Employee empowerment, equality plans and job satisfaction: an empirical analysis of the demand-control model.

IBUKUN, T. and PÉROTIN, V.

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Employee Empowerment, Equality Plans and Job Satisfaction: An Empirical Analysis of the Demand-Control Model

Abstract

The paper investigates the effects of individual employees' empowerment on different forms of job satisfaction in British workplaces while controlling for the presence of job demands; and whether these effects depend on the presence of an equality plan in the workplace. The demand-control model that we test proposes that imbalances between the demands placed on employees and the control they have in their job negatively affect employee wellbeing and health. Control may also be strengthened, and demands mitigated, by effective equality policies. This study looks at nine forms of job satisfaction and examines the individual effects of job demands, job control, the interaction of control and demands and their joint effects with equality plans.

Methodology: The study uses matched employee-employer British data from the 2011 Workplace Employment Relations Survey (WERS). We conduct principal component analysis and logit estimations and estimate a recursive simultaneous bivariate probit model.

Findings: Employee empowerment, or job control, is a key predictor of job satisfaction, and job demands are negatively associated with various aspects of job satisfaction. The presence of equality plans strengthens the positive effects of job control and mitigates the detrimental effects of job demands. Consistent with the demand-control model, employees are more likely to be satisfied in low strain jobs (jobs with low demands and high control) than in high strain jobs (jobs with high demands and low control). Employees in passive jobs (jobs with low demand and low control) on the other hand are less likely to be satisfied with achievement and influence than employees in low strain job.

Originality: Much of the empirical literature has focused on collective empowerment practices and none has tested the demand-control model. This paper adds to the literature on employee empowerment practices with a focus on individualized job control and the way its effects interact with equality plans. In the process, we provide novel and rigorous empirical evidence on an extended version of the demand-control model.

Introduction

The dynamic and competitive nature of business environments has increasingly focused attention on the role of employees within workplaces and ways to strengthen employee commitment to workplace and tasks. This shift has led in particular to the surge of 'participative infrastructure', which is conceptualised as employee empowerment practices (Tretiakov et al, 2023; Jain et al, 2022; Askenazy and Caroli, 2010; Askenazy, 2001; Kling, 1995; Bauer, 2004; Kato and Morishima, 2002 among others). Empowerment practices are policies, mechanisms and processes within the workplace that enable lower-level individual employees to participate in decision making and share rewards and authority (Kim and Fernandez, 2016; Wood and de Menezes, 2011; Appelbaum et al., 2000; Zatzick and Iverson, 2011; Mohr and Zoghi, 2008; Hammer and Stern, 1980; Seibert et al., 2004)). Existing studies have suggested that empowerment practices/ employee-level participation affect job satisfaction through job control factors inherent in these practices. However, the actual empowerment and control associated with a given practice at the employee level may be limited for part of the workforce by a hostile, discriminatory environment. In this paper, we look at the effects of individual employee empowerment on several aspects of job satisfaction, and the extent to which those relationships are affected by the presence of equality plans in the workplace.

While empowerment practices may improve job satisfaction by increasing employees' sense of control, the direction of their effect may be due to the level of job demands associated with the presence of the practices (Wood, 2008; De Witte et al., 2007; Noblet et al., 2006; Noblet and Rodwell, 2009; Mikkelsen et al., 1999; Morrison et al., 2003; Akerboom and Maes, 2006). The job demand-control model (Karasek ,1979) provides a powerful framework to analyse employee empowerment and the impact of such practices on workers' outcomes such as job satisfaction (Noblet et al., 2006; Noblet and Rodwell, 2009; Mikkelsen et al., 1999). The model

suggests that an employee's wellbeing in the workplace depends on the balance between the demands associated with the job and the employee's degree of control in the job. One important aspect of employee wellbeing is the positive feeling induced by being on the job--job satisfaction.

In this study, we incorporate employees' individual empowerment, or employee-level participation, in a demand-control framework. We re-evaluate employees' individual empowerment according to the opportunities employees are offered to influence various aspects of the job—job control—and provide a new empirical test of the demand-control model, testing for both the separate effect of job demands and job control and the joint effects of these job characteristics. As discrimination may intensify the job demands placed on employees from discriminated groups and/or reduce the control they effectively have over their work, effective workplace equality policies/plans may affect these relationships. We test for the joint effects of the presence of an equality plan in the workplace, job control, and job demands.

While the main hypotheses of the demand-control model about the separate effects of job demands and job control on job satisfaction have been confirmed empirically, tests of their joint effects have produced mixed results. This inconclusiveness may be due to variable misspecification or to the construction of the measures used. We use Principal Components Analysis (PCA) on the sets of variables indicating job demands and those measuring job control in order to identify aspects of these variables that are independent of each other for use in the estimation. This approach avoids potentially confounding results with unacknowledged statistical relationships among the variables representing job demands, or job control.

We find that job control is a key predictor of job satisfaction, and that the imbalance between job demands and control specifically affects job satisfaction, though not always in the expected way. The presence of a formal equality plan in the workplace reinforces the positive effects of job control on several forms of job satisfaction. Conversely, the negative consequence of higher job demands for several aspects job satisfaction are mitigated by the presence of an equality plan.

Theory

The demand-control model

The demand-control model, developed by Karasek (1979), emphasises the degree of decision authority and skills discretion (jointly referred to as job control) as well as job demands placed on employees. The model has two propositions: (1) it suggests that the presence of high job demands, and low job control causes psychological stress – strain hypothesis (Panatik et al., 2011; McClenahan et al., 2007); and (2) it suggests that the presence of high levels of job control and high levels of job demands is associated with learning, growth and employees' motivation (learning hypothesis).

This model is one of the major theoretical models used in studies on mental health and psychosocial work conditions. The model proposes psychological strains and subsequent physiological illness can be consequences of the joint effects of job demands and job control, depending on the availability of these job characteristics to the employee. Stress will not be tested in this study, but we will consider conditions that may create stress as well as dissatisfaction with the job.

In the model, job demands refer to the quantity and pace of work associated with the job. In other words, job demands include both psychological and physical demands. The physical demands may take the form of the demand on employees to acquire new workplace skills in the context of rapid technological changes, for example. Psychological demands could take the form of time stressors such as tight deadlines. Some studies that have considered physical and psychological demands at work as 'workplace stressors' (that is, stress-causing factors) included factors that are perceived by the employee to be problematic, such as: role ambiguity, role conflict, role overload, tight schedules, responsibility for others, and concern for quality (Beehr et al., 1990; Winnbst et al., 1982; Marcelissen et al., 1988).

Karasek's (1979) definition of job control comprises two elements: decision-making latitude and skill discretion. That is, the extent to which employees decide for themselves what tasks to do, how and when to do them. Control is the individual's ability to meet the job demands and consists of how employees make decisions about work and working conditions and their ability to utilise their skills.In this study, we focus on 'the decision-making latitude of employees'. While most studies have confounded the concept of job control by broadly defining or measuring it as

the decision latitude that employees have in their job, studies such as the one conducted by Weststar (2009) distinguished between two aspects of job control: social and technical control. Social control refers to control over individuals and management activities and includes ownership and decision authority. Kato and Morishima (2002) and Ben-Ner and Jones (1995) referred to this type of control as participation in decision-making at the management level, while Sainfort (1991) in his study identified such type of control as conceptual control.

Technical control on the other hand refers to the control over tasks performed and autonomy in the work domain. Kato and Morishima (2002) referred to this type of control as employees' participation at employee level, while Sainfort (1991) referred to this type of control as instrumental control. Kato and Morishima (2002) and Weststar (2009) suggested that the distinction between the two forms of job control is essential as an employee may have control over his/her own technical task but not have any form of authority in management decisions and vice versa.

The aspect of job control we focus on is technical control, or employees' participation at the employee level. However, we will control for participation at management level using joint consultative committees and consultative schemes to ascertain the effects of these practices in workplaces.

Karasek (1979) and De Witte et al. (2007) suggested job demands may not necessarily have negative effects if adequate job control opportunities are made available to employees. This means that the effect of job demands on employees' wellbeing varies with the amount of control an employee has over tasks (McClenahan et al., 2007). As such, the demand-control model's emphasis is on the combination of job characteristics and the interaction effects are as important as the individual effects. In understanding how workplace stress is induced and how it can be avoided, the demand-control model outlines four types of jobs, depending on the combination of high or low levels control with high or low demands. These jobs are outlined in Figure 1.

Figure 1: Types of Jobs Based on the Demand-Control Model

Source: Figure adapted from Karasek and Theorell (1990)

From the outline of the job types, Karasek and Theorell (1990) summarised the two major hypotheses (strain and active learning hypotheses) of the model as:

i.   Employees are less likely to be satisfied with the job when they have high levels of job demands and low levels of job control (strain hypothesis).

ii.   Employees are more likely to be satisfied with the job when they have high levels of job demands and high levels of job control (active learning hypothesis).

Research Hypotheses

The demand-control model has been mainly tested on the mental health of employees with few studies concentrating on job satisfaction (e.g. Wood, 2008; De Witte et al., 2007; McClenahan et al., 2007; Noblet et al., 2006; Noblet and Rodwell, 2009; Wall et al., 1996). The main hypothesised effects of job demands and job control on job satisfaction have been confirmed but results on joint effects have been mixed, inconclusive and sometimes confusing. This may be a result of variable misspecification or the construction of measures. For example, Beehr et al.

(2001) used the original constructs as stated in Karasek's model and examined a manufacturing firm in the US. The non-significant result obtained by Beehr et al. (2001) may have been due to the construction of the job demands variable. A composite measure was used, and its components (such as work intensity) may have impacted on the result in different ways. Similarly, job demands may be quantitative (work overload, work intensity) or emotional, particularly where there is a high degree of contact with individuals on a day-to day basis and it is associated with emotional exertion. Inn Söderfeldt et al.'s (2000) study, these two forms of job demands are not distinguished from each other, which may lead to non-significant results.

Given that Karasek model highlights the importance of job characterization, controlling for the appropriate workplace practices that will promote employees' job satisfaction is important. Based on the propositions of the demand-control model that high levels of job demands are negatively associated with employees' wellbeing, the first hypothesis is summarized as follows.

Hypothesis 1: employees are less likely to be satisfied with different facets of the job in the presence of high levels of job demands.

Conversely, job control according to the model is expected to increase job satisfaction independently. Job control has been suggested and emphasised in the literature (e.g. Wood, 2008; De Witte et al., 2007; Wood and de Menezes, 2011) as an important predictor of job satisfaction. Karasek (1979) suggested that employees' empowerment is expected to positively influence job satisfaction. Thus, the next hypothesis is summarized as follows.

Hypothesis 2: Employees are more likely to be satisfied with various aspects of the job when they have control over different aspects of their work.

In addition to the separate effects of job demands and control, we examine the effect of their joint presence (interaction effect). Based on Karasek's model, we expect that employees will be dissatisfied with different aspects of the job when they are faced with high levels of job demands and less opportunities to exercise control over their work. This implies that job control is a psychosocial resource that has a positive impact on job satisfaction. Thus, we test the strain hypothesis of the demand-control model.

Hypothesis 3: The joint presence of a high level of job demands and less control opportunities is negatively related to various forms of job satisfaction when compared to the joint presence of a low level of job demands and a high level of job control.

Based on Karasek's model, we argue that a high level of job demands does not necessarily have negative effects if combined with a high level of job control. That is, job control has a moderating effect on the level of job demands faced by employees as the presence of control opportunities weakens the negative consequences of job demands on job satisfaction. This is because employees may be able to solve problems in demanding situations as they have the opportunity to exercise control over such situations. Based on all these arguments, our next hypothesis is summarised as follows:

Hypothesis 4: A high level of job control moderates the negative consequences of a high level of job demands, so that employees in jobs characterised by these work conditions are more likely to be satisfied with different aspects of the job.

Johnson and Hall (1988) argue that job control is not the only resource available for coping with job demands and they suggest that social support from colleagues and managers might also be a moderator of the job demands and strain relationship. However, in this study we propose that the presence of equality plans in the workplace may be a more effective moderating resource of the job demands and job satisfaction relationship as well as strengthen job control. That is, the presence of equality plans may be more important than support from managers because social support may only be effective and made available to all groups of employees when the work environment is less discriminatory.

The presence of equality plans may ensure that all groups of employees are delegated authority over their tasks and jobs. That is, such a plan expands the coverage of control opportunities, thereby strengthening the presence of job control and making it more effective. For example, Pérotin and Robinson (2000) suggested that participation in decision-making is strengthened if discriminated groups get the opportunities to participate in control and have their contributions considered. On the other hand, equality plans may be strengthened by job control. Discrimination and harassment seem to be more evident in authoritarian workplaces where there are large power imbalances. Delegating control to employees may thus reinforce

policies against unfair treatment and discrimination. Therefore, job control and equality plans may be complementary in that the effect of job control is strengthened by the presence equality plans.

Further, an equality plan may serve as a buffering mechanism for the negative consequences of job demands through the means of ensuring that all groups of employees are allocated appropriate workload. That is, it could serve as a medium of ensuring that discriminated groups are allocated the same workload just as non-discriminated groups so as to be able to fulfil commitments outside of work. For the same level of job demands, employees from discriminated group may be more likely to believe the demands have been allocated fairly in the presence of an effective equality policy. Also, the presence of equality plans may moderate the impact of job demands by creating an active coping atmosphere for employees. Such plans may also provide a non-discriminatory atmosphere for an employee's voice against inappropriate job demands. However, if equality planss are adopted to tick boxes rather than promote equality, then they may not be effective. Also, equality plans may only be effective at certain levels of job demands. Based on these arguments, our next set of hypotheses are summarized as follows:

Hypothesis 5: job control and equality plans are complementary, so that the joint effect on different forms of job satisfaction is greater than the sum of individual effects when implemented separately in the workplace.

Hypothesis 6: equality plans moderate the negative effect of job demands on job satisfaction, which may be apparent at certain levels of job demands.

Empirical Approach

An employee's satisfaction with a particular aspect of the job is specified as:

$$S_{ij=} \alpha + C_i'\beta + D_i'\delta + E_i'\zeta + HDLC_i'\gamma + HDHC_i'\vartheta + EOC_i'\varphi + EOD_i'\eta + X_i^{S'}\mu + \varepsilon_{ij} \qquad (1)$$

$$i = 1, \dots, n \ \text{ and } j = 1, \dots, q$$

Where C_i, D_i and E_i, are the measures of job control, job demands and equality plan respectively. $HDLC_i$ and $HDHC_i$ are measures of the joint presence of job demand and control while EOC_i and EOD_i portray the joint presences of EO plans and job

control as well as EO plans and job demand. $\boldsymbol{X}_i^S$ are other control variables affecting job satisfaction outcomes and ε_{ij} is the error term. Accordingly, i and j corresponds to an employee and a workplace.

In order to estimate equation (1) we need to construct measures of job demands and job control. The data we use offer a number of indicators of job demands and measures of job control.

The main analysis is conducted individually for all the forms of job satisfaction (we have nine job satisfaction equations). For the direct effects of job control and job demands, we consider all the measures of job demands and job control as some may be more predictive of one form of job satisfaction than others. Also, we examine the effects of being in a particular type of job as identified in the demand-control model as well as the joint effects of having a formal equal opportunity policy in the workplace, job demands and job control (hypotheses 3-6). We use Principal Component Analysis (PCA) to obtain composite indices that are used to construct variables measuring demand-control model job types.

Finally, because union membership may be endogenous to job satisfaction, we also conduct a separate analysis to test for this issue, estimating a recursive simultaneous bivariate probit model.

Data

The hypotheses outlined in the preceding section are tested using the most recent edition of the Workplace Employment Relations Survey (WERS) on British workplaces, from 2011. The 2011WERS provides detailed information on employees' relationship with management, job satisfaction, motivation issues, consultation procedures and mechanisms, incentive schemes, fair treatment at work, workplace characteristics and employee characteristics. The dataset we use is an combination of the workplace and employee surveys with a total of 21,981 observations. However, with the deletion of missing cases in the dependent variables, we have a sample size of 20,596. Also, as a result of the principal components analysis (PCA) carried out in this study, we use the imputation method to account for missing values in the continuous variables (explanatory variables) derived from PCA. This method affects our feasible sample size, and this is highlighted in the following sections.

Weighting

Due to the survey used for this study, it is important to apply weights because the nature of the achieved workplaces and employees' samples are brought in line with the profiles of the respective populations. Thus, known biases as a result of sample selection and response processes are removed (WERS, 2011). While this is more important for descriptive statistics than for regression analysis, we follow established practice and use the weighting scheme provided with the WERS data for the cross-section sample.

Measures of Dependent and Explanatory Variables

We examine measures that directly test the individual effects of job control and job demands as well as the types of jobs proposed by the demand-control model. Moreover, we examine the joint effects of some workplace practices (this relates to hypotheses 5 and 6).

Forms of Job Satisfaction

Satisfaction with different facets of the job is measured based on respondents' satisfaction with various aspects of the job including: sense of achievement, initiative, influence, training, opportunity to develop skills, pay, job security, the work itself and overall decision-making. We are examining satisfaction with various facets of the job instead of overall job satisfaction because job control and job demands may have varying effects on these types of job satisfaction or may be non-significant. Altogether, we have nine job satisfaction variables.

Measures of Job Control

The construct of the 'job control' concept of the demand-control model we focus on is 'the decision making latitude of employees'. The opportunities for decision making participation individual employees encounter in their job may affect their satisfaction with their jobs more directly than collective forms of participation in management at the workplace or enterprise level, for which we otherwise control. Job control is measured using employees' influence over various aspects of work (employee-level variable). The survey questions relate to the magnitude of influence

employees have over: the tasks they do in their jobs, the pace of work, the way they do their jobs, the order tasks are carried out and the time they finish or start their working day. Responses to these questions serve as measures of employees' actual level of control and the 5-item measure has a Cronbach's alpha of 0.82.

Measures of Job demands

The measurement of job demands (psychological stressors) have been similar across studies. The measures used in the literature range from work intensity, conflicting demands, work overload to timing issues. Strictly speaking, these are outcomes of high job demands in the workplace rather than demands. However, they provide good indicators of job demands in the workplace, so we follow the literature and use similar employee-level measures as proxies for job demands in the workplace.. The measures we use include the rate of employee's agreement or disagreement (on a 1-5 scale) with the following statements: 'My job requires I work very hard' (work intensity); 'I never seem to have enough time to get my work done' (work overload); and 'I often find it difficult to fulfil commitments outside of work because of the amount of time I spend on my job' (timing demand). This set of measures has a Cronbach's alpha of 0.59. Although this scale reliability is lower than that of our measures of job control, it is consistent with previous studies that used the previous wave of our dataset (Wood, 2008; Wood and de Menezes, 2011). We expect a negative relation with various forms of job satisfaction. However, this may not be the case depending on the influence of job control in the model. Forthis reason, we also test for the joint effects of job demands and job control.

Equality Plans

To measure whether there is an equality plan at the workplace, we use the question from the management questionnaire asking if there is a "formal written policy on diversity / equal opportunities" in the workplace. These policies may include, for example, provisions for monitoring and reviewing recruitment and promotions procedures, pay rates, etc. Unfortunately, WERS 2011 does not include questions appearing in the 1998 edition of the survey that might have allowed checking how effective the policies in place are (see Hoque and Noon, 2004)[1].

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[1] WERS 1998 includes questions in the employee questionnaire about, e.g.,the frequency of conversation with the employee's boss about pay and promotion, which are used by Hoque and Noon (2004) to estimate the extent of effective discrimination in British workplaces.

Control Variables

We control for engagement practices such as other participatory practices (individual and collective forms such as suggestion schemes, performance-related pay, joint consultative committees), different types of management (informative, supportive, consultative) , types of payment schemes (individual and collective forms), employees' characteristics (intrinsic motivation, socio-demographic factors including gender, age, marital status, qualifications, job tenure, contract status, religion, sexual orientation and whether the employee is a member of a minority ethnic group, union membership, supervisory responsibilities, job tenure) and workplace characteristics (workplace size, industries, private and public sectors, grievance procedure and occupational categories, and whether employees have a right to appeal a decision made under the grievance procedure available in the workplace). The likelihood ratio test shows that adding these variables significantly improves the fit of the model. The inclusion of union membership raises endogeneity issues, which have been highlighted in the literature. Endogeneity of this variable is tested for later in the paper. Lastly, we also control for missing cases in the explanatory variables by including binary variables for missing values (dummy variable adjustment strategy). This strategy is such that the missing value in the original variable is replaced with a value of zero and a dummy variable that takes the value of 1 if data in the original variable is missing and zero otherwise is included in the regression.

Principal Component Analysis (PCA)

To test hypotheses 3-6, we conduct PCA based on the measures of job demands and job control to obtain composite indices. The purpose of this technique is to obtain a small number of linear combinations of the original variables that account for most of the total variance (Anderson, 1963). It makes it possible to take into account the statistical relationships that are likely to be exist among the different variables for job demands, or for job control, which might result in less precise or inconclusive estimation results if the original variables were used. This technique also allows us to separate common aspects of the variables in each group (demands and control) without effectively giving more weight to aspects common to several variables, as

would happen if the values of all the job demands, or job control variables were simply added up or averaged in an index.

Each principal component is estimated as a weighted sum of the q variables and each of the q variables can be expressed as a linear combination of the set of principal components. The combination of these principal components contains the same information as the original variables. However, this information is partitioned across the components in a way that the components are orthogonal and the leading components contain more information than the later ones. In summary, this technique reallocates the variance from q correlated variables into q uncorrelated components. Apart from being a statistical technique for data reduction, the eigenvectors from a PCA reveal the underlying structure of the data (Milan and Whittaker, 1995).

A point to also note is PCA can be interpreted as a fixed effect factor analysis that can be represented as:

$$y_{ij} = a_i' b_j + \varepsilon_{ij} \tag{2}$$

where $i = 1, \dots, n$ and $j = 1, \dots, q$; y_{ij} are the components of matrix Y (Y is matrix of rank f and f is substantially less than n and q), a_i are scores, b_j are loadings, are q-vectors of parameters and ε_{ij} are independent homoscedastic residuals. Accordingly, i and j correspond to an employee and a workplace.

Deciding which components to retain, the rule of thumb is to retain components that have eigenvalues of one or greater than one (the mean eigenvalue is one because we are analysing a correlation matrix). Another way is to conduct a Scree plot that provides a visual aid of the point where the inclusion of additional components will not increase the amount of variance.

PCA of Job demands and Job Control

The PCA of the measures of job control and job demands are presented in tables I and II. Table I shows the results of the PCA for job control in two panels; the first highlights the eigenvalues of the correlation matrix (from the largest to the smallest) while the second panel lists the corresponding eigenvectors. These eigenvectors are the principal components and have unit length; while the eigenvalues are the variances of the principal components and add up to the total variance of the

variables. Since we are analysing a correlation matrix, the variables are standardized to have unit variance and as such, the total variance is 5.

Table I: PCA of Job Control

Principal
Component/correlation

Component	Eigenvalue	Difference	Proportion	Cummulative
Comp1	3.09206	2.34769	0.6184	0.6184
Comp2	0.744375	0.287539	0.1489	0.7673
Comp3	0.456835	0.0496945	0.0914	0.8587
Comp4	0.407141	0.107556	0.0814	0.9401
Comp5	0.299585	0	0.0599	1.0000

Principal Component
(Eigenvectors)

Variable (Influence over:)	Comp1	Comp2	Comp3	Comp4	Comp5	Unexplained
Tasks done	0.4657	-0.1647	0.2681	0.8148	0.1419	0
Pace of work	0.4592	-0.1659	0.6548	-0.5446	0.1903	0
How work is done	0.4898	-0.2103	-0.2476	-0.1012	-0.8027	0
The order of tasks	0.4721	-0.1181	-0.6614	-0.1709	0.5446	0
Time of start or finish	0.3309	0.9419	0.0240	0.0025	-0.0526	0
Number of Observations	20193	Trace =	5			
Number of components	5	Rho =	1.0000			

Source: author's own work based on WERS2011

Table I shows that the first component has a variance of 3.09, capturing 62% (3.09/5) of the total variance. Together, the 5 components explain all the variance of the variables and as such, there is no unexplained variance. A careful consideration of the eigenvectors panel shows that the first principal component has positive loadings of similar sizes on all the variables, and this can be interpreted as employees' overall influence over their jobs. The second principal component on the other hand has positive loadings on influence over start or finish time and negative loadings on other measures of job control. Thus, the second principal component differentiates employees' control over their work in general from control over the time they start or finish work (may enhance flexible working or working too much).

The third principal component similarly differentiates control over the sequence of work (this includes how work is done and the order of tasks) from all other aspects of job control. The fourth principal component differentiates control over the sequence of work and pace of work from control over the tasks employees actually do in their jobs and influence over the start or finish time of working day. Lastly, the fifth principal component has positive loadings on control over the tasks they do in their jobs, the pace of work and the order tasks are carried out and negative loadings on control over how they do their work and time they start or finish their work. This last principal component differentiates control over tasks of the work from control over the work itself. Since the rule of thumb is to retain the component with eigenvalue that is greater than or equal to one, we retain only one component that will serve as the measure for job control and it explains 62% of the total variance.

Table II: PCA for Job demands

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.67272	0.893173	0.5576	0.5576
Comp2	0.779551	0.231825	0.2599	0.8174
Comp3	0.547725	0	0.1826	1.0000

Principal Component (Eigenvectors)				
Variable	Comp1	Comp2	Comp3	Unexplained
Work overload	0.5633	-0.6413	0.5210	0
Work Intensity	0.6333	-0.0700	-0.7708	0
Timing Demand	0.5308	0.7641	0.3667	0
Number of observations	20190	Trace =	3	
Number of components	3	Rho =	1.0000	

Table II shows that the first principal component has positive loadings of similar size on all the variables, and this can be interpreted as the overall level of job demands faced by employees. The second component has a positive loading on timing demands and negative loadings on work intensity and work overload. This second principal component differentiates not being able to fulfil commitments outside of work as a result of the time spent on the job from the requirements of the

job (other forms of job demands). The third principal component has negative loadings on work intensity and negative loadings on work overload and timing issues. Thus, the third principal component differentiates the intensity of work (working hard) from being overloaded with tasks as well as not being able to fulfil outside commitments. Here again, because it is only one principal component that has eigenvalue greater than or equal to one, we use one single component (first principal component) as the measure of job demands. This explains 55% of the total variance.

Imputation Strategy for Missing Cases

After undertaking the PCA, missing cases are detected in the components. In dealing with the missing values in the demand and control components, we utilised the imputation method for dealing with missing values. Imputation is a method where a complete data set is obtained by filling in missing data with plausible values (Durrant, 2005). This technique uses auxiliary variables that are statistically related to the variable with missing values. As the principal components are continuous variables, we use the linear regression method to fill in the missing values

By considering a variable $X = (x_1, \dots, x_n)$ in a linear regression model, we have:

$$x_i | \mathbf{z}_i \sim N(\mathbf{z}_i' \boldsymbol{\beta}, \sigma^2) \tag{3}$$

Where $\mathbf{z}_i = (\mathbf{z}_{i1}, \mathbf{z}_{i2}, \dots, \mathbf{z}_{iq})'$ captures the predictors of X for observation i, β is the $q \times 1$ vector of unknown regression coefficients, and σ^2 is the unknown scalar variance. In this case X contains missing values that are to be filled in. We consider the partition of $X = (X_o', X_m')$ into $n_0 \times 1$ and $n_1 \times 1$ vectors that contain complete and incomplete observations. A similar partitioning can be done for $\mathbf{Z} = (\mathbf{Z}_o, \mathbf{Z}_m)$ into $n_0 \times q$ and $n_1 \times q$ matrices.

Thus, the linear regression imputation method follows the following steps to fill in X_m:

First Step: Fit a regression model (7.3) to the observed data $(X_o, \mathbf{Z}_m)$ to obtain the estimates of $\widehat{\beta}$ and $\hat{\sigma}^2$

Second Step: Simulate new parameters β_* and σ_*^2 from their joint subsequent distribution of the missing data $(\beta, \sigma^2) \propto {1}/{\sigma^2}$. This simulation is done in two ways:

$$\sigma_*{}^2 \sim \hat{\sigma}^2 \left.(n_0 - q)\middle/ X^2_{n_0-q}\right.$$

$$\beta_* | \sigma_*{}^2 \sim N\left[\hat{\beta}, \sigma_*{}^2 (\mathbf{Z'}_o \, \mathbf{Z}_o)^{-1}\right]$$

Third step: One set of imputed values, X_m^1, is obtained by simulating from

$N[\mathbf{Z}_m \beta_*, \sigma_*{}^2 I_{n1 \times n1}]$

Fourth step: Here, the second and third steps are repeated to obtain M sets of

imputed values $X_m^1, X_m^2, \ldots, X_m^M$.

Imputations are successfully done for job demands and job control indexes. For the job demands index, 406 observations that had missing cases were imputed. However, in the case of job control index, 47 observations (out of 403 observations) with missing cases could not be imputed. An explanation for the non-imputation in the case of these 47 observations may be that respondents did not provide answers to the questions used in generating the job control component (that is, respondents who did not co-operate). These 47 observations with missing cases are dropped and our feasible sample consists of 20, 549 observations.

Measures of Job Types based on PCA

Using composite measures of job demands and job control obtained from the PCA analysis, we construct four binary variables that examine four distinct types of jobs. We use the median value of the components as the discriminative cut-off points for these characteristics. The binary variables are constructed as follows.

High demand and high control dummy: this variable takes the value of 1 when job demands is greater than -0.07 and job control is greater than 0.26; zero otherwise.

High Demand and low control dummy: takes the value of 1 when job demand is greater than -0.07 and job control is less than or equal to 0.26; and takes the value of 0 otherwise.

Low demand and High control dummy: takes the value of 1 when job demand is less than or equal to -0.07 and job control is greater than 0.26; and takes the value of 0 otherwise.

Low demand and low control dummy: takes the value of 1 when job demand is less than or equal to -0.07 and job control is less than or equal to 0.26; and zero otherwise.

We use low demand-high control dummy as the reference category because it has the largest mean when compared with the other binary variables. Also, we multiply job control and job demand components with equality plan to test for joint effects.

Empirical Analysis

Descriptive Analysis

Table III shows that the proportions of employees in the examined job types are quite similar. A higher percentage (27%) of employees report being in low demand and high control jobs (less stressful jobs) while 24% are in active and stressful jobs. 26% of British employees reported being in passive jobs, which are characterised by repetitive tasks. That is, 26% of British employees report that they do not have the opportunity to make decisions regarding their work or work environment and they are faced with low levels of job demands. As such, there will be less opportunity to solve problems or learn new skills.

Table III: Job Types Based on the Demand-Control Model

	Mean	Standard Deviation	Minimum	Maximum
Types of Jobs				
High Demand& High control	0.24	0.43	0	1
High Demand& Low control	0.24	0.43	0	1
Low Demand& High control	0.27	0.44	0	1
Low Demand& Low control	0.26	0.44	0	1

Source: author's own work based on WERS2011

Table IV presents the distribution of employee and job characteristics by gender and shows that more than 90% of female and male employees in our dataset have permanent contracts while less than 5% have temporary or fixed contracts. For occupational categories, 47% of male employees in our dataset are in lower occupational categories while 29% are in managerial categories. In contrast, more female employees are in managerial occupations (35%) than in lower occupational categories. A possible explanation for the higher proportion of male employees in lower categories may be due to the influence of some industries dominated by men (data is weighted). For example, male employees dominate the construction industry and most of the employees who do manual jobs in this industry are men. This sort of manual job has the form of a labour contract – employees get paid for the amount of

work done – and it is the description of occupations at lower category. About 68% of female employees and 72% of male employees are married or living with a partner while 2% of female employees and 1% of male employees are widowed. The proportions of female and male employees who have been on the job for 10 years or less are similar. Lastly, 36% of female employees in our dataset are union members while 38% of male employees are union members.

Table IV: Employee and Workplace Characteristics by Gender

	Workplaces with 5 or more employees	
	Females	Males
	%	%
Contract		
Permanent	0.923	0.934
Temporary	0.035	0.031
fixed period	0.041	0.033
Occupation		
Higher & Lower managerial and professional occupations	0.349	0.294
Intermediate occupations	0.323 .	0.234
Lower occupational category	0.324	0.469
Union Member		
No, have never been	0.477	0.428
No, but have been	0.156	0.185
Yes	0.362	0.384
Tenure		
less than 1 year	0.115	0.109
less than 2 year	0.100	0.092
less than 5 year	0.249	0.231
less than 10 years	0.242	0.243
10 years or more	0.292	0.321
Marital Status		
Single	0.199	0.218 .
married or living with partner	0.675	0.719
divorced/ separated	0.095	0.053
Widowed	0.020	0.007
Supervisor	0.304	0.365

Note: Percentages are based on the total proportion of females (11,553) and males (8,996) in the dataset.

Source: author's own work based on WERS2011 (weighted analysis)

Estimation of the job satisfaction equations

Our econometric strategy relies on the use of logit estimations. As a result of employees being nested in workplaces, observations within workplaces may not

necessarily be independent and this may result in biased standard error estimates. Thus, we report clustered standard errors along with the estimated coefficients. In addition, we report some marginal effects for key variables, and these are available in the appendix.

Endogeneity Analysis

As we control for union membership in this study, this raises concerns of endogeneity. As has often been discussed, the negative relationship between union membership and job satisfaction found by some studies (Bryson et al., 2004; Borjas, 1979) may be due to unobserved factors co-determining union membership and job satisfaction. We test for the endogeneity of union membership. To test and overcome the potential endogeneity problems associated with union membership – a binary measure – we estimate a recursive simultaneous bivariate probit model (Greene, 2012). That is, we estimated the effect of union membership on job satisfaction while simultaneously estimating union membership equation with the use of instrumental variables. This can be represented as:

$$U^* = X_1'\beta_1 + \varepsilon_1 \qquad U = 1 \ if \ U^* > 0, and \ 0 \ otherwise$$

$$y^* = X_2'\beta_2 + \gamma U + \varepsilon_2 \qquad y = 1 \ if \ y^* > 0, and \ 0 \ otherwise,$$

$$\binom{\varepsilon_1}{\varepsilon_2}\Big| X_1 \ X_2\Big) \sim N\left[\binom{0}{0}, \binom{1 \ \rho}{\rho \ 1}\right].$$

Where X_1 is the instrumental variable and it is correlated with union membership. X_2 represents explanatory variables of the job satisfaction equation. U union membership, is a binary variable and it is instrumented by dispute over pay and working conditions. The intuition behind the use of this instrument is that employees are likely to join unions possibly as a result of dispute over pay and working conditions. The test of the validity of this instrument is done using the tetrachoric correlation technique. The significant correlation result confirms the validity of the instrument. The next section presents the endogeneity test results.

The Effect of Union Membership (Results)

The estimation results show that union membership is negatively related to satisfaction with skills and involvement in decisions and positively related to satisfaction with pay and work itself. The negative association of union membership

may be the result of reverse causality (Bryson et al, 2004, but see also Wood and de Menezes, 2011).

Table V: Test of Exogeneity of union membership

	Satisfaction With:								
	Achievement	**Initiative**	**Influence**	**Training**	**Skills**	**Pay**	**Job security**	**Work itself**	**Involvement in decisions**
	Union	Union	Union	Union	Union	Union	Union	Union	Union
Instrumental variable									
Dispute over pay and Working conditions	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Constant	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Test of exogeneity (ρ)	**0.092**	**0.198*****	**-0.012**	**0.039**	**0.018**	**-0.118***	**0.057**	**0.063**	**-0.025**
	(0.070)	**(0.075)**	**(0.070)**	**(0.071)**	**(0.072)**	**(0.061)**	**(0.086)**	**(0.070)**	**(0.086)**

Notes: The full results are presented in the appendix. Standard errors are in parentheses. Coefficients are statistically significant at * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Source: author's own work based on WERS2011

In Table V, the likelihood ratio statistics for the tests of the hypothesis that ρ (correlation coefficient) equals zero shows that we cannot reject the hypothesis that ρ is equal to zero for seven dimensions of job satisfaction. That is, union membership is not endogenous to seven dimensions of job satisfaction. A possible explanation for this result is that British workplaces may be covered by union bargaining[2] and non-union members do not need to join unions because of dissatisfaction so as to benefit from union bargaining. In two cases, union membership is endogenous., The endogeneity test shows that satisfaction with initiative and pay influence union membership, though the relationship for satisfaction with initiative goes in the opposite direction.

However, a comparison of results obtained before and after dealing with endogeneity shows that there are no significant changes in the coefficients of job demands and control when the base and selection effects models are compared.[3] Since union membership is not endogenous for most of the forms of job satisfaction and there are no significant changes in the results, we can confidently use our findings.

Results

Overview

We start off by verifying that our characterization of job demands and control results in findings consistent with Karasek's basic model. Table VI shows the results from weighted logit estimations with only the four Karasek job types as explanatory variables. The default category, to which all other job types are being compared, is jobs with low demands and high control. As expected, we find employees in active jobs (jobs with high levels of job demand and job control), stressful jobs (high job demand and low job control jobs) and passive jobs (characterised by low demand and low control) are less likely to be satisfied with different aspects of the job when

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[2] Covered or uncovered workplaces were not tested in this study.
[3] This is not the case for the estimated coefficient of joint consultative committees, whose effect on satisfaction with influence and job security becomes significant when selection effect is accounted for.

compared to employees in low strain jobs, and the ranking of the types of jobs in their effects on the different forms of job satisfaction is plausible. With the addition of other explanatory and control variables to the model, Table VII shows that job demands, and job control have separate and significant effects on various forms of job satisfaction.

Work overload and not being able to fulfil outside commitments because of amount of time spent on the job (length of time issues) are shown to be significantly and negatively related to all forms of job satisfaction at 1% and 5% levels. Interestingly, we find that work intensity is positively related to four forms of job satisfaction and negatively associated with pay satisfaction and job security satisfaction. The results on the measures of job control are robust and positive across most forms of job satisfaction. These results on the independent effects of job control and job demands support the findings of previous studies and hypotheses of the demand-control model.

The addition of other explanatory and control variables shows active jobs (jobs with high levels of job demands and job control) are not significantly related to any form of job satisfaction when compared to low strain jobs (low job demands and high job control jobs). This non-significant result may be the result of the effects being captured by engagement practices that are included as control variables as they may affect job control and job demands. On the other hand, employees in the passive jobs (characterised by low demand and low control) reveal being less satisfied with achievement and influence than employees in low strain jobs. A possible explanation may be that in such passive jobs, there is an absence of control and problem-solving opportunities and this in turn results in the likelihood of less satisfaction with achievement and influence.

Employees in high strain jobs are less likely to be satisfied with achievement, influence, pay, work itself and involvement in decision-making and more likely to be satisfied with training than employees in low strain jobs. The positive association with training satisfaction may be a result of the availability of more training opportunities so as to deal with high level of job demands. However, as proposed in the demand-control model, high levels of job demand result in strain and this may be a possible explanation for the negative associations obtained. Table VII shows that higher levels of job control together with equality plan is positively related to

satisfaction with achievement, initiative, influence and work itself. This reveals the presence of an equality plan strengthens employees' control in the workplace possibly through making such control opportunities more effective for discriminated groups. Apart from strengthening the presence of job control, equality plans are shown to moderate job demands at high levels and as such weaken the resulting negative effects on satisfaction with skills and pay. However, in the case of satisfaction with achievement and work itself, equality plans only moderate job demands at medium and low levels. In sum, our analyses provide support and extension of findings on demand-control model. Also, we found that the presence of equality plans is as important as the availability of control opportunities.

Table VI: Empirical Analysis of Karasek's Job Types (excluding control variables)

	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
Types of Jobs (ref: Low Demand and High Control)									
High Demand and High Control	-0.059	-0.000	-0.227***	-0.424***	-0.307***	-0.349***	-0.381***	-0.273***	-0.521***
	(0.057)	(0.066)	(0.051)	(0.055)	(0.057)	(0.044)	(0.055)	(0.055)	(0.059)
High Demand and Low Control	-1.313***	-1.815***	-2.121***	-1.139***	-1.222***	-1.036***	-1.036***	-1.352***	-1.630***
	(0.049)	(0.054)	(0.047)	(0.051)	(0.052)	(0.042)	(0.051)	(0.049)	(0.053)
Low Demand and Low Control	-1.278***	-1.721***	-1.882***	-0.665***	-0.862***	-0.496***	-0.655***	-1.041***	-0.994***
	(0.049)	(0.054)	(0.046)	(0.053)	(0.052)	(0.042)	(0.052)	(0.050)	(0.055)
Constant	1.856***	2.217***	1.585***	1.963***	1.969***	1.098***	1.799***	1.865***	2.116***
	(0.042)	(0.048)	(0.039)	(0.044)	(0.045)	(0.034)	(0.045)	(0.043)	(0.048)
Pseudo R-Squared	0.062	0.110	0.142	0.027	0.035	0.024	0.024	0.047	0.056
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	20549	20549	20549	20549	20549	20549	20549	20549	20549

Source: author's own work based on WERS2011

Table VII: Weighted Logit Estimation of Demand-Control Model (coefficients)

	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
Main Predictors									
Job Control									
Over tasks	0.243***	0.391***	0.582***	0.043	0.142***	0.072**	0.096*	0.163***	0.113**
	(0.037)	(0.038)	(0.039)	(0.041)	(0.041)	(0.033)	(0.055)	(0.036)	(0.046)
Over pace	-0.021	-0.038	0.009	0.031	0.032	0.078***	0.109**	-0.020	0.024
	(0.035)	(0.036)	(0.036)	(0.037)	(0.037)	(0.030)	(0.052)	(0.034)	(0.043)
On How to do task	0.080*	0.298***	0.197***	0.080*	0.175***	0.015	0.110*	0.120***	0.023
	(0.044)	(0.046)	(0.047)	(0.048)	(0.048)	(0.039)	(0.067)	(0.043)	(0.056)
Over Order of task	-0.023	0.184***	0.112***	0.067	0.036	-0.001	0.055	-0.075*	0.099**
	(0.042)	(0.042)	(0.042)	(0.045)	(0.045)	(0.036)	(0.061)	(0.040)	(0.050)
Over Working Time	0.003	0.022	0.113***	0.085***	0.101***	0.101***	0.029	-0.050**	-0.042
	(0.023)	(0.025)	(0.025)	(0.026)	(0.025)	(0.020)	(0.035)	(0.023)	(0.028)
Job Demand									
Work overload	-0.094**	-0.020	-0.120***	-0.225***	-0.186***	-0.081**	-0.089	-0.106**	-0.041
	(0.044)	(0.045)	(0.041)	(0.045)	(0.045)	(0.036)	(0.069)	(0.043)	(0.057)
Work Intensity	0.501***	0.268***	0.115**	-0.055	-0.059	-0.239***	-0.274***	0.369***	0.013
	(0.054)	(0.056)	(0.051)	(0.056)	(0.057)	(0.049)	(0.091)	(0.053)	(0.071)
Timing Demand	-0.074**	-0.063	-0.139***	-0.106***	-0.174***	-0.097***	-0.122**	-0.112***	-0.049
	(0.038)	(0.039)	(0.034)	(0.037)	(0.038)	(0.031)	(0.059)	(0.036)	(0.048)
Types of Jobs (ref: LD_HC)									
HD_HC	-0.061	0.101	-0.030	0.054	0.014	-0.105	0.009	-0.091	-0.098
	(0.082)	(0.091)	(0.075)	(0.082)	(0.090)	(0.066)	(0.107)	(0.080)	(0.099)
HD_LC	-0.243***	-0.099	-0.203**	0.168*	0.138	-0.165**	0.179	-0.209**	-0.234**
	(0.091)	(0.101)	(0.089)	(0.098)	(0.105)	(0.080)	(0.127)	(0.094)	(0.112)
LD_LC	-0.268***	-0.109	-0.174**	0.084	0.086	0.053	0.015	-0.113	-0.088
	(0.073)	(0.078)	(0.073)	(0.081)	(0.085)	(0.064)	(0.102)	(0.074)	(0.092)
Demand x EO Policies	-0.117*	-0.104	0.019	0.081	0.195***	0.091*	0.085	-0.120*	-0.038
	(0.066)	(0.067)	(0.060)	(0.064)	(0.067)	(0.055)	(0.109)	(0.063)	(0.085)
Control x EO Policies	0.109**	0.099**	0.176***	-0.010	-0.029	-0.047	-0.080	0.111**	0.041
	(0.046)	(0.048)	(0.054)	(0.051)	(0.048)	(0.042)	(0.077)	(0.043)	(0.060)
Control Variables									
Consultation Schemes (ref: none)									
Suggestion	0.013	0.013	0.070	0.149***	0.068	0.013	0.092	-0.007	0.013

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	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
	(0.047)	(0.047)	(0.043)	(0.051)	(0.053)	(0.048)	(0.061)	(0.047)	(0.055)
Notice Boards	0.006	-0.037	-0.008	0.139**	-0.032	-0.166***	-0.106	-0.012	-0.104
	(0.056)	(0.063)	(0.052)	(0.062)	(0.061)	(0.057)	(0.074)	(0.058)	(0.070)
Cascade	0.014	0.057	0.022	-0.002	-0.158***	0.011	-0.023	0.054	-0.037
	(0.052)	(0.055)	(0.047)	(0.059)	(0.057)	(0.051)	(0.071)	(0.053)	(0.066)
Newsletters	-0.026	0.016	0.016	-0.047	-0.015	-0.035	0.085	-0.038	0.018
	(0.049)	(0.052)	(0.045)	(0.055)	(0.055)	(0.051)	(0.064)	(0.050)	(0.060)
Email	0.001	-0.017	-0.077	-0.079	-0.008	0.081	-0.105	-0.034	0.036
	(0.057)	(0.060)	(0.053)	(0.068)	(0.066)	(0.059)	(0.088)	(0.059)	(0.073)
Intranet	-0.059	-0.023	-0.015	0.120**	0.056	0.037	-0.057	-0.049	-0.056
	(0.052)	(0.054)	(0.049)	(0.059)	(0.058)	(0.054)	(0.077)	(0.056)	(0.065)
Other	-0.010	-0.005	0.002	-0.005	-0.028	-0.019	-0.022	0.059	-0.037
	(0.045)	(0.048)	(0.043)	(0.051)	(0.052)	(0.045)	(0.061)	(0.047)	(0.055)
Joint Consultative Committees	0.026	-0.013	-0.064	-0.046	-0.031	0.011	-0.095	-0.011	-0.039
	(0.045)	(0.048)	(0.043)	(0.050)	(0.051)	(0.048)	(0.061)	(0.046)	(0.054)
Secure job	0.142***	0.130***	0.199***	0.198***	0.230***	0.136***	2.355***	0.191***	0.109***
	(0.020)	(0.021)	(0.020)	(0.022)	(0.023)	(0.018)	(0.048)	(0.020)	(0.024)
Individual Incentive pay									
Merit Pay	-0.015	0.013	-0.054	-0.100*	0.003	0.030	-0.070	-0.037	0.131**
	(0.046)	(0.050)	(0.045)	(0.054)	(0.054)	(0.051)	(0.065)	(0.048)	(0.058)
Types of Pay (ref: basic pay)									
Individual pay	0.153**	-0.067	-0.056	0.067	0.028	0.088	0.153	0.006	-0.149*
	(0.072)	(0.077)	(0.070)	(0.076)	(0.078)	(0.066)	(0.100)	(0.071)	(0.081)
Group pay	0.011	0.149	0.127	-0.186*	0.054	0.031	0.087	0.028	-0.098
	(0.091)	(0.103)	(0.094)	(0.104)	(0.116)	(0.086)	(0.135)	(0.090)	(0.122)
Workplace pay	0.182**	0.000	-0.056	-0.119	0.026	0.285***	-0.018	0.080	0.108
	(0.091)	(0.092)	(0.089)	(0.091)	(0.102)	(0.083)	(0.123)	(0.086)	(0.100)
Extra pay	0.132***	0.041	0.024	0.071	0.049	-0.025	0.102	0.199***	-0.035
	(0.045)	(0.048)	(0.044)	(0.051)	(0.053)	(0.040)	(0.065)	(0.046)	(0.056)
Pension (deferred payment schemes like ESOP)	-0.024	0.052	0.005	-0.055	-0.117**	0.211***	-0.039	0.023	-0.029
	(0.046)	(0.047)	(0.043)	(0.049)	(0.050)	(0.039)	(0.059)	(0.047)	(0.056)
Measures of fairness									
Appeal right	0.102	-0.087	0.067	-0.110	0.163	0.010	-0.378	0.102	0.158

	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
	(0.168)	(0.183)	(0.223)	(0.197)	(0.242)	(0.125)	(0.284)	(0.171)	(0.289)
EO policies	-0.181*	0.033	-0.124	0.151	0.055	-0.100	-0.023	-0.023	-0.034
	(0.096)	(0.108)	(0.091)	(0.101)	(0.103)	(0.095)	(0.145)	(0.101)	(0.118)
Informative Management									
Operations	-0.025	-0.041	-0.097***	0.035	-0.073**	-0.053*	0.065	-0.039	0.036
	(0.034)	(0.035)	(0.033)	(0.035)	(0.036)	(0.029)	(0.045)	(0.033)	(0.038)
Staffing	-0.009	-0.036	0.000	-0.033	-0.021	-0.032	0.077*	-0.036	0.038
	(0.032)	(0.033)	(0.030)	(0.034)	(0.034)	(0.028)	(0.044)	(0.032)	(0.037)
Sequence	0.182***	0.191***	0.221***	0.365***	0.316***	0.013	0.038	0.244***	0.227***
	(0.033)	(0.034)	(0.032)	(0.035)	(0.033)	(0.027)	(0.045)	(0.033)	(0.038)
Finance	-0.050*	0.053*	0.062**	0.066**	0.045	0.145***	-0.017	-0.044*	0.148***
	(0.027)	(0.028)	(0.025)	(0.029)	(0.029)	(0.022)	(0.038)	(0.026)	(0.031)
Consultative Management									
Views of employees	0.070**	0.004	0.028	0.089**	0.121***	0.041	-0.044	-0.002	0.167***
	(0.033)	(0.033)	(0.031)	(0.036)	(0.036)	(0.028)	(0.042)	(0.032)	(0.036)
Response to suggestions	0.050	0.107***	0.041	0.062	0.133***	0.050	-0.070	0.090**	0.379***
	(0.038)	(0.038)	(0.035)	(0.040)	(0.043)	(0.031)	(0.049)	(0.036)	(0.045)
Influence of employees	0.045	0.179***	0.258***	0.089**	0.096**	0.167***	0.201***	0.025	0.785***
	(0.035)	(0.036)	(0.032)	(0.037)	(0.039)	(0.028)	(0.049)	(0.035)	(0.044)
Supportive Management									
Keep promises	0.036	-0.006	0.056	0.169***	0.057	0.117***	0.079	-0.016	0.053
	(0.037)	(0.037)	(0.035)	(0.038)	(0.040)	(0.031)	(0.051)	(0.036)	(0.042)
Sincere	0.043	0.111***	0.052	-0.190***	-0.109**	-0.129***	-0.022	0.036	0.130***
	(0.040)	(0.041)	(0.039)	(0.043)	(0.046)	(0.035)	(0.057)	(0.040)	(0.046)
Honest	-0.136***	-0.073*	-0.031	-0.052	-0.078*	-0.044	-0.129**	-0.055	-0.012
	(0.039)	(0.040)	(0.039)	(0.043)	(0.045)	(0.034)	(0.058)	(0.039)	(0.048)
Understanding	-0.009	0.034	0.030	-0.045	-0.030	0.035	0.042	0.051*	0.005
	(0.027)	(0.029)	(0.027)	(0.029)	(0.029)	(0.024)	(0.037)	(0.028)	(0.033)
Encouraging	0.231***	0.254***	0.140***	0.814***	1.062***	0.119***	0.088**	0.167***	0.182***
	(0.030)	(0.031)	(0.030)	(0.033)	(0.034)	(0.026)	(0.041)	(0.029)	(0.035)
Treat fairly	0.081**	-0.000	0.040	-0.016	-0.012	0.169***	0.119**	0.082***	0.136***
	(0.033)	(0.035)	(0.032)	(0.035)	(0.037)	(0.028)	(0.048)	(0.031)	(0.039)
Supervisor	-0.026	0.186***	0.202***	0.009	0.094*	0.156***	0.074	0.007	0.193***
	(0.048)	(0.052)	(0.045)	(0.051)	(0.052)	(0.041)	(0.065)	(0.047)	(0.054)

	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
Intrinsic Motivation									
Using initiative	0.141***	0.257***	0.150***	-0.071***	-0.041	-0.097***	-0.075**	0.125***	-0.033
	(0.024)	(0.025)	(0.024)	(0.027)	(0.028)	(0.021)	(0.034)	(0.024)	(0.031)
Value sharing	0.154***	0.080**	0.152***	0.020	-0.021	0.030	-0.003	0.124***	0.057
	(0.032)	(0.033)	(0.032)	(0.034)	(0.036)	(0.027)	(0.045)	(0.033)	(0.038)
Loyal	0.214***	0.138***	0.108***	0.012	0.038	0.072**	0.098**	0.238***	0.105**
	(0.033)	(0.035)	(0.035)	(0.035)	(0.036)	(0.030)	(0.045)	(0.033)	(0.041)
Proud	0.500***	0.264***	0.201***	0.153***	0.191***	0.227***	0.079*	0.471***	0.115***
	(0.031)	(0.031)	(0.031)	(0.032)	(0.033)	(0.027)	(0.042)	(0.030)	(0.036)
Voice mechanisms									
Grievance procedure	0.035	-0.208	-0.124	-0.274	-0.591**	-0.231	-0.361	0.063	-0.224
	(0.151)	(0.189)	(0.170)	(0.309)	(0.264)	(0.223)	(0.370)	(0.198)	(0.220)
Union Member (ref: not a member)									
A member	0.082	-0.007	-0.046	-0.036	-0.114*	0.089*	-0.111	0.103*	-0.169***
	(0.053)	(0.055)	(0.049)	(0.058)	(0.060)	(0.048)	(0.068)	(0.053)	(0.063)
Have been in the past	0.107*	0.044	-0.034	-0.091	-0.048	-0.093*	-0.020	0.124**	0.015
	(0.059)	(0.063)	(0.059)	(0.064)	(0.067)	(0.050)	(0.081)	(0.058)	(0.075)
Gender (ref: female)	-0.033	0.171***	0.237***	0.103**	0.156***	0.003	-0.067	-0.064	0.030
	(0.047)	(0.048)	(0.046)	(0.051)	(0.052)	(0.041)	(0.063)	(0.046)	(0.055)
White ethnic background (ref: others)	0.176**	-0.083	0.068	0.011	0.125	0.201***	0.088	0.392***	0.251**
	(0.080)	(0.077)	(0.073)	(0.080)	(0.088)	(0.068)	(0.108)	(0.073)	(0.099)
Tenure (ref: <1year)									
1-2 years	-0.042	0.002	0.017	-0.103	-0.331***	-0.226***	0.072	-0.076	-0.278**
	(0.086)	(0.093)	(0.083)	(0.094)	(0.099)	(0.074)	(0.132)	(0.085)	(0.114)
2-5 years	0.007	-0.015	0.055	-0.015	-0.334***	-0.246***	-0.158	0.022	-0.324***
	(0.073)	(0.075)	(0.069)	(0.077)	(0.083)	(0.063)	(0.106)	(0.073)	(0.098)
5-10 years	-0.101	0.019	0.055	0.039	-0.300***	-0.162**	-0.152	0.057	-0.281***
	(0.074)	(0.078)	(0.069)	(0.081)	(0.086)	(0.066)	(0.108)	(0.077)	(0.097)
>10 years	-0.018	0.069	0.134*	0.142*	-0.135	-0.112*	-0.089	0.068	-0.116
	(0.078)	(0.080)	(0.073)	(0.083)	(0.091)	(0.067)	(0.109)	(0.080)	(0.102)
contract (ref: permanent)									
Temporary	-0.027	-0.162	0.036	-0.270**	0.063	0.233**	-0.701***	0.251**	0.091
	(0.108)	(0.118)	(0.112)	(0.127)	(0.130)	(0.100)	(0.166)	(0.118)	(0.156)
Fixed	0.162	0.025	0.141	0.106	0.027	0.215**	-0.761***	0.192*	-0.198

	Satisfaction with:								
	Achievement	**Initiative**	**Influence**	**Training**	**Skills**	**Pay**	**Job security**	**Work itself**	**Involvement in decisions**
	(0.116)	(0.116)	(0.108)	(0.118)	(0.123)	(0.095)	(0.129)	(0.107)	(0.128)
Marital Status (Ref: Single)									
Married	0.089*	0.038	0.077	-0.019	0.023	0.029	0.059	0.177***	0.099
	(0.051)	(0.054)	(0.050)	(0.057)	(0.056)	(0.046)	(0.077)	(0.051)	(0.065)
Divorced	0.040	0.106	0.061	-0.066	-0.049	-0.138*	-0.003	0.240***	0.092
	(0.090)	(0.094)	(0.084)	(0.089)	(0.091)	(0.072)	(0.118)	(0.088)	(0.106)
Widowed	-0.067	0.086	0.073	0.156	0.305	0.235	0.176	0.197	0.066
	(0.185)	(0.181)	(0.159)	(0.196)	(0.204)	(0.147)	(0.271)	(0.176)	(0.214)
Age (ref: 16-29)									
30-49	0.326***	0.105*	0.013	-0.078	0.106	0.030	-0.058	0.137**	0.009
	(0.059)	(0.061)	(0.058)	(0.068)	(0.067)	(0.054)	(0.085)	(0.059)	(0.073)
50 and above	0.515***	0.119	0.007	0.089	0.287***	-0.012	-0.107	0.211***	-0.091
	(0.074)	(0.075)	(0.069)	(0.078)	(0.080)	(0.063)	(0.102)	(0.075)	(0.086)
Qualifications (Ref: GCSE grades D-G)									
GCSE A-C	0.036	0.004	-0.010	0.003	0.057	0.069*	-0.013	0.008	0.098*
	(0.047)	(0.050)	(0.044)	(0.048)	(0.049)	(0.038)	(0.063)	(0.046)	(0.055)
ONE GCE	-0.011	0.025	-0.057	-0.007	-0.045	-0.097*	-0.151*	-0.054	-0.157**
	(0.066)	(0.071)	(0.063)	(0.071)	(0.068)	(0.057)	(0.085)	(0.067)	(0.076)
TWO or more GCE	0.063	-0.008	0.050	-0.098*	-0.094*	0.071	0.002	0.004	-0.173***
	(0.054)	(0.057)	(0.052)	(0.053)	(0.057)	(0.044)	(0.071)	(0.053)	(0.061)
First degree	0.036	-0.105*	-0.050	-0.235***	-0.254***	0.051	0.004	0.024	-0.060
	(0.054)	(0.058)	(0.050)	(0.056)	(0.059)	(0.046)	(0.070)	(0.056)	(0.062)
Higher degree	0.107	-0.014	0.058	0.134*	0.130	0.190***	-0.003	0.087	-0.104
	(0.079)	(0.082)	(0.070)	(0.074)	(0.081)	(0.066)	(0.100)	(0.079)	(0.084)
Other academic qualification	0.125**	-0.052	-0.065	0.002	0.011	-0.042	-0.077	0.001	-0.155**
	(0.052)	(0.053)	(0.049)	(0.054)	(0.057)	(0.044)	(0.070)	(0.053)	(0.061)
No academic qualification	0.086	0.226**	0.161	0.480***	0.124	-0.001	0.227	0.033	0.172
	(0.111)	(0.114)	(0.112)	(0.131)	(0.126)	(0.091)	(0.182)	(0.108)	(0.142)
Level 1 NVQ	0.004	0.133*	0.102	0.065	-0.039	0.081	-0.035	-0.019	-0.019
	(0.069)	(0.075)	(0.066)	(0.075)	(0.076)	(0.058)	(0.093)	(0.073)	(0.085)
Level 2 NVQ	0.016	0.047	-0.037	0.064	-0.081	-0.084*	-0.135**	-0.010	-0.018
	(0.052)	(0.056)	(0.051)	(0.057)	(0.057)	(0.044)	(0.068)	(0.052)	(0.063)
Level 3 NVQ	-0.049	0.023	0.077	-0.091	-0.178***	-0.027	-0.052	-0.046	-0.049
	(0.055)	(0.056)	(0.053)	(0.058)	(0.058)	(0.045)	(0.071)	(0.056)	(0.066)

	Satisfaction with:								
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
Level 4 NVQ	0.056	-0.060	-0.061	0.091	-0.019	0.015	-0.074	-0.110	-0.089
	(0.093)	(0.091)	(0.080)	(0.093)	(0.095)	(0.073)	(0.112)	(0.088)	(0.104)
Level 5 NVQ	-0.320	-0.071	0.051	-0.491**	-0.520**	-0.242	-0.183	-0.294	-0.002
	(0.249)	(0.261)	(0.237)	(0.243)	(0.237)	(0.185)	(0.295)	(0.242)	(0.299)
Completion of apprenticeship	0.033	0.001	-0.012	-0.192**	0.071	0.040	0.122	0.217**	0.159
	(0.086)	(0.082)	(0.082)	(0.081)	(0.089)	(0.071)	(0.103)	(0.085)	(0.107)
Other vocational qualification	0.011	-0.084	-0.043	-0.030	-0.059	-0.044	-0.076	-0.071	-0.057
	(0.069)	(0.075)	(0.062)	(0.071)	(0.075)	(0.057)	(0.086)	(0.067)	(0.082)
Other professional qualification	0.091	0.069	0.077	0.132**	0.143**	0.280***	0.115	0.157***	-0.063
	(0.059)	(0.061)	(0.053)	(0.061)	(0.061)	(0.051)	(0.076)	(0.057)	(0.067)
No vocational qualification	0.197**	0.314***	0.298***	0.283**	0.388***	0.153**	0.010	0.132	0.106
	(0.093)	(0.101)	(0.097)	(0.113)	(0.116)	(0.076)	(0.139)	(0.092)	(0.116)
No religion (ref: having a religion)	-0.089**	-0.005	-0.004	-0.066	-0.023	0.030	0.023	-0.022	-0.010
	(0.044)	(0.047)	(0.042)	(0.047)	(0.048)	(0.037)	(0.059)	(0.044)	(0.054)
Heterosexual (ref: other orientations)	-0.039	0.002	-0.077	0.185**	0.045	-0.033	-0.034	-0.072	-0.022
	(0.075)	(0.080)	(0.074)	(0.078)	(0.086)	(0.066)	(0.106)	(0.076)	(0.095)
Organizational size (ref: 5-999)									
1000-9,999	0.018	-0.029	-0.069	0.033	0.119*	0.016	-0.019	-0.029	-0.054
	(0.055)	(0.058)	(0.050)	(0.062)	(0.063)	(0.058)	(0.074)	(0.054)	(0.067)
10,000 and above	0.009	-0.110*	-0.053	0.043	0.061	-0.072	0.015	-0.051	-0.025
	(0.060)	(0.060)	(0.056)	(0.064)	(0.068)	(0.059)	(0.077)	(0.062)	(0.072)
Industries (ref: manufacturing)									
Electricity	0.281*	0.090	-0.033	0.337**	0.306*	0.593***	0.643***	0.291**	0.213
	(0.164)	(0.152)	(0.153)	(0.152)	(0.167)	(0.175)	(0.212)	(0.144)	(0.193)
Water supply	-0.079	0.304	-0.168	0.469**	0.447**	0.048	0.512**	0.024	0.039
	(0.193)	(0.199)	(0.200)	(0.223)	(0.216)	(0.182)	(0.239)	(0.158)	(0.218)
Construction	0.591***	0.421***	0.093	0.503***	0.222	0.053	0.044	0.291**	0.103
	(0.124)	(0.135)	(0.121)	(0.162)	(0.140)	(0.127)	(0.174)	(0.121)	(0.177)
Wholesale/Retail	0.062	-0.072	-0.252**	0.061	0.164	-0.167	0.075	0.127	-0.142
	(0.094)	(0.103)	(0.101)	(0.113)	(0.120)	(0.102)	(0.179)	(0.101)	(0.126)
Transportation	0.174*	0.037	-0.164	0.370***	0.366***	0.578***	-0.200	0.229**	-0.069
	(0.101)	(0.113)	(0.113)	(0.127)	(0.133)	(0.127)	(0.157)	(0.117)	(0.140)
Accommodation services	-0.126	-0.259**	-0.189	0.385**	0.042	-0.173	0.169	0.060	-0.060
	(0.132)	(0.124)	(0.129)	(0.186)	(0.172)	(0.129)	(0.211)	(0.130)	(0.197)

	Satisfaction with:								
	Achievement	**Initiative**	**Influence**	**Training**	**Skills**	**Pay**	**Job security**	**Work itself**	**Involvement in decisions**
Information and communication	0.495***	0.163	0.007	-0.207	-0.051	-0.409**	-0.302	0.336*	-0.451**
	(0.180)	(0.189)	(0.194)	(0.166)	(0.164)	(0.168)	(0.198)	(0.177)	(0.192)
Financial services	0.306*	-0.067	0.012	0.264	0.105	-0.274	0.406	0.041	-0.428**
	(0.177)	(0.239)	(0.201)	(0.191)	(0.261)	(0.195)	(0.252)	(0.186)	(0.201)
Real estate	0.325**	0.023	-0.042	0.509***	0.304**	-0.035	0.025	0.199	0.030
	(0.133)	(0.156)	(0.121)	(0.167)	(0.140)	(0.151)	(0.185)	(0.153)	(0.227)
Professional services	0.443***	0.328**	-0.071	0.330**	0.255*	-0.297**	-0.088	0.252**	-0.045
	(0.125)	(0.146)	(0.124)	(0.139)	(0.144)	(0.133)	(0.154)	(0.126)	(0.151)
Administrative and support	0.580***	0.169	-0.003	0.451***	-0.083	-0.126	0.078	0.331**	-0.087
	(0.149)	(0.134)	(0.140)	(0.165)	(0.143)	(0.143)	(0.234)	(0.146)	(0.203)
Public admin	0.465***	0.099	0.005	0.351***	0.304**	-0.326***	0.075	0.331***	-0.186
	(0.117)	(0.119)	(0.112)	(0.126)	(0.129)	(0.117)	(0.154)	(0.118)	(0.140)
Education	0.883***	0.519***	0.151	0.434***	0.446***	-0.222**	0.341**	0.552***	-0.119
	(0.110)	(0.110)	(0.101)	(0.117)	(0.117)	(0.110)	(0.145)	(0.115)	(0.131)
Human health	0.595***	0.384***	-0.055	0.719***	0.299***	-0.240**	0.182	0.413***	-0.198
	(0.101)	(0.105)	(0.092)	(0.117)	(0.113)	(0.099)	(0.141)	(0.098)	(0.123)
Arts, entertainment	0.479***	0.307**	0.010	0.452***	0.291**	-0.271**	0.060	0.600***	-0.295*
	(0.125)	(0.126)	(0.123)	(0.154)	(0.137)	(0.126)	(0.175)	(0.133)	(0.153)
Other services	0.593***	0.262	-0.145	0.193	0.086	0.209	-0.236	0.627***	-0.126
	(0.139)	(0.173)	(0.140)	(0.147)	(0.158)	(0.161)	(0.188)	(0.161)	(0.181)
Public sector	0.054	0.057	-0.024	-0.056	-0.054	0.076	-0.318***	0.094	0.033
	(0.068)	(0.065)	(0.058)	(0.073)	(0.073)	(0.068)	(0.085)	(0.067)	(0.078)
Occupational Categories (ref:Managerial)									
Intermediate	-0.049	-0.030	0.006	0.142**	0.081	-0.102*	0.028	-0.166***	0.023
	(0.060)	(0.063)	(0.054)	(0.060)	(0.062)	(0.060)	(0.071)	(0.060)	(0.068)
Lower	0.242***	0.043	0.094	0.366***	0.226***	-0.233***	-0.115	0.027	0.006
	(0.070)	(0.071)	(0.062)	(0.079)	(0.075)	(0.069)	(0.094)	(0.071)	(0.082)
Intercept	-7.932***	-7.935***	-7.751***	-4.091***	-4.699***	-1.510***	-5.312***	-6.905***	-6.269***
	(0.632)	(0.633)	(0.586)	(0.623)	(0.667)	(0.535)	(0.901)	(0.593)	(0.786)
Pseudo R-Squared	0.281	0.315	0.337	0.262	0.312	0.135	0.558	0.256	0.444
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	20549	20549	20549	20549	20549	20549	20549	20549	20549

Clustered standard errors in parenthesis and the coefficients are statistically significant at * p<0.10, ** p<0.05, *** p<0.01.

Source: author's own work based on WERS2011

Discussion

This study has shown, in line with the theory, that job demands are negatively related to various forms of job satisfaction. Interestingly, in the case of work intensity, we find significant and positive associations with four forms of job satisfaction (satisfaction with achievement, initiative, influence and work itself[4]) and negative associations with two forms of job satisfaction (pay satisfaction and job security satisfaction). The finding on work intensity is in contrast to the 'win-lose' argument by Ramsey et al. (2000). These authors suggested that the workplace gains with the presence of employees' empowerment practices while employees lose because of work intensity associated with such practices.

In our analysis, we find that employees are more likely to be satisfied in various ways when required to work very hard (work intensity). An overall view of the work intensity result suggests that job demands may not necessarily have negative effects on some forms of job satisfaction. This finding emphasises the importance of examining different forms of job satisfaction. Further, the results obtained on job demands confirm the proposition of Karasek's model as well as hypothesis 1 as job demands are negatively associated with employees' wellbeing. Also, this study corroborates the findings of numerous studies[5] on stress and employees' wellbeing as well as studies that have examined the impact of job characteristics on job satisfaction.

All the measures of job control on the other hand are positively related to different forms of job satisfaction. This shows that job control is a key predictor of job satisfaction, and the findings are consistent with the longstanding job design tradition. The results also support the importance of job control as highlighted in the theories of happiness (Wood and de Menezes, 2011; Wood, 2008; Westerlund et al., 2010). In particular, the positive relationship between measures of job control and satisfaction with involvement in decision-making corroborates the ideas of Driscoll (1978), who suggested the significant impact of participation in decision-making on satisfaction with involvement in decision-making. Our

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[4] These forms of job satisfaction may be classified as intrinsic forms of job satisfaction.

[5] Wood, 2008; Wood and de Menezes, 2011; De Witte et al., 2007; McClenahan et al., 2007; Noblet and Rodwell, 2009;, Beehr et al., 2001; Mikkelsen et al., 1999; Mikkelsen et al., 2005; Akerboom and Maes, 2006; Morrison et al., 2003 al., 2005.

measures of job control can be explained as mechanisms through which employees are involved in decision-making regarding their tasks. This has been referred to as 'participation in decisions at employee level' in some studies (Kato and Morishima, 2002).

Employees in stressful jobs (characterised by high job demands and low job control) are less likely to be satisfied with achievement, influence, pay, work itself and involvement in decision-making when compared to those in less stressful jobs (low demand – high control jobs). This confirms the strain hypothesis and provides a more concrete support for previous studies (Wood, 2008; De Witte et al., 2007; Wall et al., 1996). Additionally, employees in stressful jobs are more likely to be satisfied with training than those in less stressful jobs. A reason for this may be that a high level of job demands attracts various training opportunities. As such, employees are more likely to be satisfied with the training they receive than when they are required to work less hard (evident in low demand and high control jobs). As expected, we find that employees in passive jobs are less likely to be satisfied with achievement and influence when compared to employees in less stressful jobs. Passive jobs are devoid of learning and control opportunities as well as novelty. As such, we expect that employees will prefer jobs where they can exert influence. However, the active job hypothesis is not significant for any form of job satisfaction. A possible explanation may be that effects have been captured by the main predictors or control variables included in the model.

We find that the presence of equality plans and job control are complementary in that the presence of one reinforces or strengthens the presence of the other. This result is evident for satisfaction with achievement, the use of initiative, amount of influence and the work itself. This corroborates Renger et al (2017)'s finding that equality-based respect (equality practices) contributes to perceived autonomy. Equality plans on the other hand are found to moderate/buffer the negative consequences of jobs demand at low and medium levels for satisfaction with achievement and the work itself and weaken the impact of job demands at high levels on skills and pay satisfaction. This suggests that the presence of such equality plan in the workplace weakens the negative consequences of job demands and as such makes the work environment less discriminatory or results in perceptions that pay and the opportunity to develop skills on the job are fairer.

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Our results for the joint effects and the types of jobs proposed in the demand-control model are more conclusive than the existing literature. Studies like De Jonge et al. (1999), De Witte et al. (2007), Wood (2008) and Wall et al. (1996) that have been able to provide support for the interaction effects of job demands and job control considered just an interaction measure that examined the buffering effect of job control on the negative consequences of job demands. The interaction measure was constructed by multiplying the job demands and job control indexes. In contrast, we show through four different job types that the imbalance between job demands, and control specifically affects job satisfaction. Furthermore, our results reveal the buffering effect as well as the complementary nature of equality plans in the workplace.

Interestingly, the presence of an equality plan is only negatively and significantly related to satisfaction with achievement, and not significantly related with any of the other forms of satisfaction. If employees' perception about equality and fairness in terms of pay, working conditions, promotion are increased as suggested by O'Connell and Russell (2005), then we should obtain positive and significant results. It could be that these equality policies change perceptions of achievement by highlighting inequalities, or they may only be effective when implemented alongside empowerment practices that increase job control.

The workplace-level and employee- level control variables have the expected signs in most instances, though some findings are unexpected. First is the finding that being able to participate in decision-making individually via suggestion schemes, independently of the level of individual job control, has some influence on job satisfaction (satisfaction with training) whereas participating collectively through joint consultative committees doesn't have any.

It may be the case that these committees may offer a more diluted and collective form of influence and may not represent the interests of all employees. Also, such committees may be more informative than consultative. The positive association between the use of suggestions schemes and training satisfaction is expected. Wood and de Menezes (2011) suggested that such schemes are opportunities for employees to have better understanding of workplace plans and initiatives and contribute towards the achievement of the plans and initiatives.

Second is the finding that having a right of appeal in workplace complaints procedures is not significantly related to any form of job satisfaction.

Conclusion

Using the British Employment Relations Survey, we have examined the effects of individual employee empowerment on nine aspects of job satisfaction in a demand-control framework. With a rich set of controls, we estimated the effects of job types defined by their combinations of levels of job demands and job control and tested for the moderation effects of having a formal equality plan in the workplace.

This study gains strength from the fact that it is based on a large representative sample of workplaces, and it merges workplace-level and employee-level data. This combination of data that rely on responses from HR personnel (workplace-level) and employees within workplaces (employee-level) reduces the likelihood of common method variation. Also, this study differs from previous published studies on the demand-control model in several ways. First, we consider the main effects of different measures of job control and job demands on various forms of job satisfaction. We consider different measures of job demands and job control because each measure elicits different levels of satisfaction with various aspects of the job. Although there are debates within the literature on whether job satisfaction is a correct measure of employee well-being, the use of various forms of job satisfaction offers a solution as we consider various aspects of the job.

Second, we conduct Principal Component Analysis (PCA) on the measures of job demands and job control to obtain composite measures of job demands and job control. These composite measures are then used to construct four binary variables that measure four types of jobs proposed by the demand-control model. We believe this approach contributes to the significance of our results by more precisely characterising job demands and control.

This study is the first to provide a test of the job types from the demand and control model, to conduct the analysis for different aspects of job satisfaction, and to look at the potential complementary effects of individual employees' participation in decisions over their job—job control--and equality plans on job satisfaction. Examining the effects of individual employees' participation in decisions

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concerning their jobs on their satisfaction, we find, consistent with Karasek's demand-control model, that employees are more likely to be satisfied with different aspects of the job when they are more empowered. Employees are also happier with the job when they are in less stressful jobs. Importantly, we have also shown that the presence of a formal written equality policy in the workplace moderates the effects of individual job demands and strengthens those of control on employees' job satisfaction.

Limitations of this study includes the fact that it is a cross sectional study, and data is more than 10 years old. However, this is the most recent edition available of WERS, the largest survey of employment relations in British workplaces. We opted for the cross-section sample as unfortunately, the smaller sample of workplaces included in the panel section of the survey does not include information on a panel of employees, and questions that can be used to measure effective discrimination in earlier editions of WERS were not included. Another potential question relates to the fact that job satisfaction is very much related to expectations, which is an important measure when assessing the presence or effectiveness of workplace practices. For example, the study found men as well as educated employees are less likely to be satisfied with certain aspect of their jobs. Using a range of measures of satisfaction mitigates the problem to some extent. However, this is an issue that should be explored in future studies.

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Appendix: Supplementary Tables

Table A.1: **Marginal Effects for Types of Jobs under Demand-Control Model**

	Satisfaction with achievement		Satisfaction with Initiative	
	dy/dx	Standard Error	dy/dx	Standard Error
Types of Jobs (ref: Low Demand and High Control				
High Demand and High Control	-0.009	0.012	0.013	0.012
High Demand and Low Control	-0.037***	0.014	-0.013	0.013
Low Demand and Low Control	-0.040***	0.011	-0.015	0.011

	Satisfaction with Influence		Satisfaction with Training	
	dy/dx	Standard Error	dy/dx	Standard Error
Types of Jobs (ref: Low Demand and High Control				
High Demand and High Control	-0.007	0.017	0.006	0.009
High Demand and Low Control	-0.047**	0.020	0.018*	0.010
Low Demand and Low Control	-0.040**	0.016	0.009	0.009

Satisfaction with Skills			Satisfaction with Pay	
	dy/dx	Standard Error	dy/dx	Standard Error
Types of Jobs (ref: Low Demand and High Control				
High Demand and High Control	0.002	0.009	-0.023	0.014
High Demand and Low Control	0.014	0.010	-0.037**	0.017
Low Demand and Low Control	0.009	0.008	0.012	0.013

Satisfaction with Job security			Satisfaction with Work itself	
	dy/dx	Standard Error	dy/dx	Standard Error
Types of Jobs (ref: Low Demand and High Control				
High Demand and High Control	0.000	0.005	-0.013	0.012
High Demand and Low Control	0.008	0.005	-0.031**	0.014
Low Demand and Low Control	0.001	0.004	-0.017	0.011

Satisfaction with Involvement in decision-making		
	dy/dx	Standard Error
Types of Jobs (ref: Low Demand and High Control		
High Demand and High Control	-0.008	0.008
High Demand and Low Control	-0.020**	0.010
Low Demand and Low Control	-0.007	0.008

Notes: dy/dx is for discrete change of dummy variable from 0 to 1. Marginal effects are statistically significant at * $p<0.10$, ** $p<0.05$, *** $p<0.01$.
Source: author's own work based on WERS2011

Table A.2: **Definitions of Variables**

Job satisfaction (employee-level)	**How satisfied are you with the following aspects of your job?**
	The sense of achievement you get from your work
	The scope for using your own initiative
	The amount of influence you have over your job
	The training you receive
	The opportunity to develop your skills in your job
	The amount of pay you receive
	Your job security
	The work itself
	Amount of involvement you have in decision-making at this workplace?
Job demands (employee-level)	**Do you agree or disagree with the following statements about your job?**
Work intensity	My job requires that I work very hard
Work Overload	I never seem to have enough time to get my work done
Timing Demand	I often find it difficult to fulfil my commitments outside of work because of the amount of time I spend on my job
Secured job (employee-level)	**I feel my job is secure in this workplace**
Control and Autonomy (employee-level)	**How much influence do you have over the following?**
Over task	The tasks you do in your job
Over pace	The pace at which you work
On how to do task	How you do your work
Over order of task	The order in which you carry out tasks
Over working time	The time you start or finish your working day
Informative management (employee-level)	**How good would you say managers at this workplace are at keeping employees informed about the following?**
Operations	Changes to the way the organisation is being run
Staffing	Changes in staffing
Sequence	Changes in the way you do your job
Finance	Financial matters, including budgets or profits
Consultative Management (employee-level)	**How good would you say managers at this workplace are at?**
Views of employees	Seeking the views of employees or employees' representatives
Response to suggestions	Responding to suggestions from employees or employees' representatives
Influence of employees	Allowing employees or employees' representatives to influence final decisions
Supportive Management (employee-level)	**Now thinking about the managers at this workplace, to what extent do you agree or disagree with the following?**
Keep promises	Can be relied upon to keep to their promises
Sincere	Are sincere in attempting to understand employees' views
Honest	Deal with employees honestly
Understanding	Understand about employees having to meet responsibilities outside work
Encouraging	Encourage people to develop their skills
Treat fairly	Treat employees fairly

Intrinsic Motivation (employee-level)	To what extent do you agree or disagree with the following statements about working here?
Using initiative	Using my own initiative I carry out tasks that are not required as part of my job
Value sharing	I share many of the values of my organisation
Loyal	I feel loyal to my organisation
Proud	I am proud to tell people who I work for
Voice Mechanisms	
Grievance procedure (workplace-level)	Is there a formal procedure for dealing with individual grievances raised by any employee at this workplace?
Union Member (ref: not a member) – employee-level	Are you a member of a trade union or staff association?
Have been in the past	No, but have been in the past
A member	Yes
Supervisor (employee-level)	Do you supervise any other employees?
Consultation Schemes (ref: none) - workplace-level	
Suggestion	
Notice Boards	
Cascade (Systematic use of management chain/cascading of information)	Besides the schemes we have discussed are there any other ways in which management communicates or consults with employees at this workplace?
Newsletters	
Email	
Intranet	
Other ways of communicating	
Joint Consultative Committees (workplace-level)	Are there any committees of managers and employees at this workplace, primarily concerned with consultation, rather than negotiation?
Individual Incentive pay (workplace-level)	
Merit Pay	Do any of the employees in this workplace get paid by results or receive merit pay?
Types of Pay (ref: basic pay) (employee-level)	Which of the following do you receive in your job here?
Individual pay	Payments based on your individual performance or output
Group pay	Payments based on the overall performance of a group or a team
Workplace pay	Payments based on the overall performance of your workplace or organisation (e.g. profit-sharing scheme)
Extra pay	Extra payments for additional hours of work or overtime
Pension	Contributions to a pension scheme
Measures of fairness (workplace-level)	
Appeal right	Do employees have a right to appeal against a decision made under the procedure?'/ In disciplining or dismissing an employee, are they able to appeal against the decision?
EO policies	Does this workplace have a formal written policy on equal opportunities or managing diversity?
Gender (employee-level)	Are you male or female?
Ethnicity (ref: British) - employee-level	
Irish	
Any other white background	Which of these groups do you consider you belong?
White and black Caribbean	
White and black African	

White and Asian	
Any other mixed background	
Indian	
Pakistan	
Bangladeshi	
Chinese	
Any other Asian background	
Caribbean	
African	
Any other black background	
Arab	
Any other ethnic group	
Religion (employee-level)	
No religion	
Christian (including Church of England, Church of Scotland, Catholic, Protestant, and all other Christian denominations)	
Buddhist	What is your religion?
Hindu	
Jewish	
Muslim	
Sikh	
Another religion	
Marital status (employee-level)	
Single	
Married or living with a partner	Which of the following describes your current status?
Divorced/separated	
Widowed	
Age (employee-level)	
16-17	
18-19	
20-21	
22-29	
30-39	How old are you?
40-49	
50-59	
60-64	
65 and above	
Sexual orientation (employee-level)	
Heterosexual or straight	
Gay or lesbian	
Bisexual	Which of the following options best describes how you think of yourself?
Other	
Prefer not to say	
Organisational size (workplace-level)	How many employees in total are there within each organisation in the UK

5-9	
10-24	
25-49	
50-99	
100-149	
150-249	
250-499	
500-999	
1,000-1,999	
2,000-4,999	
5,000-9,999	
10,000-49,999	
50,000-99,999	
100,000 or more	
Industrial classifications and academic, professional or vocational qualification (employee-level)	
GCSE grades D-G/CSE grades 2-5, SCE O grades D-E/SCE Standard grades 4-7	
GCSE grades A-C, GCE 'O'-level passes, CSE grade 1, SCE O grades A-C, SCE Standard grades 1-3	
1 GCE 'A'-level grades A-E,1-2 SCE Higher grades A-C, AS levels	
2 or more GCE 'A'-levels grades A-E, 3 or more SCE Higher grades A-C	
First degree, eg BSc, BA, BEd, HND, HNC, MA at first degree level	
Higher degree, eg MSc, MA, MBA, PGCE, PhD	
Other academic qualifications No academic qualifications	
Level 1 NVQ or SVQ, Foundation GNVQ or GSVQ	Which, if any, of the following academic, vocational or professional qualifications have you obtained?
Level 2 NVQ or SVQ, Intermediate GNVQ or GSVQ, City and Guilds Craft, BTEC First/General Diploma, RSA Diploma	
Level 3 NVQ or SVQ, Advanced GNVQ or GSVQ, City and Guilds Advanced Craft, BTEC National, RSA Advanced Diploma	
Level 4 NVQ or SVQ, RSA Higher Diploma, BTEC Higher level	
Level 5 NVQ or SVQ	
Completion of trade apprenticeship	
Other vocational or pre-vocational qualifications, e.g. OCR	
Other professional qualifications, e.g. qualified teacher, accountant, nurse	
No vocational or professional qualifications	
Tenure (ref: <1year) - employee-level	How many years in total have you been working at this workplace?

1-2 years	
2-5 years	
5-10 years	
>10 years	
Contract (ref: permanent) - employee-level	Which of the phrases below best describes your job here?
Temporary	
Fixed	
Public Sector (workplace-level)	
Public Limited Company (PLC)	
Private limited company	
Company limited by guarantee	
Partnership (inc. Limited Liability Partnership) / Self-proprietorship	
Trust / Charity	
Body established by Royal Charter	How would you describe the formal status of this workplace (or the organisation of which it is a part)?
Co-operative / Mutual / Friendly society,	
Government-owned limited company / Nationalised industry	1-7 are private and 8-12 are public
Public service agency	
Other non-trading public corporation	
Quasi Autonomous National Government Organisation (QUANGO)	
Local/Central Government (inc. NHS and Local Education Authorities)	
Occupational Categories (workplace-level)	
Higher Managerial Occupations	
Lower Managerial Occupations	
Professional Occupations	
Intermediate Occupations	
Lower supervisory and technical occupations	
Semi-routine occupations	
Routine occupations	

For more information on the data, see: http://discover.ukdataservice.ac.uk/catalogue/?sn=7226&type=Data%20catalogue..
Source: author's own work based on WERS2011

Table A.3: Union Membership and Job Satisfaction (Endogeneity Analysis)

	Union	Union	Union	Union	Union	Union	Union	Union	Union
Instrumental variable									
Dispute over pay and Working conditions	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***	0.684***
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Constant	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***	-0.456***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)

Satisfaction With:									
	Achievement	Initiative	Influence	Training	Skills	Pay	Job security	Work itself	Involvement in decisions
Job Control									
Over tasks	0.186***	0.257***	0.397***	0.016	0.063***	0.030**	0.025	0.132***	0.085***
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)	(0.015)	(0.021)	(0.016)	(0.019)
Over pace	0.028*	0.013	0.063***	0.011	0.007	0.035***	0.044**	0.024	0.028
	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)	(0.014)	(0.020)	(0.015)	(0.018)
On How to do task	0.097***	0.210***	0.189***	0.032	0.079***	-0.006	0.019	0.117***	0.030
	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)	(0.018)	(0.026)	(0.020)	(0.023)
Over Order of task	0.036**	0.144***	0.133***	0.032*	0.006	-0.016	0.006	-0.006	0.074***
	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	(0.016)	(0.024)	(0.018)	(0.021)
Over Working Time	0.025**	0.031***	0.100***	0.045***	0.051***	0.052***	-0.007	-0.010	-0.011
	(0.011)	(0.011)	(0.010)	(0.011)	(0.012)	(0.009)	(0.015)	(0.011)	(0.013)
Consultation Schemes (ref: none)									
Suggestion	0.006	0.009	0.040*	0.088***	0.041	0.010	0.039	-0.007	0.009
	(0.025)	(0.026)	(0.024)	(0.026)	(0.027)	(0.022)	(0.033)	(0.025)	(0.029)
Notice Boards	-0.004	-0.014	-0.004	0.080**	-0.017	-0.101***	-0.063	-0.009	-0.056
	(0.031)	(0.032)	(0.030)	(0.032)	(0.033)	(0.027)	(0.042)	(0.031)	(0.037)
Cascade	0.014	0.026	0.012	0.001	-0.093***	0.009	-0.014	0.034	-0.016
	(0.028)	(0.029)	(0.027)	(0.030)	(0.031)	(0.024)	(0.038)	(0.028)	(0.034)
Newsletters	-0.014	0.010	0.009	-0.028	-0.012	-0.026	0.057	-0.019	-0.000
	(0.027)	(0.027)	(0.026)	(0.028)	(0.029)	(0.023)	(0.036)	(0.027)	(0.032)
Email	0.001	-0.007	-0.043	-0.053	0.000	0.048*	-0.068	-0.015	0.021
	(0.032)	(0.032)	(0.030)	(0.034)	(0.034)	(0.027)	(0.043)	(0.032)	(0.038)
Intranet	-0.026	-0.000	-0.010	0.070**	0.029	0.018	-0.015	-0.025	-0.039
	(0.029)	(0.030)	(0.028)	(0.030)	(0.031)	(0.025)	(0.039)	(0.029)	(0.035)
Other	-0.004	-0.002	0.001	-0.004	-0.020	-0.009	-0.015	0.034	-0.020
	(0.025)	(0.025)	(0.024)	(0.026)	(0.026)	(0.021)	(0.033)	(0.025)	(0.029)
Joint Consultative Committees	0.012	-0.011	-0.042*	-0.031	-0.021	0.005	-0.057*	-0.009	-0.027
	(0.025)	(0.025)	(0.024)	(0.026)	(0.026)	(0.021)	(0.032)	(0.024)	(0.029)
Secure job	0.082***	0.073***	0.117***	0.115***	0.133***	0.082***	1.223***	0.110***	0.060***
	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)	(0.010)	(0.019)	(0.011)	(0.013)
Individual Incentive pay									
Merit Pay	-0.003	0.010	-0.033	-0.057**	0.004	0.015	-0.035	-0.016	0.070**

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	(0.026)	(0.027)	(0.026)	(0.027)	(0.028)	(0.023)	(0.035)	(0.026)	(0.031)
Types of Pay (ref: basic pay)									
Individual pay	0.090**	-0.033	-0.029	0.042	0.015	0.049	0.085	0.008	-0.089*
	(0.041)	(0.042)	(0.039)	(0.042)	(0.043)	(0.036)	(0.054)	(0.039)	(0.048)
Group pay	0.008	0.086	0.067	-0.108**	0.028	0.018	0.044	0.016	-0.057
	(0.055)	(0.058)	(0.053)	(0.055)	(0.059)	(0.049)	(0.077)	(0.054)	(0.066)
Workplace pay	0.109**	0.005	-0.032	-0.059	0.019	0.168***	0.008	0.050	0.063
	(0.049)	(0.051)	(0.047)	(0.049)	(0.052)	(0.045)	(0.070)	(0.048)	(0.060)
Extra pay	0.070***	0.015	0.010	0.041	0.031	-0.013	0.061*	0.106***	-0.019
	(0.026)	(0.026)	(0.025)	(0.027)	(0.028)	(0.022)	(0.035)	(0.026)	(0.030)
Pension (deferred payment schemes like ESOP)	-0.008	0.033	0.003	-0.033	-0.064**	0.124***	-0.033	0.016	-0.004
	(0.026)	(0.026)	(0.025)	(0.026)	(0.027)	(0.022)	(0.034)	(0.026)	(0.030)
Measures of fairness									
Appeal right	0.071	-0.035	0.055	-0.065	0.103	0.004	-0.187	0.073	0.099
	(0.091)	(0.096)	(0.095)	(0.098)	(0.098)	(0.081)	(0.136)	(0.091)	(0.106)
EO policies	-0.090	0.008	-0.077	0.082	0.029	-0.071	-0.004	0.001	-0.026
	(0.055)	(0.056)	(0.053)	(0.056)	(0.059)	(0.048)	(0.079)	(0.055)	(0.068)
Informative Management									
Operations	-0.015	-0.022	-0.050***	0.022	-0.037*	-0.030*	0.035	-0.021	0.020
	(0.018)	(0.019)	(0.018)	(0.019)	(0.019)	(0.016)	(0.024)	(0.018)	(0.020)
Staffing	-0.005	-0.022	-0.003	-0.020	-0.013	-0.021	0.040*	-0.016	0.021
	(0.018)	(0.018)	(0.017)	(0.018)	(0.019)	(0.016)	(0.024)	(0.018)	(0.020)
Sequence	0.106***	0.105***	0.125***	0.208***	0.176***	0.009	0.021	0.138***	0.124***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.016)	(0.023)	(0.018)	(0.020)
Finance	-0.030**	0.027*	0.035**	0.039***	0.023	0.087***	-0.010	-0.026*	0.082***
	(0.015)	(0.015)	(0.014)	(0.015)	(0.015)	(0.013)	(0.019)	(0.015)	(0.016)
Consultative Management									
Views of employees	0.044**	0.008	0.017	0.047***	0.067***	0.027*	-0.032	-0.002	0.097***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.016)	(0.024)	(0.018)	(0.020)
Response to suggestions	0.026	0.060***	0.021	0.041*	0.074***	0.028	-0.039	0.055***	0.208***
	(0.021)	(0.021)	(0.020)	(0.021)	(0.022)	(0.018)	(0.028)	(0.021)	(0.023)
Influence of employees	0.029	0.099***	0.150***	0.047**	0.057***	0.099***	0.120***	0.015	0.432***
	(0.019)	(0.020)	(0.019)	(0.020)	(0.020)	(0.017)	(0.025)	(0.019)	(0.022)
Supportive Management									
Keep promises	0.019	-0.013	0.031	0.090***	0.025	0.072***	0.040	-0.008	0.028
	(0.020)	(0.021)	(0.020)	(0.021)	(0.021)	(0.018)	(0.026)	(0.020)	(0.022)
Sincere	0.022	0.066***	0.028	-0.103***	-0.052**	-0.078***	-0.005	0.016	0.064***
	(0.022)	(0.023)	(0.022)	(0.023)	(0.023)	(0.020)	(0.029)	(0.022)	(0.024)
Honest	-0.074***	-0.038	-0.020	-0.026	-0.046**	-0.027	-0.075**	-0.029	-0.009
	(0.022)	(0.023)	(0.022)	(0.023)	(0.024)	(0.020)	(0.029)	(0.022)	(0.025)
Understanding	-0.006	0.017	0.016	-0.025	-0.017	0.022*	0.028	0.030**	0.002

	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)	(0.013)	(0.020)	(0.015)	(0.017)
Encouraging	0.132***	0.142***	0.080***	0.456***	0.590***	0.070***	0.052**	0.094***	0.100***
	(0.016)	(0.017)	(0.016)	(0.017)	(0.018)	(0.015)	(0.022)	(0.016)	(0.018)
Treat fairly	0.044**	-0.002	0.025	-0.011	-0.009	0.100***	0.066***	0.048***	0.081***
	(0.018)	(0.019)	(0.018)	(0.019)	(0.019)	(0.016)	(0.024)	(0.018)	(0.020)
Job Demand									
Work overload	-0.093***	-0.038***	-0.066***	-0.091***	-0.037***	-0.036***	-0.010	-0.107***	-0.048***
	(0.013)	(0.013)	(0.012)	(0.013)	(0.014)	(0.011)	(0.017)	(0.013)	(0.015)
Work Intensity	0.235***	0.114***	0.067***	0.002	0.043**	-0.128***	-0.106***	0.146***	-0.023
	(0.016)	(0.017)	(0.016)	(0.017)	(0.018)	(0.014)	(0.022)	(0.016)	(0.019)
Timing Demand	-0.073***	-0.059***	-0.081***	-0.031***	-0.045***	-0.048***	-0.042***	-0.104***	-0.050***
	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.010)	(0.015)	(0.011)	(0.013)
Supervisor	-0.015	0.106***	0.124***	0.001	0.051*	0.094***	0.043	0.008	0.108***
	(0.027)	(0.028)	(0.025)	(0.027)	(0.028)	(0.023)	(0.035)	(0.026)	(0.031)
Intrinsic Motivation									
Using initiative	0.078***	0.143***	0.085***	-0.041***	-0.023	-0.059***	-0.041**	0.070***	-0.023
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.012)	(0.018)	(0.014)	(0.016)
Value sharing	0.084***	0.042**	0.084***	0.006	-0.015	0.017	-0.009	0.064***	0.031
	(0.018)	(0.018)	(0.018)	(0.018)	(0.019)	(0.016)	(0.023)	(0.018)	(0.020)
Loyal	0.123***	0.077***	0.063***	0.008	0.023	0.042**	0.048**	0.137***	0.064***
	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)	(0.017)	(0.024)	(0.018)	(0.021)
Proud	0.280***	0.151***	0.121***	0.085***	0.105***	0.135***	0.060***	0.267***	0.062***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)	(0.015)	(0.022)	(0.017)	(0.019)
Voice mechanisms									
Grievance procedure	0.028	-0.119	-0.083	-0.155	-0.321**	-0.127	-0.201	0.044	-0.124
	(0.103)	(0.110)	(0.105)	(0.115)	(0.125)	(0.092)	(0.153)	(0.104)	(0.140)
Union Member (ref: not a member)									
A member	-0.110	-0.323***	-0.010	-0.089	-0.096	0.243**	-0.152	-0.050	-0.050
	(0.116)	(0.121)	(0.117)	(0.118)	(0.121)	(0.100)	(0.144)	(0.117)	(0.143)
Have been in the past	0.059*	0.020	-0.018	-0.052	-0.025	-0.057**	-0.005	0.074**	0.010
	(0.034)	(0.035)	(0.032)	(0.035)	(0.036)	(0.029)	(0.044)	(0.033)	(0.040)
Gender (ref: female)	-0.023	0.097***	0.138***	0.056**	0.083***	-0.000	-0.029	-0.038	0.007
	(0.026)	(0.027)	(0.025)	(0.027)	(0.028)	(0.023)	(0.034)	(0.026)	(0.031)
White ethnic background (ref: others)	0.113***	-0.035	0.041	0.009	0.079*	0.122***	0.047	0.235***	0.134***
	(0.042)	(0.044)	(0.041)	(0.045)	(0.045)	(0.036)	(0.056)	(0.041)	(0.049)
Tenure (ref: <1year)									
1-2 years	-0.018	-0.006	0.004	-0.059	-0.191***	-0.129***	0.038	-0.053	-0.139**
	(0.049)	(0.050)	(0.047)	(0.052)	(0.055)	(0.043)	(0.068)	(0.048)	(0.062)
2-5 years	0.007	-0.017	0.029	-0.010	-0.192***	-0.144***	-0.080	0.012	-0.164***
	(0.042)	(0.042)	(0.039)	(0.044)	(0.047)	(0.036)	(0.057)	(0.041)	(0.053)
5-10 years	-0.058	0.004	0.026	0.018	-0.173***	-0.093**	-0.066	0.029	-0.135**
	(0.043)	(0.044)	(0.041)	(0.046)	(0.048)	(0.037)	(0.059)	(0.042)	(0.054)

>10 years	-0.005	0.034	0.079*	0.079*	-0.072	-0.063	-0.035	0.036	-0.047
	(0.044)	(0.045)	(0.042)	(0.047)	(0.050)	(0.038)	(0.060)	(0.044)	(0.055)
contract (ref: permanent)									
Temporary	-0.002	-0.094	0.023	-0.151**	0.033	0.139**	-0.375***	0.146**	0.051
	(0.065)	(0.063)	(0.061)	(0.068)	(0.073)	(0.057)	(0.074)	(0.066)	(0.083)
Fixed	0.100	0.019	0.081	0.056	0.015	0.123**	-0.444***	0.118*	-0.099
	(0.063)	(0.063)	(0.058)	(0.065)	(0.067)	(0.054)	(0.072)	(0.063)	(0.075)
Marital Status (Ref: Single)									
Married	0.053*	0.020	0.045	-0.006	0.019	0.014	0.037	0.099***	0.055
	(0.030)	(0.031)	(0.029)	(0.032)	(0.032)	(0.026)	(0.040)	(0.030)	(0.036)
Divorced	0.026	0.052	0.038	-0.032	-0.016	-0.088**	0.015	0.136***	0.040
	(0.049)	(0.051)	(0.048)	(0.052)	(0.053)	(0.042)	(0.064)	(0.049)	(0.058)
Widowed	-0.016	0.058	0.062	0.117	0.198*	0.130	0.078	0.129	0.035
	(0.099)	(0.105)	(0.097)	(0.116)	(0.120)	(0.086)	(0.134)	(0.102)	(0.121)
Age (ref: 16-29)									
30-49	0.182***	0.056	0.005	-0.047	0.050	0.018	-0.050	0.078**	0.010
	(0.034)	(0.035)	(0.034)	(0.036)	(0.037)	(0.030)	(0.048)	(0.034)	(0.042)
50 and above	0.282***	0.065	-0.001	0.050	0.155***	-0.004	-0.076	0.113***	-0.042
	(0.041)	(0.042)	(0.040)	(0.043)	(0.044)	(0.036)	(0.056)	(0.041)	(0.049)
Qualifications (Ref: GCSE grades D-G)									
GCSE A-C	0.019	0.002	-0.006	0.000	0.034	0.040*	-0.000	-0.003	0.063**
	(0.026)	(0.027)	(0.026)	(0.028)	(0.028)	(0.023)	(0.035)	(0.026)	(0.031)
ONE GCE	0.001	0.019	-0.029	0.000	-0.025	-0.058*	-0.085*	-0.028	-0.089**
	(0.038)	(0.039)	(0.036)	(0.038)	(0.040)	(0.033)	(0.049)	(0.037)	(0.044)
TWO or more GCE	0.035	-0.005	0.031	-0.059*	-0.053*	0.040	0.006	0.001	-0.090**
	(0.030)	(0.031)	(0.029)	(0.031)	(0.032)	(0.026)	(0.040)	(0.030)	(0.035)
First degree	0.019	-0.058*	-0.029	-0.129***	-0.132***	0.030	-0.002	0.014	-0.028
	(0.030)	(0.031)	(0.029)	(0.031)	(0.032)	(0.026)	(0.040)	(0.030)	(0.035)
Higher degree	0.063	-0.009	0.035	0.081*	0.066	0.106***	-0.025	0.044	-0.063
	(0.042)	(0.043)	(0.039)	(0.042)	(0.044)	(0.036)	(0.053)	(0.041)	(0.048)
Other academic qualification	0.072**	-0.025	-0.039	0.002	0.001	-0.027	-0.043	0.001	-0.086**
	(0.030)	(0.030)	(0.028)	(0.030)	(0.031)	(0.025)	(0.038)	(0.029)	(0.034)
No academic qualification	0.058	0.133**	0.091	0.280***	0.068	-0.010	0.133	0.020	0.098
	(0.061)	(0.064)	(0.060)	(0.074)	(0.071)	(0.052)	(0.086)	(0.062)	(0.074)
Level 1 NVQ	-0.002	0.065	0.061	0.038	-0.021	0.048	-0.006	-0.013	0.002
	(0.039)	(0.041)	(0.039)	(0.042)	(0.042)	(0.034)	(0.053)	(0.039)	(0.047)
Level 2 NVQ	0.010	0.032	-0.021	0.034	-0.046	-0.052**	-0.067*	-0.009	-0.015
	(0.030)	(0.031)	(0.029)	(0.031)	(0.032)	(0.026)	(0.039)	(0.030)	(0.035)
Level 3 NVQ	-0.028	0.008	0.042	-0.045	-0.094***	-0.018	-0.026	-0.025	-0.031
	(0.030)	(0.031)	(0.029)	(0.032)	(0.032)	(0.026)	(0.039)	(0.030)	(0.036)
Level 4 NVQ	0.016	-0.022	-0.032	0.045	-0.002	0.011	-0.037	-0.063	-0.046
	(0.050)	(0.052)	(0.048)	(0.051)	(0.053)	(0.043)	(0.063)	(0.049)	(0.058)

Level 5 NVQ	-0.199	-0.073	0.013	-0.261**	-0.299**	-0.143	-0.097	-0.188	-0.020
	(0.128)	(0.138)	(0.128)	(0.126)	(0.130)	(0.111)	(0.155)	(0.124)	(0.156)
Completion of apprenticeship	0.019	0.004	-0.002	-0.102**	0.033	0.027	0.069	0.123***	0.080
	(0.046)	(0.048)	(0.045)	(0.047)	(0.049)	(0.040)	(0.060)	(0.046)	(0.054)
Other vocational qualification	0.005	-0.044	-0.025	-0.023	-0.036	-0.029	-0.043	-0.036	-0.041
	(0.039)	(0.039)	(0.037)	(0.039)	(0.040)	(0.033)	(0.049)	(0.038)	(0.045)
Other professional qualification	0.056*	0.039	0.047	0.075**	0.079**	0.163***	0.064	0.091***	-0.037
	(0.033)	(0.033)	(0.031)	(0.033)	(0.034)	(0.028)	(0.042)	(0.032)	(0.037)
No vocational qualification	0.112**	0.173***	0.176***	0.145**	0.202***	0.089**	-0.003	0.080	0.056
	(0.052)	(0.054)	(0.051)	(0.058)	(0.059)	(0.045)	(0.072)	(0.052)	(0.061)
No religion (ref: having a religion)	-0.051**	-0.002	-0.002	-0.035	-0.012	0.019	0.009	-0.016	-0.006
	(0.025)	(0.026)	(0.024)	(0.026)	(0.027)	(0.022)	(0.033)	(0.025)	(0.029)
Heterosexual (ref: other orientations)	-0.030	-0.012	-0.045	0.106**	0.034	-0.019	-0.013	-0.042	-0.002
	(0.043)	(0.044)	(0.043)	(0.045)	(0.046)	(0.037)	(0.056)	(0.043)	(0.051)
Organizational size (ref: 5-999)									
1000-9,999	0.012	-0.010	-0.039	0.023	0.068**	0.008	-0.010	-0.019	-0.032
	(0.030)	(0.030)	(0.028)	(0.031)	(0.032)	(0.026)	(0.039)	(0.029)	(0.035)
10,000 and above	0.001	-0.056*	-0.031	0.026	0.036	-0.045	0.003	-0.031	-0.019
	(0.032)	(0.033)	(0.031)	(0.033)	(0.034)	(0.028)	(0.042)	(0.032)	(0.038)
Industries (ref: manufacturing)									
Electricity	0.148*	0.049	-0.023	0.181**	0.146	0.342***	0.356***	0.166**	0.139
	(0.084)	(0.087)	(0.083)	(0.087)	(0.092)	(0.083)	(0.126)	(0.084)	(0.103)
Water supply	-0.040	0.189*	-0.108	0.248**	0.233**	0.036	0.319**	0.015	0.020
	(0.095)	(0.104)	(0.097)	(0.107)	(0.111)	(0.089)	(0.137)	(0.096)	(0.117)
Construction	0.331***	0.235***	0.052	0.294***	0.138*	0.027	0.042	0.170**	0.076
	(0.072)	(0.076)	(0.070)	(0.077)	(0.079)	(0.064)	(0.097)	(0.071)	(0.089)
Wholesale/Retail	0.032	-0.048	-0.148***	0.022	0.081	-0.097*	0.026	0.072	-0.088
	(0.055)	(0.058)	(0.056)	(0.059)	(0.062)	(0.050)	(0.082)	(0.056)	(0.069)
Transportation	0.109*	0.026	-0.084	0.191***	0.189***	0.332***	-0.115	0.136**	-0.043
	(0.059)	(0.061)	(0.061)	(0.062)	(0.064)	(0.054)	(0.079)	(0.059)	(0.070)
Accommodation services	-0.089	-0.150**	-0.114	0.207**	0.020	-0.100	0.068	0.021	-0.064
	(0.073)	(0.076)	(0.074)	(0.084)	(0.084)	(0.065)	(0.110)	(0.073)	(0.094)
Information and communication	0.271***	0.076	0.017	-0.137*	-0.031	-0.238***	-0.151	0.198**	-0.246**
	(0.085)	(0.089)	(0.084)	(0.083)	(0.089)	(0.075)	(0.119)	(0.085)	(0.104)
Financial services	0.165*	-0.041	0.008	0.121	0.028	-0.164*	0.220	0.022	-0.246**
	(0.100)	(0.101)	(0.097)	(0.101)	(0.105)	(0.092)	(0.151)	(0.096)	(0.116)
Real estate	0.190**	0.025	-0.025	0.274***	0.176**	-0.025	0.029	0.108	0.012
	(0.078)	(0.080)	(0.076)	(0.083)	(0.086)	(0.068)	(0.106)	(0.077)	(0.096)
Professional services	0.238***	0.174**	-0.046	0.178**	0.123*	-0.179***	-0.053	0.136**	-0.030
	(0.068)	(0.071)	(0.066)	(0.069)	(0.073)	(0.060)	(0.094)	(0.067)	(0.084)
Administrative and support	0.331***	0.098	0.007	0.243***	-0.059	-0.073	0.049	0.192**	-0.036
	(0.079)	(0.082)	(0.079)	(0.086)	(0.085)	(0.069)	(0.113)	(0.078)	(0.099)

Public admin	0.268***	0.069	0.002	0.178***	0.147**	-0.205***	-0.002	0.190***	-0.117
	(0.063)	(0.065)	(0.062)	(0.066)	(0.067)	(0.055)	(0.083)	(0.062)	(0.074)
Education	0.498***	0.308***	0.086	0.237***	0.239***	-0.140***	0.191**	0.316***	-0.068
	(0.059)	(0.061)	(0.057)	(0.061)	(0.063)	(0.051)	(0.080)	(0.059)	(0.071)
Human health	0.331***	0.224***	-0.029	0.394***	0.162***	-0.149***	0.090	0.237***	-0.117*
	(0.053)	(0.055)	(0.052)	(0.057)	(0.058)	(0.046)	(0.073)	(0.053)	(0.064)
Arts, entertainment	0.265***	0.175**	0.000	0.231***	0.158**	-0.163***	0.024	0.333***	-0.163**
	(0.069)	(0.072)	(0.068)	(0.073)	(0.075)	(0.060)	(0.092)	(0.071)	(0.082)
Other services	0.338***	0.138	-0.089	0.102	0.045	0.126*	-0.107	0.356***	-0.084
	(0.084)	(0.085)	(0.079)	(0.084)	(0.087)	(0.073)	(0.110)	(0.084)	(0.096)
Public sector	0.036	0.040	-0.015	-0.020	-0.023	0.037	-0.169***	0.062*	0.025
	(0.035)	(0.036)	(0.034)	(0.037)	(0.038)	(0.030)	(0.045)	(0.035)	(0.041)
Occupational Categories (ref:Managerial)									
Intermediate	-0.037	-0.020	0.000	0.080**	0.043	-0.055**	0.020	-0.099***	0.023
	(0.032)	(0.033)	(0.030)	(0.032)	(0.034)	(0.027)	(0.041)	(0.031)	(0.038)
Lower	0.131***	0.015	0.052	0.189***	0.115***	-0.135***	-0.077	0.012	0.005
	(0.037)	(0.038)	(0.036)	(0.039)	(0.040)	(0.032)	(0.049)	(0.037)	(0.044)
Intercept	-4.780***	-4.570***	-5.470***	-2.419***	-3.047***	-0.911***	-2.702***	-3.995***	-3.537***
	(0.196)	(0.211)	(0.193)	(0.202)	(0.212)	(0.164)	(0.266)	(0.192)	(0.234)
Test of exogeneity (Athrho)	0.092	0.198***	-0.012	0.039	0.018	-0.118*	0.057	0.063	-0.025
	(0.070)	(0.075)	(0.070)	(0.071)	(0.072)	(0.061)	(0.086)	(0.070)	(0.086)
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
N	20549	20549	20549	20549	20549	20549	20549	20549	20549

Clustered standard errors in parenthesis and the coefficients are statistically significant at * p<0.10, ** p<0.05, *** p<0.01.

Source: author's own work based on WERS2011