

Title: Social class, employment status and inequality in psychological well-being in the UK: cross-sectional and fixed effects analyses over two decades

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Abstract. A body of academic research has shown a social class gradient in psychological well-being. Some recent work has also suggested that the gradient is worsening over time, though the evidence is mixed. We focus on two straightforward research questions: Is there a class gradient in mental health? Has this gradient changed over time? We answer these questions with attention to two specific causal pathways: *employment status* and *unobserved heterogeneity*. We use two data sources: repeated cross-sections from the Health Survey of England (HSE) and longitudinal data from the British Household Panel Survey (BHPS). The combination of pooled OLS regression (with HSE) and fixed effects analysis (with BHPS) allows for a robust analysis of the relationship between class and psychological well-being. We argue that employment status is a confounder in the analysis of class inequalities and show that, along with unobserved heterogeneity, these two pathways go a long way to explain the class gradient. The effects of employment status are substantive and, unlike social class, cannot be explained away by unobserved heterogeneity. We conclude that employment status deserves greater prominence in the debate as both a pathway by which the class gradient transpires, and as another ‘dimension’ of inequality in its own right. Our overtime analysis suggests that skilled and unskilled manual workers had higher psychological well-being in the 1990s but by 2008 were closer to the average. Class inequalities do not appear to be widening.

Keywords: psychological well-being (GHQ), social class, employment status, inequality, fixed effects.

1. Introduction

A key challenge for monitoring health and health inequalities is to accurately identify population groups where health problems are clustered (Kunst and Roskam, 2010) and tackling socio-economic inequalities in health has become one of the priorities in UK government health policy (Marmot et al., 2010). Yet, empirical evidence on the health gradient remains mixed, and the nature of the social determinants of health ‘unresolved’ (Eckersley, 2015). Several studies have found a ‘health gradient’ whereby incrementally better outcomes are seen for those higher up the socio-economic and occupational ladder (WHO, 2008). This field of study has been extended to include well-being and mental health where the gradient has been replicated (e.g. Stansfeld et al., 2003; Chandola and Jenkinson, 2000; Maheswaran et al., 2015; Katikireddi et al., 2012; Jokela et al., 2013). Further, several studies have suggested that these inequalities in mental health may be worsening over time. Maheswaran et al. (2015), for example, showed that the difference between those at the top (in professional and managerial jobs) and those at the bottom (unskilled manual) of the occupational social hierarchy grew between 1997 and 2009. Katikireddi et al. (2012) have similarly shown that the gap between those with low and high educational attainment grew between 1991 and 2010. In contrast, while Jokela et al. (2013) report a social class gradient in mental health, they find no evidence of a change over time in social class inequalities. Moreover, Foverskov and Holm (2015) cast doubt on the nature of the relationship arguing that the gradient emerges in cross-sectional and random effects studies due to unobserved confounding factors such as childhood disadvantage (Ferraro et al., 2015).

Eckersley (2015) argues that, for the last few decades, research into social determinants of health seemed to tell a simple and coherent story - that any socio-economic hierarchy would directly reflect a health gradient. Therefore, different dimensions of socio-economic status – income, class, education – have been taken as good indicators for identifying clusters of mental health problems. However, the substantial differences between these dimensions indicate complexity in the social determinants of health (Eckersley, 2015). In this paper we focus on social class as a specific dimension; however, we will go on to argue that economic activity status and the uneven distribution of employment function as a further dimension of inequality of mental health.

This paper comes down to two straightforward questions: First, is there a social class gradient in mental health in the UK? Second, did the social class gradient in mental health increase over time? We address these questions with attention to two alternative pathways: firstly, employment status as a time-varying (measured) confounder correlated with both class and mental health, and, secondly time invariant unobserved heterogeneity (unmeasured confounder). We do this by using a combination of cross-sectional and panel data. With the second question, we aim to reconcile the evidence from previous studies showing that class inequalities are becoming larger over time (Maheswaran et al., 2015) in contrast to those showing stable inequalities (Jokela et al., 2013).

2. Theoretical background

2.1 What is social class?

Our conceptualization of class in this study is that of occupation and skill based class. The occupation in which one is or has been employed is a reflection of one's place in the socio-economic system; it influences various dimensions of economic advantage and disadvantage: earnings, earnings stability, career prospects, risk of unemployment, and access to the labour market more generally (Goldthorpe, 2000). Thus class is largely concerned with the allocation of economic advantage and disadvantage as well as reflecting the nature of the employer-employee relationship (Goldthorpe, 2000). Nonetheless, we argue that the occupation-based approach to class applies to those *outside* as much as to those *inside* the labour market. Firstly, this is because class defines long-term career prospects and directly influences the risks of exiting and re-entering the labour market, with higher percentages of the lower classes retired early, outside the labour market for long-term health conditions, or to look after home and children (Popham and Bambra, 2010; Goldthorpe, 2000; Whelan, 1994; Arbor, 1987). Secondly, it has been shown that occupation-based status continues to have an effect on health after the employment has ended (van Rossum et al., 2000). Finally, occupational class is likely to shape people's perceptions about their position and status in a society in relation to others (Ridgeway, 2013), such perceptions of one's status can affect mental health also when out of the labour market either temporarily or permanently.

2.1 Social class and mental health

From a 'social causation' perspective four types of explanation for the class mental health relationship can be distinguished. First, social class could exert its influence on mental health via conditions of the work environment. The specific psychosocial stressors thought to have a causal effect on mental health include 'job strain', which comprises the elements of high demands and low autonomy, and effort-reward imbalance (Stansfeld and Candy, 2006). The extent to which individuals can exercise autonomy in their day to day job, for example, has been found to explain some of the variance in the mental health gradient (Marmot et al., 1997). However, the link between these psychosocial stressors and social class is itself is not as strong as might be assumed. For example, high levels of demand are found in higher grade positions, while lower grade jobs might be associated with lower demands but may be monotonous with little room for autonomy (Stansfeld and Candy, 2006). The second social causation pathway is based on economic insecurity and the level of, and access to, resources. Lower social class occupations are characterized by lower incomes, higher income volatility, job insecurity, and fewer long-term economic prospects (Goldthorpe, 2000), which are likely to create a 'common element of economic insecurity' leading to negative mental health consequences (Rohde et al., 2016). The third pathway is that of health behaviours including exercising, eating habits, smoking and alcohol consumption. Although these factors might be more intuitively associated with physical than mental health, they have been shown to explain the class-mental health relationship when included in multivariate analyses (Chandola and Jenkinson, 2000). The fourth is the psychosocial explanation whereby the social environment and perceptions of one's place in the hierarchy can directly influence health outcomes (Marmot, 2004). Those occupying positions lower in the social hierarchy are subject to greater levels of 'psychiatric distress' directly resulting from perceiving oneself to be of low status.

In contrast to the social causation hypotheses the health selection hypothesis suggests reverse causality – that health determines social class (Foverskov and Holm, 2015; Dahl et al., 2003). From this perspective membership in a lower social class does not cause the lower mental health, but lower mental health makes people more likely to be in the lower-classified occupation.

2.2 The role of employment

The social causation and the health selection hypotheses are not mutually exclusive but they both assume a causal relationship between social class and mental health. However, we need to consider the problem of endogeneity – that some third variable might be driving this relationship between class and mental health. Much of the evidence on the effect of class on health outcomes in the UK has been from studies of civil servants working in Whitehall; for those in such (mostly) white-collar jobs, incremental increases of common mental disorder are seen with each drop in job grade (Stansfeld et al., 2003). However, there are also important differences to note for those who are not in paid employment. Particularly in contrast to being unemployed, employment itself, of any class or grade, appears to be beneficial. Work provides ‘a daily experience of collectivity’ (Jahoda, 1982: 24), which includes opportunity for inter-personal contact, as well as social status, opportunities for skill use and control, and feelings of goal achievement and worth (Gallie, 2004). In contrast to the unemployed, the class differences in mental health of those in employment tend to be small (Author ref). A number of studies have shown that the health gradient appears to be stronger for women and for those in older age groups (Fryers et al., 2003; Chandola and Jenkinson, 2000), two groups with lower than average participation in the labour market, thus suggesting that employment status might be partly accounting for the social class effect.

The social causation pathways of working conditions, economic security and access to resources, health behaviours, and perceived status are also relevant to people who are not currently working. Job strain and unequal effort-reward balance, but also income and prospects, may be factors that determine the likelihood of one dropping out of the labour market for long-term illness, early retirement, or to stay at home to look after children. It is therefore not surprising that Dahl (2003) suggests that neglecting the non-employed risks distorting the relationships between class and health. Fryer et al. (2003), in their meta-analysis of social inequalities also suggest that occupational class had the least consistent association with mental health, while unemployment and material standard of living matter far more.

Dahl’s (2003) ‘healthy worker selection effect’ asserts that the observed class-health relationship is in part a result of the tendency for upward mobility among healthy individuals and ‘downward drift’ among the less healthy. Employment status can be seen as

an important extension to the healthy worker effect, it being likely that this selection operates not only within class positions for those in the labour market, but also for processes of leaving and entering the labour market. Others have shown that employment itself is being unequally distributed between social classes (Popham and Bambra, 2010; Whelan, 1994; Arbor, 1987).

2.3 Unmeasured time-invariant confounders

An additional explanatory mechanism, unobserved heterogeneity, relates to an unmeasured ‘third cause’ that is time-invariant and likely to stem from factors that pre-date, in temporal terms, social class and health outcomes. Examples include socio-economic status during childhood (McMunn et al., 2001; Ferraro et al., 2015) and personality traits together with health endowments developed by age 10 (Conti et al., 2014). Kim-Cohen et al. (2003) find that the onset of mental health in most cases occurs during childhood and thus we must consider that in our sample of adults, pre-existing mental health conditions may also be contributing to the unobserved heterogeneity.

3. Research aims

In this paper our aim is to investigate whether there is a social class gradient in mental health. We do this by accounting for employment status as a potential confounder. Furthermore, we control for time-invariant unobserved heterogeneity using fixed effects analysis. We do not study the direction of causality. Even if we do not know about the direction of causality, it is important to establish whether social class is meaningful for identifying where mental health problems are concentrated within the population.

4. Methods

4.1. Data sources

We use two sources of data for this study, both covering the same time period from 1991 to 2008. Each has their own advantage in terms the specific research problems that can be reliably addressed. The Health Survey for England (hereafter HSE) is a repeated cross-sectional study; in each year a new representative sample of the population of England is

selected making it ideally suited to gauging the level of mental health in the population and how it is changing over time. We also use the British Household Panel Survey (BHPS). Repeated measures of the same individuals over time allow us to examine the effects of social class whilst controlling for unobserved heterogeneity. An additional advantage of BHPS is that it contains high quality household income data, available from the *Derived Current and Annual Net Household Income* supplement (Bardasi et al., 2012). This allows us to control for the role of material resources with greater accuracy than with the HSE where income data were collected from 1997 onwards, thus reducing the time period coverage and reducing the harmony between the two data sets.

HSE has sample sizes that vary considerably from year to year from around 3,000 in 1991 to just under 18,000 in 1993, but average around 10,000. The BHPS started with a representative sample of 5500 British households (10,000 individuals) in 1991 and continued with an annual follow-up until 2008; we select households located in England, thus keeping our two data sources closely aligned in their coverage. The rate of attrition is highest in the first five waves of the BHPS before settling into an average of around 5 percentage points dropping out in each wave (Uhrig 2008). Response rates in the HSE fell over the period of our study from around 70% to 58% (Mindell et al., 2012). Uhrig (2008) showed that mental health scores (using the GHQ-12 battery, see below) did not predict attrition from the survey; thus, while we accept that some response bias is inevitable, we believe that our data remain comparable over time.

The mental health ‘landscape’ has been a changing one during the two decades we observe; sickness and disability benefits owing to a mental health disorder have increased by 87% (Viola and Moncrieff, 2016). While there have certainly been large changes in the awareness, diagnoses and treatment of mental health disorders, the underlying prevalence of these conditions may have remained largely unchanged over recent decades (see Busfield (2012) for a review of the evidence).

To best represent our analytic emphasis on the working-age population and the psychological experience of belonging to a social class, we restrict our samples to people in the age range of 25-65. We drop full time students and young people for whom class assignment based on previous occupation is an unreliable indicator of present socioeconomic status because they have not yet reached occupational maturity.

4.2. Variables

Dependent variable: psychological well-being

In order to capture psychological well-being, we use the 'GHQ-12' scale – a validated survey instrument designed to ascertain the presence of symptoms of common mental health disorders (Goldberg et al., 1997). The scale is based on 12 items, each scored 0-3, such as: *have you been thinking of yourself as a worthless person?* With answer options: more so than usual; same as usual; less so than usual; much less than usual. These items are included in all waves of BHPS and all but 2007 in HSE. In the HSE sample, 1995 is dropped due to a coding error that skews the distribution of responses. We use the full 36-point version of the GHQ score, ordered so that it becomes a measure of positive mental health. Accordingly, we use the term *psychological well-being* to describe our outcome. The decision to use the linear outcome is driven both by pragmatism and by the aims of the paper. The choice of a linear scale above a binary cut-off (usually at 4 or more 'symptoms' using the caseness approach) leaves a greater degree of variation, thus increasing the effective sample size and allowing for more robust model estimation. We prefer the 36-point version to the 12-point scale as it is much more normally distributed, as have others (e.g. Foverskov and Holm, 2016).

Explanatory variables: social class indicators

We measure social class using the Registrar General's (RG) schema, which is an older social class classification but is available across survey years in both data sources. The categories in RG schema are hierarchically ordered as follows: i – Professional; ii – Managerial; iiii – Skilled non-manual; iiim – Skilled manual; iv – Semi-skilled manual; v – Unskilled manual. In all models we use the professional class as the reference category. As a robustness test, we replicate the analysis using alternative measures of social class: Goldthorpe's class schema and NS-SEC. The robustness test is only done with the BHPS, since alternative social class measures are not available in all years of the HSE.

Individual level covariates

Employment status is our central measured confounding variable. We focus on five possible employment statuses: employed (including self-employment), unemployed, early retired, long-term ill or disabled, and looking after home or family. The retired are classified based on their last main occupation; with our restricted sample we do not aim to capture the average experience of retirement, but rather the experiences of the recently retired. In addition we control for factors that could be confounded with psychological well-being and that may also be important sources of demographic change over the two decades we observe. We include equivalized annual household income, age, with a quadratic term, sex, and ethnicity as controls, with the latter reduced to a distinction between white and non-white due to sample size restrictions and non-consistent coding. Table 1 gives a descriptive overview of the variables included in the two datasets and shows the two surveys to be broadly similar in terms of their population coverage. The averages are taken from pooled data which is to say that they relate to the whole period of 1991-2008. Where we see differences, for example, in the differences in the non-white population, this likely reflects that the BHPS sample is more representative of the UK population in 1991 (Taylor et al. 2010) while HSE targeted a fresh representative sample in each separate survey year.

[Table 1 here]

4.3. Statistical analysis

We pool data from each year of the HSE into a single dataset and estimate a series of OLS regression models. With BHPS data we estimate Fixed Effects (FE) models: the coefficients estimates in FE modelling are based on within-individual variation thus control for all time-invariant unobserved heterogeneity between individuals. Time-invariant variables cannot be modelled in the FE analysis; hence, the variables for 'female' and 'non-white' are omitted from the analysis. Further, we treat age as a time-invariant variable in the panel data as it can be thought of as the fixed 'year of birth'. This approach circumvents problems with multicollinearity with year. For robustness, we check all our FE models with age control variables and the results we present in the following tables hold. In effect, FE models 'discard' those cases where there is no variation in the explanatory variable (Allison, 2009), in our case, social class. The model results therefore depend upon the subset of our sample

who have been mobile in terms of social class in the period of observation. It appears that changes in social class are frequent: 44.1% of individuals observed in the sample change social class at least once over the 17-year timespan. Random effects (RE) models consider both between individual and within individual variance, so unlike FE model results are estimated based on the whole sample including those who have remained in the same class throughout. Unlike OLS models, the hierarchical nature of the panel data (observations nested within individuals) is taken into account in the estimates of coefficients and their standard errors. Random effects models are based on strong statistical assumptions, and of particular importance here the assumption that level 2 residual variances are independent between groups.

5. Results

5.1. Is there a social class gradient in psychological well-being?

Social class and psychological well-being among the working age population

Table 2 presents results from our two datasets. First, we look at the cross-sectional analysis with HSE. In model OLS1, in which employment status is not controlled, there is evidence of the class inequalities that the literature would lead us to expect. Each of the five classes below professional class I has a negative coefficient and only the managerial class ii is not worse off than the professional class. The rank order of the classes corresponds to the magnitude of the coefficient estimate. The lowest, the unskilled manual class v, has the largest difference in psychological well-being compared to the professionals ($b = -0.695$), followed by the semi-skilled manual class iv ($b = -0.578$) while the differences are somewhat smaller with the skilled manual class iii ($b = -0.297$) and skilled non-manual class iin ($b = -0.173$).

Once activity status is included (model OLS2), the class gradient disappears. Only the skilled manual workers (IIIm) have a level of psychological well-being that is significantly different to the professionals; the coefficient is positive ($b = 0.227$) indicating that, all else being equal, they have better outcomes than the professionals. The coefficient estimates for activity status are both statistically significant and substantive in terms of effect size. The unemployed have psychological well-being which is on average two and a half points below those in employment ($b = -2.632$). Our findings replicate those of Bartley et al. (2006) in that

those looking after the home or children also have lower psychological well-being than those in employment, though by a smaller margin than the unemployed ($b = -0.757$). Within this age range retirement is related to lower psychological well-being ($b = -0.570$). Those who are outside the labour market due to ill health have the worst psychological well-being ($b = -5.802$). The R-squares are modest suggesting that many other factors influence psychological well-being. However, the R-square of model OLS2 is 0.09, a large improvement on model OLS1 demonstrating that employment status is able to explain much more of the variance than social class. We are making no claims of causality here; we would expect lower psychological well-being among the ill and mental health problems are indeed likely to be the cause of being unable to work (Viola and Moncrieff, 2016). Likewise, an underlying health problem may underpin the decision to stay at home, or may make unemployment more likely. In model OLS3, we see that income has a positive influence on psychological well-being ($b = 0.481$), however, the explained variance improves only a little. When controlling for household income, something of a reverse gradient emerges with lower classes reporting better psychological well-being than the professionals. Here, then, it is evident that the class gradient is entirely explained away.

Shifting to the BHPS, the results from Random Effects models largely echo the OLS models in that RE model 1 indicates a social class gradient, but this disappears when controlling for activity status. Again, instead of a gradient, there is some evidence that lower social classes have better mental health than the professional class. However, the Hausman test shows that the assumptions of random effects model are not satisfied and we need to turn to the more statistically robust fixed effects models.

In model FE1, there is no effect of social class, on average over the years observed, once accounting for stable differences between individuals. The difference between the findings here and in model OLS1 suggests that there are 'omitted' unmeasured time-invariant variables explaining both class membership and psychological well-being, such as prior health and childhood socio-economic status. This is not the case for employment status, however, as we can see in model FE2 where the psychological benefits of being in employment as compared to other activity statuses (except retired) remains strong. After accounting for fixed traits of the individuals, the experience of unemployment, long-term illness and looking after the home or children are associated with reduced psychological well-being. Confirming the results of the OLS models, long-term illness has the strongest

association ($b=-3.257$), followed by unemployment ($b=-1.993$), and looking after the home or family ($b=-0.527$). In contrast to the cross-sectional analysis, becoming retired has a positive effect on psychological well-being ($b=0.302$). This is not paradoxical, it suggests that the negative coefficient in the OLS models can be explained by unmeasured confounders. For those with pre-existing risk factors for low psychological well-being, for example, retirement may have a positive influence; however, on average, those who retire early still have lower psychological well-being than those remaining in the labour market. Income has a positive and significant effect on the outcome (model FE3, $b=0.136$) but neither the activity status nor social class coefficient estimates are affected by the presence of the control.

We can conclude that with OLS and RE models we observe a social gradient in psychological well-being; however, this gradient disappears once we control for activity status. Hence, it is more activity status than social class that is associated with psychological well-being. Furthermore, both activity status and income play an independent role in explaining psychological well-being. The FE analysis further demonstrates that changing social class is not associated with changes to the level of psychological well-being – instead changes to activity status are associated with large changes in psychological well-being. While we cannot establish the direction of causality, we can conclude that activity status together with household income are important factors in identifying clustering of mental health problems.

[Table 2 here]

Social class and activity status

As shown in Table 3, the BHPS data suggests that while in the highest social class category, the professionals, over 90% of people are employed, among the lowest social class, unskilled manual, only 56% are employed. In the lowest social class category, 7% are unemployed, 10% are retired, 8% are long-term ill and almost 20% are in caring responsibilities. The distributions with HSE data remain broadly similar. Overall, this table demonstrates that activity status is an important component of social class and that activity status may be driving the social class gradient in mental health demonstrated in other research. We may consider employment itself as being unequally distributed (Popham and Bambra, 2010).

[Table 3 here]

As a robustness check, we ran models on a subsample of individuals who are in employment (not presented here but available upon request from authors). The findings remain consistent with Table 2 in that there is no social class gradient in psychological well-being and income is associated with better psychological well-being.

5.2. Did the relationship between class and psychological well-being change over time?

We have established that, on average between 1991 and 2008, there seems to be no social class gradient in psychological well-being. However, has the association between class and mental health changed over this period? In Table 3, model OLS4 introduces interaction terms between social class and year in order to see whether over time the trend in psychological well-being differed by social class. As the year variable is centred on 1991 the main effects of class can be interpreted as the differences in psychological well-being in

1991. However, it appears that differences were minimal, with no classes having an average GHQ score different to the professional class with the exception of the borderline significant lower score of class ii. The main effect of year, being positive, can be interpreted in this model as overtime improvement for the professional class. The interaction terms suggest that over time as compared to the professional class psychological well-being has deteriorated for the lower three social classes. When controlling for activity status (OLS5), there is still some limited evidence of worsening mental health for skilled manual class iiii compared to professionals. In OLS6 we add a control for income, after which we do not observe the overtime worsening condition of lower social classes. This is either because income accounts for the worsening condition of lower social class categories over time, or the effect might simply not emerge due to the restricted data available from 1997 onwards.

The FE analysis with BHPS data leads to a similar conclusion – negative interactions between time and social class categories suggest that between 1991 and 2008 compared to the professional class the skilled and unskilled manual classes experienced negative trends in their psychological well-being. The fact that we find significant class-year interactions in the FE analysis indicates that the changing state of the social classes is not a result of omitted variable bias, but indicates a change in the psychological experience of belonging to particular classes over time. However, these two classes started out with high levels of psychological well-being in 1991.

In Figure 1, we show the marginal effects based on model OLS5. We show that, the unskilled manual class has experienced a decline in well-being, while the professionals have improved. If anything, in contrast to Maheswaran et al. (2015), the overall pattern is of a narrowing of inequalities rather than a widening. Controlling for employment status and household income does not change the findings (see models FE5 and FE6).

[Figure 1 Here]

As a sensitivity test, we run the analysis with alternative social class indicators (Goldthorpe's schema and NS-SEC). The findings show that there is no social class gradient in mental health and again, it seems to be the activity status instead of class that determines mental health. Over time, we find our findings with Goldthorpe's schema are similar to what we showed with RG Class. The overtime effect with NS-SEC is very small and disappears when accounting for activity status and income.

Furthermore, the cross-sectional data (model OLS5) indicate that the average psychological well-being of those who are unemployed and out of the labour market due to a long-term illness is deteriorating over time. The effect is particularly large for the long-term ill where the coefficient size (-0.212) would suggest a decrease in GHQ scores over the 17 years of observation of 3.6 points, a sizeable effect. This can be explained by the increasing proportion of people who are outside the labour market for mental health reasons (Viola and Moncrieff, 2016) and suggests that if population levels of psychological well-being are constant (Busfield, 2012), that people with mental health disorders are becoming increasingly concentrated outside the labour market. Perhaps a similar argument can explain the average deterioration among the unemployed though this is an area in which further investigation is required. The deterioration of the well-being of those outside the labour is not supported in the models based on panel data suggesting that the pattern can be explained by unobserved heterogeneity. As the majority of mental health problems emerge before adulthood (Kim-Cohen et al., 2003), this is perhaps not surprising.

[Table 4 here]

6. Discussion

The class gradient in psychological well-being can be explained in two ways. Firstly the gradient is not evident in the Fixed Effects analysis indicating that unobserved heterogeneity can explain much of the inequality over the period 1991-2008. In this, our results are similar to those of Foverskov and Holm (2016), and suggest a strong role for pre-existing factors or tendencies that explain both psychological well-being and position in the social class hierarchy. Secondly, even where we cannot control for unmeasured confounders, we can explain the average gradient between 1991 and 2008 by controlling for employment status. Those in employment have better psychological well-being than those outside the labour market; the long-term ill and unemployed have particularly large negative effects but those looking after the home or family also have worse outcomes than the employed. Unlike social class, the differences in psychological well-being by activity status remain strong after controlling for unobserved heterogeneity. We make no claim about the direction of causality here. Although there is a large body of evidence showing that work is good for us (e.g. Gallie, 2004; Jahoda, 1982), particularly where the working conditions are good (Stansfeld and Candy, 2006), these patterns of association may also reflect the tendency of the less healthy to drop out of the labour market. Activity status therefore appears to be a more meaningful means of identifying clusters of mental health problems for policy intervention.

Despite this, there are three reasons that class should not be dropped or forgotten in the debate. Firstly, it is clear that employment itself is unequally distributed by class, and this may be thought of as a key mechanism by which class is associated with psychological well-being. The degree to which employment is unequally distributed is substantial. In the lowest social class, a little over half of the people are employed. This is in contrast to the highest social class where 90% are in employment. Although selection effects are likely to be operating, these large disparities may stem from employment opportunities, employment experiences and the degree to which individuals have autonomy, work satisfaction and fair rewards for their efforts.

This in turn brings us to the second reason that class is not simply ‘the dog that did not bark’ (Scambler and Higgs, 2000); the literature on job strain and effort-reward imbalance tells us that these aspects of the work environment matter greatly for mental health. It

remains a fundamental area of inquiry for social scientists to determine the relationships between class and working conditions and how these may be changing over time.

The third reason that we ought not be complacent about social class is that our examination of change over time suggests that those in the lower RG class categories (particularly skilled manual and unskilled manual), have experienced a deterioration in psychological well-being. Our interaction terms showed that these groups may have had better psychological well-being back in 1991, but that they have become closer to the average over the years. As such our findings are in contrast to Maheswaran et al. (2015) who showed widening inequalities. Our simple explanation for the contrast is that this study, along with many other studies of the class gradient, did not include controls for activity status. Thus, this paper is not a call to forget about social class, but rather a call for future studies to firstly, pay attention to the mechanisms, and secondly, to consider employment status as both a mechanism (in which explanation for the uneven distribution of employment should be sought), or as a confounder of the gradient.

As regards mental health by employment status, here too we find evidence of change over time, evident in the cross-sectional data. The average psychological well-being of those belonging to the category of long-term illness has seen a large drop over these two decades. This is likely to result directly from the large increases in people with mental health disorders claiming out-of-work benefits. This group has changed in its composition over the period with mental health disorders making up an increasing proportion of the reasons for being unable to work (Viola and Moncrieff, 2016). The lack of corroboration in the FE analysis tells us that unmeasured time-invariant confounders may explain this trend, but nonetheless this suggests that people with low psychological well-being are being increasingly concentrated outside of the labour market, and the possible consequences of this require investigation.

7. Conclusions

The aim of this paper was to answer two questions: Is there really a social class gradient in psychological well-being? Has the gradient in psychological well-being increased over time in the UK? Regarding the first question, we conclude that on average for the period from

1991-2008, there is some evidence for a gradient. However, the existence of the average gradient over this period can be explained by activity status and unobserved heterogeneity with household income also playing an important role. Regarding activity status, employment itself is beneficial for psychological well-being and is unevenly distributed between the classes. We suggest that activity status should be thought of as an important dimension of inequality alongside the 'usual suspects' of class, income and education. However, there is some evidence that the psychological experience of belonging to particular classes may be evolving over time.

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Table 1. Descriptive statistics of variables from the two data sources

	Health Survey for England		British Household Panel Survey	
	Mean	SD	Mean / %	SD
GHQ-36	25.16	4.92	24.76	5.37
Age	44.49	11.44	43.05	11.24
Income	£34,854.23*	29815.02	£17028.21*	8575.72
Female	54.2%		53.0%	
Non-white	7.9%		0.6%	
Class i	5.4%		5.19%	
Class ii	31.1%		32.05%	
Class iiin	23.3%		23.62%	
Class iiim	18.6%		18.93%	
Class iv	16.2%		15.20%	
Class v	5.4%		5.01%	
Employed	72.0%		76.59%	
Unemployed	3.5%		3.55%	
Retired	7.9%		6.51%	
Long-term ill	5.6%		3.89%	
Looking after home/ family	10.9%		9.46%	
N	120,921 individuals		10 977 individuals 89 851 observations	

* HSE: Gross income calculated using mid-points of a 30-point ordered scale; equivalized per household composition; adjusted to 2010 prices. BHPS: Net income, equivalized per household composition, adjusted to 2010 prices.

Table 2: Estimation of psychological well-being: pooled OLS analysis with HSE and Fixed Effects/ Random Effects analyses with BHPS.

	OLS1	OLS2	OLS3	RE1	RE2	RE3	FE1	FE2	FE3
	-	-	-	-	-	-			
Age	0.193*** [0.011]	0.198*** [0.012]	0.210*** [0.015]	0.224*** [0.015]	0.221*** [0.015]	0.231*** [0.016]			
Age squared/100	0.213*** [0.013]	0.237*** [0.013]	0.249*** [0.017]	0.252*** [0.017]	0.256*** [0.018]	0.266*** [0.019]			
	-	-	-	-	-	-			
Female	0.878*** [0.033]	0.946*** [0.033]	0.847*** [0.040]	1.219*** [0.076]	1.232*** [0.074]	1.244*** [0.077]			
Non-white	0.102 [0.064]	0.199** [0.062]	0.364*** [0.077]	-0.168 [0.209]	-0.169 [0.208]	-0.241 [0.231]			
	-	-	-	-	-	-	-	-	-
Year (1991=0)	0.018*** [0.003]	0.011*** [0.003]	0.020*** [0.005]	0.017*** [0.004]	0.020*** [0.004]	0.024*** [0.004]	0.020*** [0.003]	0.021*** [0.004]	0.023*** [0.004]
RG class ii	-0.077 [0.071]	0.056 [0.068]	0.167* [0.083]	0.005 [0.097]	0.046 [0.096]	0.023 [0.101]	0.064 [0.109]	0.075 [0.109]	0.005 [0.115]
RG class iiin	-0.173* [0.074]	0.114 [0.072]	0.364*** [0.088]	-0.037 [0.105]	0.085 [0.104]	0.118 [0.109]	0.182 [0.120]	0.222+ [0.120]	0.210+ [0.127]
	-	-	-	-	-	-	-	-	-
RG class iiim	0.297*** [0.074]	0.227** [0.072]	0.574*** [0.090]	-0.179 [0.109]	0.006 [0.107]	0.025 [0.113]	0.189 [0.128]	0.214+ [0.127]	0.145 [0.135]
	-	-	-	-	-	-	-	-	-
RG class iv	0.578*** [0.076]	0.058 [0.074]	0.426*** [0.093]	-0.210+ [0.111]	0 [0.109]	0.03 [0.116]	0.192 [0.130]	0.214+ [0.129]	0.14 [0.136]
	-	-	-	-	-	-	-	-	-
RG class v	0.695*** [0.094]	-0.003 [0.091]	0.363** [0.117]	-0.343* [0.137]	-0.086 [0.135]	-0.033 [0.144]	0.145 [0.161]	0.161 [0.160]	0.12 [0.171]
	-	-	-	-	-	-	-	-	-
Unemployed		2.632*** [0.084]	2.707*** [0.121]		2.142*** [0.090]	2.137*** [0.098]		1.893*** [0.096]	1.955*** [0.106]
	-	-	-	-	-	-	-	-	-
Retired		0.570*** [0.068]	0.340*** [0.084]		-0.196* [0.087]	-0.122 [0.095]		0.302*** [0.088]	0.334*** [0.096]
	-	-	-	-	-	-	-	-	-
Long-term ill		5.802*** [0.069]	5.813*** [0.085]		3.967*** [0.106]	3.886*** [0.114]		3.257*** [0.120]	3.188*** [0.129]
	-	-	-	-	-	-	-	-	-
Looking after home/ family		0.757*** [0.052]	0.579*** [0.067]		0.714*** [0.068]	0.633*** [0.075]		0.527*** [0.074]	0.501*** [0.082]
	-	-	-	-	-	-	-	-	-
Centred log income			0.481*** [0.028]			0.349*** [0.048]			0.136* [0.055]
	-	-	-	-	-	-	-	-	-
Missing income dummy			-0.104 [0.826]						
	-	-	-	-	-	-	-	-	-
Constant	29.899** [0.254]	29.846** [0.258]	29.711** [0.326]	30.243** [0.331]	30.271** [0.337]	30.508** [0.359]	24.787** [0.110]	24.997** [0.110]	25.089** [0.116]
R-squared	0.01	0.09	0.1	0.02	0.06	0.06	0.00	0.01	0.01
N observations	101067	100621	65749	89851	89851	78616	89851	89851	78616

Significance levels: + p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001

Note: Standard errors in parentheses.

Table 3. Distribution of activity status by social class category (%)

	Employed	Unemployed	Retired	Long-term ill	Caring responsibilities	
RG Class - BHPS						
Class i	91.11	1.39	4.37	0.96	2.16	100
Class ii	85.46	2.02	5.94	1.56	5.02	100
Class iiin	72.33	2.78	7.72	2.62	14.55	100
Class iiim	77.59	4.88	5.67	6.15	5.7	100
Class iv	65.15	5.87	6.54	7.66	14.78	100
Class v	55.82	7.16	9.74	7.78	19.5	100
RG Class - HSE						
Class i	88.69	1.63	5.90	1.04	2.62	100
Class ii	82.31	2.18	7.40	2.55	5.39	100
Class iiin	71.07	2.54	8.22	3.36	14.66	100
Class iiim	74.32	5.04	6.15	8.62	5.68	100
Class iv	63.63	5.07	7.19	8.54	15.45	100
Class v	58.02	7.14	8.88	10.80	14.92	100

Table 4: Estimation of psychological well-being: Overtime change

	OLS4	OLS	OLS6	FE4	FE5	FE6
Age	-0.193*** [0.011]	-0.197*** [0.012]	-0.209*** [0.015]			
Age squared/100	0.212*** [0.013]	0.236*** [0.013]	0.247*** [0.017]			
Female	-0.884*** [0.033]	-0.948*** [0.033]	-0.848*** [0.040]			
Non-white	0.098 [0.064]	0.186** [0.062]	0.354*** [0.077]			
Year (1991=0)	0.046*** [0.013]	0.042*** [0.012]	0.028 [0.023]	0.005 [0.015]	0.001 [0.015]	-0.002 [0.016]
RG class ii	-0.014 [0.147]	0.079 [0.141]	-0.039 [0.286]	0.236 [0.175]	0.265 [0.173]	0.159 [0.183]
RG class iiii	0.027 [0.150]	0.239 [0.146]	0.117 [0.298]	0.342+ [0.184]	0.400* [0.183]	0.356+ [0.195]
RG class iiim	0.172 [0.152]	0.546*** [0.147]	0.751* [0.308]	0.524** [0.191]	0.508** [0.189]	0.480* [0.202]
RG class iv	-0.134 [0.156]	0.324* [0.152]	0.349 [0.317]	0.426* [0.196]	0.448* [0.195]	0.364+ [0.210]
RG class v	-0.148 [0.186]	0.275 [0.181]	-0.074 [0.391]	0.511* [0.244]	0.566* [0.243]	0.519+ [0.265]
RG class ii x year	-0.007 [0.014]	-0.003 [0.013]	0.018 [0.024]	-0.02 [0.016]	-0.022 [0.016]	-0.018 [0.017]
RG class iiii x year	-0.021 [0.014]	-0.012 [0.014]	0.023 [0.025]	-0.018 [0.016]	-0.021 [0.016]	-0.018 [0.018]
RG class iiim x year	-0.053*** [0.015]	-0.036* [0.014]	-0.016 [0.026]	-0.040* [0.017]	-0.036* [0.017]	-0.042* [0.018]
RG class iv x year	-0.049** [0.015]	-0.028+ [0.015]	0.008 [0.027]	-0.028 [0.017]	-0.029+ [0.017]	-0.028 [0.019]
RG class v x year	-0.063*** [0.018]	-0.031+ [0.018]	0.04 [0.034]	-0.043* [0.022]	-0.050* [0.022]	-0.049* [0.024]
Unemployed		-1.845*** [0.141]	-1.915*** [0.378]		-1.852*** [0.159]	-1.840*** [0.174]
Retired		-0.327** [0.124]	0.328 [0.238]		-0.478* [0.195]	-0.433* [0.211]
Long-term ill		-3.860*** [0.147]	-3.329*** [0.280]		-3.505*** [0.217]	-3.540*** [0.235]
Looking after home/ family		-0.827*** [0.100]	-0.617** [0.228]		-0.626*** [0.115]	-0.550*** [0.130]
Unemployed x year		-0.111*** [0.016]	-0.075* [0.033]		-0.009 [0.018]	-0.019 [0.020]
Retired x year		-0.026* [0.011]	-0.059** [0.020]		0.076*** [0.017]	0.074*** [0.018]
Long-term ill x year		-0.212*** [0.014]	-0.229*** [0.024]		0.027 [0.019]	0.039+ [0.021]
Looking after home x year		0.009 [0.010]	0.003 [0.020]		0.011 [0.012]	0.004 [0.014]
Centred log income			0.281** [0.095]			0.148+ [0.088]
Missing income dummy			0.008 [0.826]			
Centred log income x year			0.018* [0.008]			0 [0.008]
Constant	29.626*** [0.279]	29.551*** [0.281]	29.596*** [0.412]	24.577*** [0.164]	24.830*** [0.164]	24.933*** [0.174]
R-squared	0.01	0.09	0.11	0.00	0.01	0.01
N observations	101067	100621	65749	89851	89851	78616

Significance levels: + p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001

Note: Standard errors in parentheses.

Figure 1: Marginal effects of class on psychological well-being, by year (Source: HSE, model OLS5)

