I Z A

Disability and Skill Mismatch

Melanie K. Jones
Peter J. Sloane

September 2009

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

Disability and Skill Mismatch

Melanie K. Jones
WELMERC, Swansea University

Peter J. Sloane
WELMERC, Swansea University,
University of Melbourne and IZA

ABSTRACT

Disability and Skill Mismatch[*]

This paper integrates two strands of literature on overskilling and disability using the 2004 British Workplace Employment Relations Survey (WERS). It finds that the disabled are significantly more likely to be mismatched in the labour market, to suffer from a pay penalty and to have lower job satisfaction, the effects being stronger for the work-limited disabled. Giving workers more discretion over how they perform their work would significantly reduce these negative effects.

Corresponding author:

Melanie K. Jones
WELMERC, School of Business and Economics
Swansea University
Richard Price Building
Singleton Park
Swansea, SA2 8PP
United Kingdom
Email: m.k.jones@swansea.ac.uk

---

1. INTRODUCTION

This paper attempts to combine two different strands of the labour economics literature. First, there is now a growing literature on the economic impact of disability. The rate of disability among the working age population ranges considerably among EU member states, from 6.6% in Italy to 32.2% in Finland in 2002 (Jones, Latreille and Sloane, 2007). This makes it numerically much more important, for instance, than membership of various ethnic minorities in most countries, an issue on which there is a much more extensive literature. Employment rates for the disabled are much lower than for the non-disabled, varying among OECD countries in the late 1990s for those of working age from 20.8% in Poland against 71.2% for the non-disabled, to 62.2% in Switzerland against 79.1% for the non-disabled. Understanding the reasons for this and for the disability earnings gap has preoccupied much of the existing literature. Following DeLeire (2001) and Jones, Latreille and Sloane (2006) it has become common to distinguish between work-limited and non-work-limited disabled, with the disability affecting the amount and nature of work that the individual can do only in the former case. This approach attempts to distinguish between discrimination and the unobserved impact of disability on productivity as explanations for their labour market disadvantage. The evidence suggests the latter effect is more important (DeLeire, 2001, Jones *et al.* 2006).[1]

A second strand of literature has examined skill mismatch, first concentrating on overeducation (and to a lesser extent undereducation), and finding that there are pay

---

[1] Assuming that those who report no work limitations do not have lower productivity as a result of their health impairment compared to the non-disabled, one can interpret the unexplained residual in an Oaxaca-type decomposition as an estimate of discrimination.

penalties to being overeducated (see Sloane, Battu and Seaman, 1999) and at the same time reductions in job satisfaction (see Battu, Belfield and Sloane, 1999, Chevalier, 2003, Fleming and Kler, 2007). More recently attention has focused on overskilling as new data sets have become available which include a relevant question, such as the Household Income and Labour Dynamics in Australia (HILDA) panel survey, the British Workplace Employment Relations Survey, 2004 and The Flexible Professional in the Knowledge Society (REFLEX) survey for a number of European countries (see Allan and Van der Velden, 2001, Green and McIntosh, 2007, McGuinness and Wooden, 2009, and Mavromaras *et al.*, forthcoming). These find strong negative effects of overskilling on both wages and job satisfaction.

The relationship between education or skill mismatch and disability in the labour market has generally been ignored in the earlier literature, even to the extent of not always controlling for disability in the regression analysis.[2] One recent exception to this is Blazquez and Malo (2005) who use Spanish data from the European Community Household Panel 1995-2000. They, however, find no significant relationship between disability and educational mismatch, which is surprising given, as they note, there are good reasons to expect the problem of overeducation to be more acute for the disabled.

In a similar manner to other minority groups, the presence of employer discrimination reduces the probability of employment, suggesting, therefore, that the disabled may be more likely to accept employment which does not fully utilise their skills or

---

[2] This is despite interest in differences in overeducation among other minority groups including ethnic groups (see, for example, Battu and Sloane, 2004).

3

qualifications.[3] A similar argument can also be made with regard to the unobserved productivity effect of a disability, which, by lowering productivity (for a given set of educational characteristics), would also reduce employment prospects. However, another argument used in the context of ethnic minorities by Battu and Sloane (2004) is that spatial constraints on job search increase the probability of educational mismatch. Constraints on job search for the disabled may actually be multidimensional, including not only in terms of geographical location, but also the physical (or emotional) demands of employment, hours of work and accessibility. All of these will mean the disabled are searching for a smaller pool of jobs and are more at risk of accepting 'mismatched' employment.[4]

In this paper we make use of WERS 2004 to assess the incidence of over and underskilling for the disabled, differentiated according to whether or not the disability is work related, compared to the effect on the non-disabled. In short, we find that the disabled are more prone to both over and underskilling than the non-disabled. We consider the consequences of this skill mismatch on wages and job satisfaction and find the adverse effect of overskilling on wages is particularly acute for the work-limited disabled.

2. THE DATA

WERS 2004 is a cross-section data set involving a national sample of interviews with managers from 2,293 establishments with at least five workers. In addition, up to 25

---

[3] The precise form of discrimination is not important in this regard as prejudice or statistical discrimination in hiring or in promotion all potentially increase the probability of skill mismatch.
[4] Jones and Latreille (2006) find that a greater percentage of the work-limited disabled live and work in the same local authority district and Prescott-Clarke (1990) documents a wide range of constraints experienced by the disabled.

employees at each workplace were randomly selected for the employee survey and we have a total of 22,173 usable responses.[5] Employees were asked: *Do you have any long-term illness, health problem or disability? By long-term, we mean that it can be expected to last more than one year*. Those who respond positively to this are also asked: *Does this illness or disability affect the amount or type of work you can do?* We define the work-limited as those who have positive responses to both questions. Those who respond positively to the first, but not the second, question are defined as non-work-limited and those who do not have a long-term health problem form the non-disabled group.[6] This results in 11.9% of employees being classed as disabled, with 4.5% being work-limited and 7.4% non-work-limited. This is lower than previous estimates of the population share, consistent with the low rate of labour market participation among the disabled and this should be born in mind when considering the results presented in this paper.[7]

Employees were also asked a direct question about overskilling, the advantages of which, relative to the more typical measures of overeducation, are outlined by McGuinness and Wooden (2009). Specifically they were asked *How well do the work skills you personally have match the skills you need to do your present job?*. Their response is listed on a five point scale as *much higher*, *a bit higher*, *about the same*, *a bit lower* and *much lower*, enabling us to distinguish three categories – overskilled, matched and underskilled, based on the employees' own perceptions of their skills

---

[5] Unfortunately, the cross sectional nature of the data means it is not possible to consider the dynamics or persistence of skill mismatch. However, Blazquez and Malo (2005) find that mismatch has particularly severe consequences for the disabled as they have a lower probability of leaving this state to become matched and have a higher probability of exiting this state to unemployment or inactivity.

[6] Individuals should only answer the second question following a positive response to the first. A small number of mutually inconsistent responses are dropped from the analysis. Unfortunately, there is no further information about the nature of the disability which would enable us to control for productivity and work limitations more directly.

[7] Given employees form the entire sample, it is not possible to control for sample selection bias that may arise as a result of this.

and that required to do their job.[8] We do not attempt to estimate the extent of over and under-*education* in this paper. Though it is possible to impute it using the empirical method, a substantial number of respondents have other vocational qualifications, which are difficult to interpret in relation to their level. However, consistent with previous evidence (see, for example, Jones *et al.*, 2006), the disabled are significantly less likely to have a first degree, A levels or AS levels than the non-disabled and significantly more likely to have no academic qualifications (see Table 1). Furthermore, the work-limited disabled are less well qualified than the non-work-limited disabled. These differences would reduce the likelihood of finding that overeducation was a more serious problem for the disabled. It is not possible, for example, to be overeducated if you have no qualifications, which is the case for roughly a quarter of the disabled.

The main limitation of our overskilling variable is that it is subjective, which means the responses of individuals may not be directly comparable.[9] However, there seems to be no obvious reason why disabled employees would consistently overestimate or underestimate their own skills or the demands of their employment relative to the non-disabled group.[10] The results in Table 2 show the disabled are significantly more likely to report having "much higher" skills than those required to do their job than the non-disabled and are significantly less likely to be matched. A greater proportion of the disabled also report being underskilled, but this sample is small and the

---

[8] Overskilled includes *much higher* and *a bit higher,* whereas underskilled includes *a bit lower* and *much lower.* A complete list of descriptive statistics is contained in appendix table 1.

[9] Overeducation has also been measured subjectively in most studies and there is no evidence that individuals exaggerate the extent to which the job requires the level of education they possess.

[10] In fact, if statistical discrimination exists, one may argue that disabled employees, in particular, are better placed than their employers to assess their work skills and abilities. It is also important to note that if there is any (negative) influence of their disability on work skills and abilities then this does not imply underskilling, since job requirements also vary and individuals are asked about their *present* job.

differences are not significant. In Table 3 the mean values are presented for seven facets of job satisfaction (each measured on a scale where 5 is *very satisfied* to 1 *very dissatisfied*) and an index of overall satisfaction which combines each of them.[11] The disabled have a significantly lower index of job satisfaction than the non-disabled. For the work limited disabled this also applies to each of the seven facets of job satisfaction, but for the non-work-limited disabled satisfaction is significantly lower only in the case of training[12] and pay. This is despite the fact that hourly pay is actually higher for the non-work-limited disabled (£9.77) than for the non-disabled (£9.55). The work-limited disabled have significantly lower pay (£8.90) than the non-disabled. This emphasises the point that the differences between the non-work-limited disabled and the non-disabled are much less pronounced than the differences between the work-limited disabled and the non-disabled.

One other feature of the data is worth noting, since there is relatively limited evidence which documents more detailed information about the nature of disabled employment. Regardless of the precise measure, the disabled report having less influence over their job. For example, 34.1% of the work-limited disabled report having little or no influence over the *tasks you do in your job* compared to 25.9% of the non-disabled; also, 23.1% of the work-limited disabled report having little or no influence over the

---

[11] In this we follow Mumford and Smith (2008) who, using the same data set (but for a different purpose), calculated an aggregate measure of job satisfaction from six facets of job satisfaction by constructing a binary measure for each of them based on positive responses (*satisfied* or *very satisfied*) and summed them form a scaled index with values from 0 to 6. However, we use all seven facets of job satisfaction available in WERS.

[12] Respondents were asked "apart from health and safety training how much training have you had during the last 12 months, either paid for or organised by your employer?" 43.9% of the work-limited disabled responded none compared to 36.2% of the non-disabled and the difference was significant at the 1% level. The work-limited disabled were also significantly less likely to have received training of between 2-5 days or more than 10 days than the non-disabled. There was no significant difference between the training provision for the non-work-limited disabled and the non-disabled. Thus, one of the potential causes of the higher rates of skill mismatch is the lower rates of job related training for the work-limited disabled.

order in which you carry out tasks compared to 17.0% of the non-disabled. The responses of the non-work-limited disabled are again more similar to the non-disabled.[13]

---

[13] Preliminary analysis also suggests this is not just a consequence of the types of jobs the disabled hold.

3. METHODOLOGY

(a) Determinants of mismatch

The first stage is to estimate the determinants of under- and overskilling, distinguishing between non-work-limited and work-limited disabled. Since there are three possibilities, the multinominal logit model seems appropriate. This estimates two sets of coefficients, β_1 (underskilled) and β_3 (overskilled). From these two sets of coefficients we can calculate the probability P_{ij} of an individual i being underskilled ($j=1$) or overskilled ($j=3$) conditional on a vector of characteristics x_i. The probability of individual i being under-(over)- skill group j (relative to the probability of being in the default group 2 (skill matched)) is given by

$$\frac{P_{ij}}{P_{i2}} = \exp[x_i'(\beta_j - \beta_2)] \qquad \text{for } j=1,3 \qquad (1)$$

with normalisation of B_2 to equal 0 to permit identification of the model, the probabilities are

$$P_{i2} = \frac{1}{[1+\sum_{j=1,3}\exp[x_i'\beta_j]]} \qquad \text{for } j=2 \qquad (2)$$

$$P_{ij} = \frac{\exp[x_i'\beta_j]}{[1+\sum_{j=1,3}\exp[x_i'\beta_j]]} \qquad \text{for } j=1,3 \qquad (3)$$

WERS contains a rich set of covariates which, in addition to controls for disability status, include personal and workplace related characteristics. The controls for personal characteristics include gender, age, ethnicity (defined broadly as white or non-white), highest academic qualifications and marital status. We also control for

9

work related characteristics including part-time employment, having a temporary contract, union membership, tenure, (log of) workplace size, whether the workplace is part of a larger organisation as well as sector, industry, occupation and region of work. All the estimates from the econometric models are unweighted; but, in order to check for consistency, we also run weighted regressions. Generally, these produce consistent results.

(b) Implications of mismatch on earnings and job satisfaction

Next, we establish whether being disabled or skill mismatched has a detrimental effect on earnings. Since usual gross weekly pay is banded into 14 groups, interval regression is the appropriate procedure, as the dependent variable is categorised and ordered and the cut-off points are known. Under such circumstances, OLS regressions using the mid-point of the pay band may generate inconsistent estimates (Stewart, 1983). In practice, OLS and the interval regression estimates produce very similar results so here we only present the former, which are easier to interpret. The midpoint of the pay band is adjusted for usual weekly hours to create a continuous measure of hourly pay.[14] The resulting earnings function is given by:

$$\ln y_i = Z_i \varphi_1 + S_{i1}\varphi_2 + S_{i3}\varphi_3 + \eta_i \tag{4}$$

where $\ln y_i$ is the log of the derived measure of hourly pay and Z_i contains personal and employment related characteristics including educational attainment, occupation

---

[14] Examination of the resulting distribution of hourly earnings suggests a number of outliers where high hourly earnings are generated because a relatively short number of hours are reported. In a similar manner to Dolton and Pelkonen (2008), we trim 1% off the upper and lower distribution of hourly wages and, reassuringly, the correlation between the derived pay measure and the mid point of the actual hourly pay measure (of which there are only 4 bands) is relatively high at 0.55.

and industry. Two dummy variables capture skill mismatch, namely, S_{i1}, which captures individuals who are underksilled and S_{i3} which captures those who are overskilled.

We must, however, consider the nature of the matched employer – employee samples, as there is both a within establishment error term variance and an across establishment error term variance. Under such circumstances, random effects GLS is a less biased indicator than OLS (see Moulton, 1987). We present, also, random effects results for each of the three groups separately – the non-disabled, the non-work-limited disabled, and the work-limited disabled.[15]

Finally, we estimate an ordered probit to explain the determinants of job satisfaction, using a composite index of overall job satisfaction. We assume that satisfaction is measured by an unobserved latent variable J_i^* which is determined by:

$$J_i^* = Z_i \gamma_1 + S_{i1} \gamma_2 + S_{i3} \gamma_3 + \varepsilon_i \tag{5}$$

The observed response, J, will take the value 0 if $J^* \leq \alpha_1$ while

$J = 1$ if $\alpha_1 < J^* \leq \alpha_2$
$J = 2$ if $\alpha_2 < J^* \leq \alpha_3$
…
$J = K$ if $\alpha_{K-1} < J^*$

where $K+1$ is the number of alternative responses and α_k are cut points. We include a set of personal and employment related controls, as well as the dummy variables for over- and under-skilling as determinants of job satisfaction. In a similar manner to the

---

[15] The results are qualitatively similar, if instead, we control for workplace fixed effects.

11

analysis of earnings, we also control for unobserved workplace heterogeneity by estimating a random effects ordered probit model.

4. RESULTS

(a) *Determinants of Mismatch*

The disabled are significantly more likely to be mismatched than the non-disabled (Table 4), the effect being stronger for the work-limited disabled as shown by the marginal effects in relation to underskilling, which is not significant for the non-work-limited disabled. The work-limited disabled are nearly 6 percentage points more likely to be overskilled than the non-disabled, which is consistent with a situation where it is harder for the disabled to obtain a job, such that they are prepared to trade-off higher skills for employment.[16] Obviously this argument does not explain the greater prevalence of underskilling, but this is also consistent with the disabled being more constrained in job search.[17]

In contrast to the arguments of Frank (1978), we find women are less likely to be mismatched than men. This may, however, reflect the self-assessed nature of our dependent variable and the greater tendency for men to overestimate their own skills and abilities (see, for example, Waldman, 1994). Younger workers are more likely to be underskilled and less likely to be overskilled (though this is not reported in the table). Mismatch is also associated with shorter tenure and lower educational

---

[16] Since both the work-limited and non-work-limited disabled have a higher probability of being overskilled, it suggests this is not entirely a consequence of differences in productivity but may reflect some discrimination against the entire disabled group.

[17] It may also reflect a lack of employer sponsored training among the disabled. We did experiment by including training in the multinominal logit, but there is potential reverse causation, since the overskilled are less likely to be offered training. Its inclusion does not alter the main results discussed above.

qualifications. However, vocational qualifications significantly increase the probability of being mismatched. Members of ethnic minorities are significantly more likely to be overskilled, again consistent perhaps with preparedness to trade-off skills to obtain a job. In contrast, single or married individuals, or those living with a partner, are less likely to be overskilled than those who are widowed, divorced or separated.

As regards to structural factors, overskilling is positively associated with working in a larger workplace where perhaps management – worker relations are less close and is less likely to be present in single establishments where similar considerations may apply in reverse. We also constructed an index of worker control over their jobs which combined the ability to influence tasks, the pace of work, how the individual does the work, the order of work and time of arrival and finish of work (e.g. flexitime). This index was found to have a strong negative impact on the probability of being overskilled and seems also to have important implications for the design of jobs.

Though not reported in Table 3, the model includes a full set of controls for industry and occupation. Underskilling is significantly more prevalent in manufacturing, electricity, gas and water and public administration and less so in education than the omitted sector (other community services), while overskilling is significantly less prevalent in construction, financial services, other business services, education and

health. The more skilled the occupation the stronger the probability of underskilling and the lower the probability of overskilling.[18]

(b)   *The Effects on Earnings*

Table 5 presents the results of OLS and random effects earnings equations and columns (3-5) split the sample into non-disabled, non-work-limited disabled and work-limited disabled respectively. The non-work-limited disabled suffer no wage penalty as a result of their status, consistent with the absence of an unobserved productivity effect. However, there is a significant wage effect of around 5% for those who are work-limited disabled, being slightly smaller under random effects estimation. Similarly, there is no significant wage difference to being underskilled, but the overskilled suffer a significant wage reduction of around 3%, consistent with the reduced productivity of an overskilled individual relative to an otherwise identical individual who is better matched. When the sample is split, the penalty to being overskilled is about 2% for the non-disabled, 6% for the non-work-limited disabled and 10% for the work-limited disabled. This is not surprising since the extent of overskilling reported by the work-limited disabled is greater. However, even after controlling for the extent of overskilling, the disabled face a greater wage penalty from being in any given overskilled status.[19] The other variables behave as expected, but it is worth noting that the pay penalty for work-limited disabled women is less

---

[18] We also experimented with the inclusion of the availability of equal opportunity policies for the disabled, whether there was monitoring of recruitment, promotion and pay of the disabled, whether the firm had made a formal assessment of the extent to which the workplace was accessible by the disabled and if the workplace had made adjustments to accommodate the disabled. Only the last of these significantly reduced the probability of being overskilled.
[19] Results are not reported but specifications were estimated with separate controls for being severely and moderately overskilled. As expected the wage penalty is greater for the severely overskilled.

than for women in the other groups.[20] Further, the work-limited disabled suffer a much larger pay penalty for being employed in a single establishment employer and gain no pay benefit from being employed in the public sector. All groups benefit from an ability to control the nature of their work.

(c)   *Effects on Job Satisfaction*

Few papers have considered the relationship between disability and job satisfaction. One exception is Pagan and Malo (2009) who use Spanish data from the European Community Household Panel (ECHP) over the period 1995-2001. They find that the disabled have higher job satisfaction than the non disabled, which they attribute to lower expectations about jobs on the part of disabled workers. It should, however, be noted that the definition of disability is different in the EHCP as it refers to limitations on daily activities. They also acknowledge the alternative hypothesis that disabled workers are more likely to have lower job satisfaction due to the fact that they may have poorer health status, which finds support in some empirical studies in North America.[21] In particular, Uppal (2005) finds that, even after controlling for personal characteristics, the disabled are less satisfied in work in Canada. In our case, the non-work-limited disabled and the work-limited disabled have significantly lower job satisfaction than the non-disabled (Table 6) and, again, it is the work-limited who are worst off.[22] Both those who are underskilled and those who are overskilled have significantly lower job satisfaction than those who are properly matched, although the

---

[20] The sole exception to this is the positive association between part-time work and hourly earnings. This appears to be a consequence of measurement error in reported hours of work. However, the key results discussed above are not sensitive to restricting the sample to full-time workers.

[21] Disability and health are distinct concepts but may be correlated. We have no information on health to try and distinguish between the influence of health and disability on job satisfaction.

[22] Consistent with this the work limited disabled are more likely to strongly agree with the following statements *my job requires that I work very hard, I never seem to have enough time to get my work done, I worry a lot about my work outsideworking hours* and strongly disagree with *I feel my job is secure in this workplace*.

marginal effects indicate being underskilled has a slightly more adverse impact on job satisfaction than being overskilled. Further, in contrast to the results from Pagan and Malo (2009), who find overeducation has no influence on the job satisfaction of the disabled, we find both over- and underskilled disabled workers have lower job satisfaction relative to those who are correctly matched.[23]

The other controls generally have the expected influence, with women and those with short tenure having higher satisfaction, whereas those with higher level academic qualifications, those on temporary contracts and those from ethnic minorities having lower job satisfaction. The ability to control one's own work has a highly significant positive impact on the level of job satisfaction.[24]

5.   CONCLUSIONS

It is well known that the disabled are less likely to participate in the labour market than the non-disabled and those who do so suffer a pay penalty if they are work-limited disabled. In this paper we consider the possibility that the disabled may be more prone than the non-disabled to skill mismatch. This is, indeed, confirmed by our regression analysis, both with respect to underskilling and overskilling. We are able to confirm that there is a pay penalty to being disabled, but this is only significant for the work-limited disabled and there is an additional pay penalty to being overskilled (but not underskilled) which is larger for the disabled. Likewise, the disabled (particularly

---

[23] An alternative specification was estimated with controls for the extent of overskilling and while being severely or moderately overskilled reduced the job satisfaction for non-disabled workers, for the work-limited disabled only severe overskilling that has a significant adverse effect on job satisfaction.
[24] Again, we examined the robustness of the results to the inclusion of a control for the presence of equal opportunities policy for the disabled, but this appears to have no impact on the level of job satisfaction. Further, controlling for the level of hourly pay (which significantly raises job satisfaction) does not affect the above conclusions.

those who are work-limited) have lower job satisfaction than the non-disabled and skill mismatch further lowers job satisfaction.

Our results suggest that reducing the extent of this mismatch in the labour market would improve the earnings and satisfaction of disabled employees, the second of which has previously been found to be an important indicator of quit behaviour (Freeman, 1978) and may, therefore, aid government efforts to increase the employment rate among this group. Employers could be encouraged to assess the skills and abilities of disabled employees more formally, in order to reduce the extent of perceived skill mismatch. The evidence also suggests that giving workers greater discretion over how they perform their work tasks would have similar results. Greater flexibility for disabled employees in this respect would seem consistent with the reasonable adjustment element of the UK Disability Discrimination Act, as well as providing potential benefits to both employees and employers.

REFERENCES

1.	Allen J. and Van der Velden R. (2001), Educational Mismatch versus Skill Mismatches: Effects on Wage, Job Satisfaction and On-the-Job Search, *Oxford Economic Papers*, 53, 434-452.

2.	Battu H., Belfield C.R. and Sloane P.J. (1999), Overeducation Among Graduates: A Cohort view, *Education Economics*, 7(1), 21-38.

3.	Battu, H. and Sloane, P. (2004), Overeducation and Ethnic Minorities in Britain, *The Manchester School*, 72(4), 535-559.

4.	Blazquez M. and Malo M.A. (2005), Educational Mismatch and Labour Mobility of People with Disabilities: The Spanish Case, *Revista de Economia Labora*, 2, 31-55.

5.	Chevalier A. (2003), Measuring Overeducation, *Economica*, 70(3), 509-531.

6.	DeLeire T. (2001), Changes in Wage Discrimination against People with Disabilities: 1984-93, *Journal of Human Resources,* 36, 114-158.

7.	Dolton, P. and Pelkonen P. (2008) The Wage Effects of Computer Use: Evidence from WERS 2004, *British Journal of Industrial Relations*, 46(4), 587-630.

8.	Fleming C.M. and Kler P. (2007), I'm Too Clever for this Job: A Bivariate Probit Analysis on Overeducation and Job Satisfaction in Australia, *Applied Economics*, 40(9), 1123-1138.

9.	Frank, R.H. (1978): "Why Women Earn Less: The Theory and Estimation of Differential Overqualification", *American Economic Review*, vol. 68 (3), 360-373.

10.	Freeman, R.B. (1978), Job satisfaction as an Economic Variable, *American Economic Review*: *Papers and Proceedings*, 68, 135-141.

11.	Green F. and McIntosh S. (2007), Is there a Genuine Underutilisation of Skills Amongst the Overqualified?, *Applied Economics*, 39, 427-439.

12.	Jones M.K., Latreille P.L. and Sloane P.J. (2006), Disability, Gender and the British Labour Market, *Oxford Economic Papers*, 58, 407-449.

13.	Jones M.K., Latreille P.L. and Sloane P.J. (2007), Disability and Work: A Review of the British Evidence, *Estudios de Economia Applicada,* 25-2, 473-498.

14.	Jones M.K. and Latreille P.L. (2006) Disability and Self-Employment: Evidence from the UK LFS, 2006, University of Wales Swansea, WELMERC Discussion Paper No. 2006-07.

15. McGuinness S. and Wooden M. (2009), Overskilling, Job Insecurity and Career Mobility, *Industrial Relations*, 48(2), 265-286.

16. Mavromaras K., McGuinness S., O'Leary N., Sloane P. and Fok K.Y., The Problem of Overskilling in Australia and Britain, *Manchester School* (forthcoming).

17. Moulton B.R. (1987), Diagnostics for Group Effects in Regression Analysis, *Journal of Business Economics and Statistics*, 5, 275-282.

18. Mumford K. and Smith P.N. (2008), Gender, Job Satisfaction and Relative Wages, Department of Economics, University of York, November

19. Pagan R. and Malo M.A. (2009), Job Satisfaction and Disability: Lower Expectations about Jobs or a Matter of Health?, *Spanish Economic Review,* 11, 51-74.

20. Prescott-Clarke, P. (1990) *Employment and Handicap*, Publication 1036, Social and Community Planning Research: London.

21. Sloane P., Battu H. and Seaman P. (1999), Overeducation, Undereducation and the British Labour Market, *Applied Economics*, 31(11), 1437-1454.

22. Stewart N. (1983), On Least Squares Estimation When the Dependent Variable is Grouped, *Review of Economic Studies*, 50, 737-753.

23. Uppal S. (2005) Disability, Workplace Characteristics and Job Satisfaction, *International Journal of Manpower*, 26(4), 336-349.

24. Waldman, M. (1994) Systematic Errors and the Theory of Natural Selection, *American Economic Review*, 84, 482-497.

Table 1. Academic qualifications by disability status.

	Highest academic qualification		
	Non-disabled	Non-work-limiting disabled	Work-limiting disabled
Higher Degree	6.64	6.14	5.85
First Degree	20.04	17.40**	14.68***
A level or AS level	15.02	13.14*	10.10***
GSCE level (grade C)	25.69	24.92	24.46
Other	16.22	16.04	19.89**
None	16.39	22.37***	25.02***

Notes to table: Data are weighted. '*' '**' '***' denote significance from the non-disabled group at the 10%, 5% and 1% level respectively.

Table 2. Skill mismatch by disability status.

	How well do the work skills you personally have match the skills you need to do your present job?		
	Non-disabled	Non-work-limiting disabled	Work-limiting disabled
Much higher	21.02	25.50***	29.56***
A bit higher	32.25	31.69	29.97
About the same	42.37	37.87***	35.15***
A bit lower	3.68	4.08	4.26
Much lower	0.68	0.86	1.07

Notes to table: Data are weighted. '*' '**' '***' denote significance from the non-disabled group at the 10%, 5% and 1% level respectively.

Table 3. Job satisfaction by disability status.

	How satisfied are you with the following aspects of your job?		
	Non-disabled	Non-work-limiting disabled	Work-limiting disabled
The sense of achievement you get from your work	3.76	3.78	3.57***
The scope for using your own initiative	3.82	3.81	3.61***
The amount of influence you have over your job	3.56	3.53	3.30***
The training you receive	3.34	3.23***	3.11***
The amount of pay you receive	2.88	2.76***	2.71***
Your job security	3.61	3.57	3.36***
The work itself	3.78	3.77	3.62***
Index of satisfaction	4.27	4.15*	3.72***

Notes to table: Data are weighted. '*' '**' '***' denote significance from the non-disabled group at the 10%, 5% and 1% level respectively. With the exception of the index of satisfaction, figures are average job satisfaction scores on a ranked scale where 5=*very satisfied* and 1=*very dissatisfied*. The index of satisfaction is based on a total cumulative score from 0-7, with a higher score indicating higher job satisfaction.

Table 4. Multinomial logit model of the determinants of skill mismatch.

	Coefficients		Marginal effects	
	Underskilled	Overskilled	Underskilled	Overskilled
Constant	-2.038***	1.159***		
	(4.55)	(6.59)		
Non-work-limited disabled	0.329**	0.224***	0.008	0.047***
	(2.34)	(3.71)	(1.35)	(3.34)
Work-limited disabled	0.634***	0.304***	0.021**	0.057***
	(4.02)	(3.95)	(2.52)	(3.24)
Female	-0.314***	-0.292***	-0.006*	-0.066***
	(3.58)	(7.77)	(1.74)	(7.30)
Tenure less than a year	0.463***	0.112**	0.017***	0.016
	(3.64)	(1.98)	(2.86)	(1.21)
Tenure 1-2 years	0.153	0.313***	-0.001	0.073***
	(1.08)	(5.45)	(0.24)	(5.46)
Tenure 2-5 years	0.086	0.122***	0.001	0.028***
	(0.76)	(2.68)	(0.15)	(2.59)
Tenure 5-10 years	-0.068	0.095**	-0.004	0.025**
	(0.54)	(1.99)	(1.04)	(2.16)
Any vocational qualification	0.106	0.265***	-0.002	0.064***
	(1.29)	(7.52)	(0.50)	(7.48)
No academic qualifications	-0.534***	-0.942***	-0.003	-0.221***
	(2.82)	(11.13)	(0.45)	(11.60)
Other academic qualifications	-0.500**	-0.529***	-0.008	-0.123***
	(2.36)	(5.77)	(1.25)	(5.61)
GCSE level qualifications	-0.611***	-0.447***	-0.013**	-0.099***
	(3.90)	(6.18)	(2.54)	(5.71)
A level qualifications	-0.535***	-0.204***	-0.014***	-0.041**
	(3.16)	(2.65)	(2.98)	(2.21)
Degree level qualifications	-0.328**	-0.086	-0.010**	-0.015
	(2.20)	(1.23)	(2.10)	(0.89)
Single	0.014	-0.181***	0.004	-0.045***
	(0.09)	(2.73)	(0.71)	(2.82)
Married	-0.096	-0.106**	-0.001	-0.024*
	(0.71)	(1.99)	(0.28)	(1.88)
Non-white	0.012	0.174**	-0.003	0.043**
	(0.07)	(2.40)	(0.56)	(2.49)
Log workplace size	0.040	0.039***	0.001	0.009***
	(1.56)	(3.70)	(0.72)	(3.47)
Single establishment	0.102	-0.120***	0.007	-0.032***
	(1.01)	(2.80)	(1.63)	(3.09)
Public sector	-0.118	-0.071	-0.003	-0.015
	(0.89)	(1.36)	(0.61)	(1.20)
Control index	-0.091***	-0.013***	-0.003***	-0.001
	(8.79)	(2.82)	(8.56)	(1.14)
Likelihood ratio χ^2	1031.31 [0.00]			
Observations	18788			

Notes to table: Data are unweighted. Model also includes controls for age, temporary contracts, part-time employment, presence of children and a full set of regional, occupational and industrial dummy variables which are not reported here. T statistics reported in parenthesis. '*', '**', '***' indicate significance at the 10%, 5% and 1% level respectively. The base category is having correctly matched skills. The figure in square brackets is a p-value based on the likelihood ratio test where the null hypothesis is that the slope coefficients are jointly equal to zero.

Table 5. The determinants of hourly earnings

	OLS	Random Effects GLS			
	All	All	Non-disabled	Non-work-limited disabled	Work-limited disabled
Constant	1.870***	1.814***	1.811***	1.812***	1.939***
	(66.00)	(52.25)	(49.75)	(16.83)	(14.26)
Non-work-limited disabled	-0.001	0.001			
	(0.14)	(0.07)			
Work-limited disabled	-0.057***	-0.047***			
	(4.79)	(4.19)			
Female	-0.127***	-0.113***	-0.116***	-0.125***	-0.095***
	(21.12)	(19.27)	(18.47)	(5.32)	(3.24)
Tenure less than a year	-0.110***	-0.108***	-0.108***	-0.070**	-0.134***
	(12.30)	(12.36)	(11.60)	(2.03)	(2.81)
Tenure 1-2 years	-0.099***	-0.093***	-0.096***	-0.054	-0.066
	(10.78)	(10.49)	(10.16)	(1.52)	(1.44)
Tenure 2-5 years	-0.065***	-0.068***	-0.067***	-0.041	-0.090***
	(8.93)	(9.65)	(8.92)	(1.49)	(2.62)
Tenure 5-10 years	-0.047***	-0.044***	-0.047***	-0.015	-0.044
	(6.20)	(5.92)	(5.89)	(0.53)	(1.29)
Any vocational qualification	0.041***	0.041***	0.038***	0.040*	0.089***
	(7.19)	(7.52)	(6.54)	(1.80)	(3.10)
No academic qualifications	-0.354***	-0.317***	-0.319***	-0.371***	-0.347***
	(26.42)	(24.39)	(23.01)	(7.16)	(5.34)
Other academic qualifications	-0.272***	-0.247***	-0.244***	-0.329***	-0.299***
	(18.68)	(17.65)	(16.33)	(5.85)	(4.38)
GCSE level qualifications	-0.234***	-0.214***	-0.214***	-0.263***	-0.268***
	(20.57)	(19.51)	(18.38)	(5.65)	(4.58)
A level qualifications	-0.155***	-0.139***	-0.140***	-0.140***	-0.195***
	(12.80)	(11.92)	(11.36)	(2.85)	(2.98)
Degree level qualifications	-0.056***	-0.057***	-0.054***	-0.080*	-0.122**
	(5.08)	(5.40)	(4.88)	(1.76)	(2.03)
Part-time work	0.028***	0.060***	0.062***	0.023	-0.001
	(3.90)	(8.53)	(8.24)	(0.82)	(0.03)
Trade union member	0.061***	0.058***	0.060***	0.053**	0.066**
	(10.10)	(9.33)	(8.93)	(2.36)	(2.30)
Single	-0.037***	-0.031***	-0.032***	0.005	-0.082
	(3.54)	(3.11)	(2.95)	(0.12)	(1.59)
Married	0.017**	0.015*	0.017**	0.024	-0.028
	(2.00)	(1.84)	(2.04)	(0.78)	(0.69)
Non-white	-0.073***	-0.058***	-0.061***	-0.028	-0.106*
	(6.36)	(5.09)	(5.10)	(0.55)	(1.82)
Log workplace size	0.021***	0.023***	0.022***	0.023***	0.029***
	(12.38)	(8.49)	(8.06)	(3.38)	(3.12)
Single organisation	-0.015**	-0.015	-0.008	-0.033	-0.107***
	(2.20)	(1.34)	(0.69)	(1.11)	(2.88)
Public sector	0.034***	0.039***	0.044***	0.054	-0.058
	(4.11)	(2.85)	(3.16)	(1.58)	(1.36)
Underskill	0.006	-0.003	0.001	-0.036	-0.002
	(0.49)	(0.26)	(0.06)	(0.75)	(0.03)
Overskill	-0.032***	-0.025***	-0.021***	-0.060***	-0.103***

22

	(6.19)	(5.16)	(4.10)	(2.94)	(3.95)
Index of control	0.013***	0.012***	0.012***	0.012***	0.008***
	(17.89)	(17.53)	(16.64)	(4.37)	(2.59)
R-squared (overall)	0.53	0.53	0.54	0.51	0.48
F-test	331.23 [0.00]				
Wald χ^2		14170.44 [0.00]	13055.44 [0.00]	1227.07 [0.00]	659.53 [0.00]
Number of workplaces	-	1717	1709	867	618
Observations	18174	18174	16003	1346	825

Notes to table: Data are unweighted. Model also includes controls for age, temporary contracts, part-time employment and a full set of regional, occupational and industrial dummy variables which are not reported here. T statistics reported in parenthesis. '*', '**', '***' indicate significance at the 10%, 5% and 1% level respectively. The figures in square brackets are p-values based on the F-test or Wald test where the null hypothesis is that the slope coefficients are jointly equal to zero.

Table 6. The determinants of job satisfaction

	Ordered probit	Random effects ordered probit model			
	All	All	Non-disabled	Non-work limiting disabled	Work-limiting disabled
Non-work-limited disabled	-0.087***	-0.076**			
	(2.92)	(2.47)			
Work-limited disabled	-0.216***	-0.214***			
	(5.77)	(5.58)			
Female	0.102***	0.103***	0.087***	0.264***	0.229**
	(5.38)	(5.24)	(4.11)	(3.64)	(2.42)
Tenure less than a year	0.208***	0.226***	0.223***	0.223**	0.381**
	(7.34)	(7.63)	(7.06)	(2.06)	(2.50)
Tenure 1-2 years	0.058**	0.060**	0.035	0.323***	0.165
	(2.03)	(2.01)	(1.10)	(2.91)	(1.15)
Tenure 2-5 years	0.022	0.023	0.020	0.119	0.021
	(0.96)	(0.98)	(0.78)	(1.41)	(0.19)
Tenure 5-10 years	0.030	0.035	0.030	0.061	0.084
	(1.22)	(1.38)	(1.10)	(0.71)	(0.75)
Any vocational qualification	0.061***	0.054***	0.059***	0.063	-0.032
	(3.44)	(2.95)	(3.00)	(0.92)	(0.35)
No academic qualifications	0.277***	0.276***	0.265***	0.164	0.658***
	(6.58)	(6.29)	(5.64)	(1.03)	(3.21)
Other academic	0.206***	0.210***	0.198***	-0.006	0.733***
	(4.49)	(4.43)	(3.89)	(0.04)	(3.34)
GCSE level	0.095***	0.098***	0.075*	0.088	0.442**
	(2.66)	(2.65)	(1.92)	(0.61)	(2.36)
A level	0.044	0.054	0.034	0.026	0.456**
	(1.16)	(1.37)	(0.83)	(0.17)	(2.18)
Degree level	0.050	0.049	0.027	0.014	0.397**
	(1.45)	(1.37)	(0.71)	(0.10)	(2.07)
Temporary	-0.217***	-0.241***	-0.261***	-0.117	-0.042
	(6.84)	(7.30)	(7.46)	(0.93)	(0.24)
Part-time	0.140***	0.129***	0.141***	-0.017	0.128
	(6.39)	(5.68)	(5.79)	(0.20)	(1.24)
Trade union member	-0.064***	-0.066***	-0.075***	-0.038	-0.017
	(3.38)	(3.17)	(3.39)	(0.55)	(0.18)
Single	-0.060*	-0.071**	-0.082**	-0.054	0.119
	(1.79)	(2.08)	(2.23)	(0.43)	(0.73)
Married	0.009	-0.004	-0.017	0.065	0.132
	(0.34)	(0.14)	(0.56)	(0.67)	(1.02)
Children	0.007	0.003	0.002	0.017	0.017
	(0.39)	(0.13)	(0.08)	(0.22)	(0.18)
Non-white	-0.086**	-0.069*	-0.074*	0.070	-0.158
	(2.36)	(1.79)	(1.81)	(0.42)	(0.83)
Log workplace size	-0.030***	-0.030***	-0.030***	-0.051**	0.010
	(5.64)	(4.16)	(4.00)	(2.53)	(0.38)
Single establishment	0.064***	0.079***	0.060*	0.199**	0.216*
	(2.94)	(2.66)	(1.92)	(2.36)	(1.95)
Public sector	-0.045*	-0.044	-0.029	-0.173*	-0.030
	(1.73)	(1.22)	(0.76)	(1.78)	(0.24)
Underskilled	-0.473***	-0.462***	-0.442***	-0.538***	-0.717***
	(12.20)	(11.63)	(10.30)	(3.68)	(4.17)

Overskilled	-0.300***	-0.300***	-0.309***	-0.284***	-0.230***
	(18.46)	(17.98)	(17.37)	(4.50)	(2.75)
Control index	0.134***	0.140***	0.139***	0.146***	0.144***
	(56.41)	(56.54)	(52.22)	(15.37)	(11.67)
Cut point 1	-0.898***	-0.934***	-1.000***	-1.048***	0.359
	(9.97)	(8.93)	(8.95)	(3.23)	(0.86)
Cut point 2	-0.362***	-0.374***	-0.440***	-0.523	0.967**
	(4.02)	(3.59)	(3.95)	(1.61)	(2.31)
Cut point 3	0.046	0.050	-0.017	-0.050	1.351***
	(0.51)	(0.48)	(0.15)	(0.15)	(3.22)
Cut point 4	0.431***	0.450***	0.384***	0.370	1.729***
	(4.80)	(4.32)	(3.45)	(1.13)	(4.11)
Cut point 5	0.878***	0.915***	0.851***	0.834**	2.169***
	(9.76)	(8.76)	(7.63)	(2.54)	(5.14)
Cut point 6	1.380***	1.439***	1.370***	1.383***	2.758***
	(15.33)	(13.75)	(12.26)	(4.18)	(6.45)
Cut point 7	2.088***	2.176***	2.107***	2.178***	3.418***
	(23.09)	(20.73)	(18.79)	(6.47)	(7.84)
Rho		0.078***	0.080***	0.020	0.040
		(13.40)	(12.69)	(0.42)	(0.49)
Likelihood ratio χ^2	5029.65 [0.00]	4702.85 [0.00]	4031.70 [0.00]	462.91 [0.00]	329.89 [0.00]
Observations	18028	18028	15894	1318	816

Notes to table: Data are unweighted. Model also includes controls for age, a full set of regional, occupational and industrial dummy variables which are not reported here. T statistics reported in parenthesis. '*', '**', '***' indicate significance at the 10%, 5% and 1% level respectively. The figures in square brackets are p-values based on the likelihood ratio test where the null hypothesis is that the slope coefficients are jointly equal to zero.

Descriptive Statistics

		Non-disabled	Non-work-limited disabled	Work-limited disabled
Log hourly pay	Log of hourly pay (midpoint band of weekly pay/usual weekly hours).	2.163	2.189	2.104
Overskill	Dummy variable equals 1 if employee reports their work skills are *much higher* or *a bit higher* than those required to do their present job; 0 otherwise.	0.528	0.570	0.592
Underskill	Dummy variable equals 1 if employee reports their work skills are *much higher* or *a bit lower* than those required to do their present job; 0 otherwise.	0.044	0.046	0.061
Job satisfaction	Scale from 0-7 indicating increasing satisfaction with job.[25]	4.256	4.077	3.632
Female	Dummy variable if female; 0 otherwise	0.540	0.498	0.476
Single	Dummy variable if marital status is single; 0 otherwise	0.229	0.167	0.187
Married	Dummy variable if marital status is married or living with partner; 0 otherwise	0.673	0.728	0.707
Separated/Divorced (omitted)	Dummy variable if marital status is either separated or divorced; 0 otherwise	0.098	0.105	0.106
Children	Dummy variable equals 1 if employee has dependent children; 0 otherwise	0.403	0.319	0.339
Non-white	Dummy variable equals 1 if non-white ethnic group (mixed, asian, black or chinese); 0 otherwise	0.061	0.044	0.048
Age 16-17	Dummy variable equals 1 if employee is aged between 16 and 17; 0 otherwise	0.012	0.004	0.006
Age 18-19	Dummy variable equals 1 if employee is aged between 18 and 19; 0 otherwise	0.024	0.009	0.014
Age 20-21	Dummy variable equals 1 if employee is aged between 20 and 21; 0	0.028	0.014	0.006

---

[25] The scale is constructed by summing binary indicators for satisfaction with achievement at work, scope for using your own initiative, amount of influence over job, training received, pay received, job security and the work itself. For each binary variable 1 indicates *very satisfied* or *satisfied* and 0 else.

	otherwise			
Age 22-29	Dummy variable equals 1 if employee is aged between 22 and 29; 0 otherwise	0.164	0.095	0.078
Age 30-39	Dummy variable equals 1 if employee is aged between 30 and 39; 0 otherwise	0.262	0.158	0.199
Age 40-49	Dummy variable equals 1 if employee is aged between 40 and 49; 0 otherwise	0.266	0.268	0.295
Age 50-59	Dummy variable equals 1 if employee is aged between 50 and 59; 0 otherwise	0.202	0.365	0.331
Age 60+ (omitted)	Dummy variable equals 1 if employee is aged 60 and over; 0 otherwise	0.042	0.086	0.070
Tenure <1 year	Dummy variable equals 1 if employee has been working at this workplace for less than 1 year; 0 otherwise	0.163	0.132	0.109
Tenure 1-2 years	Dummy variable equals 1 if employee has been working at this workplace for between 1 and 2 years; 0 otherwise	0.131	0.112	0.107
Tenure 2-5 years	Dummy variable equals 1 if employee has been working at this workplace for between 2 and 5 years; 0 otherwise	0.273	0.232	0.229
Tenure 5-10 years	Dummy variable equals 1 if employee has been working at this workplace for between 5 and 10 years; 0 otherwise	0.185	0.195	0.203
Tenure 10 years+ (omitted)	Dummy variable equals 1 if employee has been working at this workplace for more than 10 years; 0 otherwise	0.249	0.330	0.353
Any vocational qualification	Dummy variable equals 1 if employee has any type of vocational qualification; 0 otherwise	0.641	0.667	0.659
No academic qualifications	Dummy variable equals 1 if employee's highest academic qualification is none; 0 otherwise	0.151	0.207	0.227
Other academic qualifications	Dummy variable equals 1 if employee's highest academic qualification is other (includes GCSE grades D-G); 0 otherwise	0.063	0.079	0.093
GCSE level academic qualifications	Dummy variable equals 1 if employee's highest academic qualification is GCSE level (grades A*-C); 0 otherwise	0.354	0.329	0.364
A level academic qualifications	Dummy variable equals 1 if employee's highest academic qualification is A level or AS level; 0 otherwise	0.150	0.133	0.110
Degree level academic qualifications	Dummy variable equals 1 if employee's highest academic qualification is degree level; 0 otherwise	0.211	0.188	0.149

Higher degree level qualifications (omitted)	Dummy variable equals 1 if employee's highest academic qualification is higher degree level (masters degree or PhD); 0 otherwise	0.070	0.064	0.057
Temporary	Dummy variable equals 1 if employee is on a temporary or fixed period contract; 0 otherwise	0.079	0.069	0.065
Part-time	Dummy variable equals 1 if employee usually works less than 30 hours per week; 0 otherwise	0.220	0.196	0.249
Trade union member	Dummy variable equals 1 if employee is a member of a trade union or staff association; 0 otherwise	0.355	0.455	0.483
Occupation 1	Dummy variable equals 1 if employee's occupation is manager or senior official; 0 otherwise	0.114	0.117	0.085
Occupation 2	Dummy variable equals 1 if employee's occupation is professional; 0 otherwise	0.121	0.126	0.105
Occupation 3	Dummy variable equals 1 if employee's occupation is associate professional and technical; 0 otherwise	0.170	0.155	0.144
Occupation 4	Dummy variable equals 1 if employee's occupation is administrative and secretarial; 0 otherwise	0.190	0.187	0.187
Occupation 5	Dummy variable equals 1 if employee's occupation is skilled trades; 0 otherwise	0.066	0.065	0.098
Occupation 6	Dummy variable equals 1 if employee's occupation is services; 0 otherwise	0.089	0.086	0.086
Occupation 7	Dummy variable equals 1 if employee's occupation is sales and customer services; 0 otherwise	0.070	0.056	0.065
Occupation 8	Dummy variable equals 1 if employee's occupation is process, plant and machine operatives; 0 otherwise	0.071	0.089	0.104
Occupation 9 (omitted)	Dummy variable equals 1 if employee's occupation is elementary; 0 otherwise	0.110	0.119	0.128
Industry 1	Dummy variable equals 1 if employee works in the manufacturing industry; 0 otherwise	0.146	0.144	0.186
Industry 2	Dummy variable equals 1 if employee works in the electricity, water and gas industry; 0 otherwise	0.018	0.019	0.022
Industry 3	Dummy variable equals 1 if employee works in the construction industry; 0 otherwise	0.047	0.038	0.049
Industry 4	Dummy variable equals 1 if employee works in the wholesale and retail	0.099	0.084	0.098

	trade; 0 otherwise			
Industry 5	Dummy variable equals 1 if employee works in the hotel and restaurant industry; 0 otherwise	0.026	0.019	0.019
Industry 6	Dummy variable equals 1 if employee works in the transport and communication industry; 0 otherwise	0.062	0.068	0.073
Industry 7	Dummy variable equals 1 if employee works in the financial services industry; 0 otherwise	0.063	0.055	0.047
Industry 8	Dummy variable equals 1 if employee works in other business services; 0 otherwise	0.116	0.116	0.086
Industry 9	Dummy variable equals 1 if employee works in public administration; 0 otherwise	0.081	0.110	0.101
Industry 10	Dummy variable equals 1 if employee works in the education; 0 otherwise	0.121	0.118	0.107
Industry 11	Dummy variable equals 1 if employee works in health; 0 otherwise	0.159	0.181	0.161
Industry 12 (omitted)	Dummy variable equals 1 if employee works in other community services; 0 otherwise	0.061	0.050	0.050
Region 1	Dummy variable equals 1 if workplace is located in the North East; 0 otherwise	0.041	0.045	0.040
Region 2	Dummy variable equals 1 if workplace is located in the North West; 0 otherwise	0.137	0.140	0.140
Region 3	Dummy variable equals 1 if workplace is located in Yorkshire and Humberside; 0	0.092	0.096	0.119
Region 4	Dummy variable equals 1 if workplace is located in the East Midlands; 0 otherwise	0.067	0.070	0.070
Region 5	Dummy variable equals 1 if workplace is located in the West Midlands; 0 otherwise	0.097	0.087	0.092
Region 6	Dummy variable equals 1 if workplace is located in the East of England; 0 otherwise	0.091	0.082	0.093
Region 7	Dummy variable equals 1 if workplace is located in London; 0 otherwise	0.104	0.107	0.080
Region 8	Dummy variable equals 1 if workplace is located in the South East; 0 otherwise	0.124	0.119	0.112
Region 9	Dummy variable equals 1 if workplace is located in the South West; 0 otherwise	0.088	0.083	0.087

Region 10	Dummy variable equals 1 if workplace is located in Scotland; 0 otherwise	0.112	0.113	0.106
Region 11 (omitted)	Dummy variable equals 1 if workplace is located in Wales; 0 otherwise	0.046	0.059	0.058
Single establishment	Dummy variable equals 1 if workplace is a single independent establishment not belonging to another body; 0 otherwise	0.184	0.171	0.185
Public	Dummy variable equals 1 if public ownership; 0 otherwise	0.312	0.362	0.352
Log workplace size	Log of the total number of employees in workplace.	4.764	4.803	4.814
Control index	Scale from 0-15 indicating greater control over nature of employment.[26]	9.966	9.865	9.167

Notes to table: Data are unweighted.

---

[26] Creating by summing the following: influence over tasks, over pace of work, over how work is done, over order of work and on start/finish time. Each is ranked from 0-3 where 0 indicates no control and 3 indicates a lot of control.