0.743	0.044	0.22	-0.285	0.411
50+ h x Overemployed	-1.110**	0.187	-1.697**	0.301	-0.946**	0.218	-1.263**	0.326
Age: 17-24	0.573	0.365	0.491	0.376	1.316**	0.415	0.495	0.432
Age: 25-34	-0.023	0.227	-0.018	0.230	0.531*	0.258	0.14	0.261
Age: 45-54	-0.234	0.194	0.159	0.205	0.319	0.235	-0.099	0.25
Age: 55-64	0.277	0.316	0.484	0.331	1.209**	0.391	0.019	0.41
Partnered	1.565**	0.202	1.038**	0.194	1.241**	0.211	1.368**	0.209
Number of children	-0.111	0.088	-0.020	0.094	-0.054	0.084	-0.107	0.092
Disabled	-1.495**	0.270	-1.890**	0.305	-2.168**	0.225	-2.734**	0.216
Ln real equivalized net h'hold income	0.371**	0.144	0.539**	0.138	0.266*	0.126	0.443**	0.131
Constant	44.807**	1.485	40.933**	1.402	47.768**	1.399	43.824**	1.441
Number of observations	43,683		47,430		26,320		29,610	
Number of groups	15,267		16,311		8,974		9,639	
R^2 overall	0.064		0.072		0.084		0.066	
R^2 within	0.024		0.022		0.018		0.019	
R^2 between	0.072		0.082		0.107		0.070	

Note: Not reported are estimates for survey year indicators, 2-digit ISCO occupation dummies and interview mode.
*p<.05; **p<.01.

Table 3. Fixed-effects estimates of the impact of working-time mismatch on mental health (sf-12): specification 2

	SOEP (Germany)				HILDA Survey (Australia)			
	Men		Women		Men		Women	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Not in labour force	-0.325	0.270	-0.432	0.248	-2.144**	0.372	-0.999*	0.387
Unemployed	-0.897**	0.314	-0.989**	0.302	-1.655**	0.417	-1.274**	0.465
Employed [Ref group = 35-40h]								
< 35h	0.371	0.277	0.021	0.184	0.509*	0.226	0.015	0.185
41 - 49h	-0.518**	0.141	-0.599**	0.188	-0.001	0.173	0.161	0.246
50+h	-0.229	0.193	-0.326	0.305	-0.122	0.190	-0.339	0.294
Hours underemployed	-0.014	0.015	0.018	0.013	-0.035**	0.014	-0.036*	0.015
Hours overemployed	-0.061**	0.009	-0.087**	0.012	-0.037**	0.009	-0.048**	0.012
Age: 17-24	0.556	0.364	0.498	0.376	1.284**	0.418	0.504	0.436
Age: 25-34	-0.037	0.227	-0.016	0.230	0.529*	0.259	0.146	0.263
Age: 45-54	-0.233	0.194	0.149	0.205	0.278	0.236	-0.138	0.252
Age: 55-64	0.281	0.316	0.461	0.331	1.147**	0.393	0.046	0.413
Partnered	1.553**	0.202	1.053**	0.194	1.222**	0.213	1.324**	0.211
Number of children	-0.107	0.087	-0.015	0.094	-0.053	0.084	-0.102	0.093
Disabled	-1.497**	0.270	-1.890**	0.305	-2.173**	0.227	-2.743**	0.217
Ln real equivalized net h'hold income	0.383**	0.143	0.535**	0.138	0.251*	0.127	0.444**	0.131
Constant	44.687**	1.483	41.020**	1.399	47.883**	1.408	43.855**	1.450
Number of observations	43,683		47,430		26,046		29,256	
Number of groups	15,267		16,311		8,923		9,588	
R^2 overall	0.065		0.072		0.084		0.065	
R^2 within	0.025		0.022		0.017		0.019	
R^2 between	0.073		0.082		0.108		0.069	

Note: Not reported are estimates for survey year indicators, 2-digit ISCO occupation dummies and interview mode.
*p<.05; **p<.01.

Table 4. Correlated random effects estimates of the impact of working-time mismatch on mental health (SF-12): specification 1

	SOEP (Germany)				HILDA Survey (Australia)			
	Men		Women		Men		Women	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
MCS_{t-1}	0.252**	0.007	0.258**	0.006	0.181**	0.009	0.247**	0.008
$MCS_{initial}$	0.231**	0.007	0.216**	0.007	0.311**	0.010	0.248**	0.008
Not in labour force	0.371	0.451	0.761	0.553	-1.482**	0.381	-1.346**	0.363
Unemployed	-0.067	0.491	-0.058	0.589	-1.392**	0.463	-1.950**	0.483
Employed [Ref group = 35-40h x Matched]								
< 35h x Underemployed	-0.012	0.308	-0.130	0.225	-0.320	0.326	-0.531*	0.270
<35h x Matched	-0.099	0.352	0.112	0.205	0.446	0.280	0.366	0.210
<35h x Overemployed	-1.031	0.740	-1.255**	0.283	-0.691	0.708	-1.153**	0.386
35-40h x Underemployed	-0.727*	0.351	0.140	0.563	-0.326	0.342	-0.545	0.637
35-40h x Overemployed	-0.986**	0.223	-1.183**	0.230	-0.978**	0.288	-0.845**	0.274
41-49h x Underemployed	-0.976*	0.478	-0.894	1.109	0.377	0.608	1.837	2.039
41-49h x Matched	-0.526**	0.195	-0.199	0.320	0.115	0.222	0.621	0.373
41-49h x Overemployed	-1.361**	0.166	-1.646**	0.226	-0.327	0.279	-0.739*	0.358
50+ h x Underemployed	-0.746	0.698	-4.778*	1.918	-1.122	0.745	-3.435	2.899
50+ h x Matched	-0.524	0.300	0.119	0.811	0.250	0.225	0.125	0.440
50+ h x Overemployed	-1.437**	0.169	-1.616**	0.288	-0.909**	0.216	-1.266**	0.332
Age: 17-24	0.806	0.495	-0.207	0.516	1.003*	0.549	0.556	0.580
Age: 25-34	0.334	0.319	-0.344	0.317	0.356	0.348	0.086	0.358
Age: 45-54	-0.292	0.255	0.091	0.272	-0.258	0.304	-0.130	0.333
Age: 55-64	0.060	0.410	0.404	0.428	0.260	0.491	-0.156	0.533
Partnered	1.074**	0.275	0.773**	0.269	1.050**	0.284	1.340**	0.290
Number of children	-0.212	0.128	0.076	0.138	-0.318*	0.118	-0.012	0.135
Disabled	-1.143**	0.366	-1.398**	0.405	-2.124**	0.289	-2.176**	0.286
Ln real equivalized net h'hold income	0.315	0.199	0.566**	0.188	0.411*	0.168	0.506**	0.183
Constant	11.139**	1.404	10.516**	1.374	16.840**	2.345	17.739**	1.834
Number of observations	28,428		30,937		16,209		18,682	
Number of groups	9,681		10,285		5,417		6,025	
R^2 overall	0.297		0.287		0.336		0.330	
R^2 within	0.003		0.003		0.002		0.003	
R^2 between	0.457		0.450		0.446		0.499	

Note: Not reported are estimates for survey year indicators, 2-digit ISCO occupation dummies and interview mode.
*p<.05; **p<.01.

Table 5. Correlated random effects estimates of the impact of working-time mismatch on mental health (SF-12): specification 2

	SOEP (Germany)				HILDA Survey (Australia)			
	Men		Women		Men		Women	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
MCS_{t-1}	0.251**	0.007	0.258**	0.006	0.181**	0.009	0.247**	0.008
$MCS_{initial}$	0.231**	0.007	0.216**	0.007	0.311**	0.010	0.248**	0.008
Not in labour force	0.512	0.448	0.733	0.546	-1.417**	0.379	-1.401**	0.356
Unemployed	0.085	0.489	-0.076	0.583	-1.272**	0.462	-2.005**	0.478
Employed [Ref group = 35-40h]								
< 35h	0.636	0.347	0.295	0.234	0.881**	0.297	0.214	0.238
41 - 49h	-0.563**	0.183	-0.289	0.245	0.232	0.221	0.354	0.324
50+h	-0.017	0.243	0.084	0.385	0.377	0.242	-0.220	0.381
Hours underemployed	0.004	0.015	0.018	0.014	-0.057**	0.015	-0.065**	0.017
Hours overemployed	-0.083**	0.009	-0.120**	0.012	-0.049**	0.009	-0.065**	0.012
Age: 17-24	0.790	0.495	-0.194	0.515	0.939*	0.553	0.552	0.586
Age: 25-34	0.312	0.319	-0.333	0.316	0.335	0.350	0.080	0.360
Age: 45-54	-0.305	0.255	0.088	0.272	-0.275	0.306	-0.127	0.335
Age: 55-64	0.048	0.410	0.380	0.427	0.206	0.494	-0.202	0.536
Partnered	1.077**	0.274	0.780**	0.269	1.020**	0.286	1.293**	0.293
Number of children	-0.211	0.128	0.070	0.138	-0.312*	0.119	-0.117	0.136
Disabled	-1.155**	0.366	-1.378**	0.405	-2.081**	0.290	-2.216**	0.288
Ln real equivalized net h'hold income	0.342	0.199	0.582**	0.188	0.399*	0.169	0.493**	0.185
Constant	11.052**	1.412	10.552**	1.373	16.599**	1.989	18.149**	1.843
Number of observations	28,428		30,937		16,066		18,476	
Number of groups	9,681		10,285		5,402		6,009	
R^2 overall	0.298		0.288		0.337		0.330	
R^2 within	0.003		0.003		0.003		0.003	
R^2 between	0.457		0.450		0.448		0.497	

Note: Not reported are estimates for survey year indicators, 2-digit ISCO occupation dummies and interview mode.
*p<.05; **p<.01.

Appendix

Table A1. Descriptive statistics: means (and standard deviations in parentheses)

Variable	SOEP		HILDA Survey (6 waves)		HILDA Survey (13 waves)	
	Men	Women	Men	Women	Men	Women
Mental Component Summary (MCS)	50.717 (9.42)	48.847 (10.07)	50.671 (9.29)	49.006 (10.09)	50.652 (9.28)	49.087 (10.06)
Not in the labour force	0.172 (0.38)	0.294 (0.46)	0.128 (0.33)	0.265 (0.46)	0.130 (0.34)	0.268 (0.44)
Unemployed	0.051 (0.22)	0.049 (0.22)	0.040 (0.20)	0.036 (0.19)	0.041 (0.20)	0.036 (0.19)
Employed (Usual weekly hours x mismatch status)						
< 35h: underemployed	0.029 (0.17)	0.097 (0.30)	0.050 (0.22)	0.091 (0.29)	0.052 (0.22)	0.093 (0.29)
<35h: unconstrained	0.022 (0.15)	0.151 (0.36)	0.068 (0.25)	0.216 (0.41)	0.068 (0.25)	0.214 (0.41)
<35h: overemployed	0.005 (0.07)	0.042 (0.20)	0.006 (0.08)	0.028 (0.17)	0.006 (0.08)	0.028 (0.16)
35-40h: underemployed	0.020 (0.14)	0.008 (0.09)	0.036 (0.19)	0.010 (0.10)	0.036 (0.19)	0.010 (0.10)
35-40h: unconstrained	0.201 (0.40)	0.110 (0.31)	0.219 (0.41)	0.152 (0.36)	0.217 (0.41)	0.150 (0.36)
35-40h: overemployed	0.057 (0.23)	0.076 (0.26)	0.047 (0.21)	0.067 (0.25)	0.046 (0.21)	0.068 (0.25)
41-49h: underemployed	0.010 (0.10)	0.002 (0.04)	0.011 (0.10)	0.001 (0.03)	0.010 (0.10)	0.001 (0.04)
41-49h: unconstrained	0.080 (0.27)	0.028 (0.17)	0.096 (0.29)	0.032 (0.18)	0.096 (0.30)	0.034 (0.18)
41-49h: overemployed	0.143 (0.35)	0.083 (0.28)	0.053 (0.22)	0.034 (0.18)	0.051 (0.22)	0.034 (0.18)
50+ h: underemployed	0.004 (0.07)	0.000 (0.02)	0.007 (0.08)	0.001 (0.02)	0.007 (0.08)	0.001 (0.02)
50+ h: unconstrained	0.031 (0.17)	0.004 (0.07)	0.110 (0.31)	0.022 (0.15)	0.110 (0.31)	0.022 (0.15)
50+ h: overemployed	0.166 (0.37)	0.043 (0.20)	0.131 (0.34)	0.045 (0.21)	0.129 (0.34)	0.044 (0.21)
Hours underemployed (if > 0)	8.726 (9.04)	8.987 (7.28)	11.738 (7.90)	11.070 (7.14)	11.856 (8.10)	11.106 (7.01)
Hours overemployed (if > 0)	9.325 (7.64)	8.418 (6.76)	14.073 (9.15)	12.904 (7.93)	14.001 (9.08)	12.937 (8.05)
Age						
17-24	0.137 (0.34)	0.129 (0.34)	0.175 (0.38)	0.172 (0.38)	0.174 (0.38)	0.172 (0.38)
25-34	0.164 (0.37)	0.175 (0.38)	0.197 (0.40)	0.202 (0.40)	0.199 (0.40)	0.204 (0.40)
35-44	0.240 (0.43)	0.242 (0.43)	0.229 (0.42)	0.237 (0.43)	0.229 (0.42)	0.235 (0.42)
45-54	0.244 (0.43)	0.250 (0.43)	0.226 (0.42)	0.221 (0.41)	0.225 (0.42)	0.221 (0.41)
55-64	0.214 (0.41)	0.204 (0.40)	0.173 (0.38)	0.169 (0.38)	0.174 (0.38)	0.168 (0.37)
Partnered	0.687 (0.46)	0.707 (0.46)	0.661 (0.49)	0.654 (0.48)	0.662 (0.47)	0.655 (0.48)
Number of children	0.607 (0.94)	0.639 (0.94)	0.684 (1.06)	0.758 (1.09)	0.684 (1.06)	0.758 (1.09)
Disabled	0.096 (0.30)	0.078 (0.27)	0.128 (0.33)	0.143 (0.35)	0.133 (0.34)	0.146 (0.35)
Real net household income (000s)	47.127 (46.15)	45.003 (44.85)	90.339 (59.36)	86.697 (59.16)	90.476 (61.21)	86.965 (60.39)
Ln real equivalized net h'hold income	10.090 (0.55)	10.032 (0.58)	10.736 (0.59)	10.675 (0.61)	10.735 (0.59)	10.676 (0.61)

Interview mode (=1 if personal interview)	0.544 (0.50)	0.548 (0.50)				
Survey year						
Year 2001					0.081 (0.27)	0.080 (0.27)
Year 2002	0.203 (0.40)	0.194 (0.40)	0.165 (0.37)	0.162 (0.37)	0.074 (0.26)	0.073 (0.26)
Year 2003					0.072 (0.26)	0.072 (0.26)
Year 2004	0.180 (0.38)	0.177 (0.38)	0.156 (0.36)	0.156 (0.36)	0.070 (0.26)	0.070 (0.26)
Year 2005					0.070 (0.26)	0.071 (0.26)
Year 2006	0.175 (0.38)	0.175 (0.38)	0.155 (0.36)	0.155 (0.36)	0.070 (0.25)	0.070 (0.25)
Year 2007					0.068 (0.25)	0.069 (0.25)
Year 2008	0.151 (0.36)	0.152 (0.36)	0.151 (0.36)	0.152 (0.36)	0.068 (0.25)	0.068 (0.25)
Year 2009					0.070 (0.26)	0.070 (0.26)
Year 2010	0.142 (0.35)	0.144 (0.35)	0.165 (0.37)	0.164 (0.37)	0.074 (0.26)	0.074 (0.26)
Year 2011					0.095 (0.29)	0.094 (0.29)
Year 2012	0.150 (0.36)	0.158 (0.37)	0.207 (0.41)	0.211 (0.41)	0.093 (0.29)	0.095 (0.29)
Year 2013					0.093 (0.29)	0.094 (0.29)