
Job Characteristics, Family Support and Wellbeing: Testing an Expanded Version of the Karasek Model

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Abstract:

This study tested an expanded version of Karasek's Job Demands-Control-Support (JDCS) model, incorporating managerial support and family support policies as explanatory variables. In the context of changing workforce demographics, it is proposed that the availability of family support in workplaces may be a crucial component of support for employees. The Workplace Employee Relations Survey 2004 (WERS2004) is used to investigate the associations between job characteristics, expanded support and well-being. It demonstrates independent cumulative effects for both the JDCS Model and the availability of family support on the well-being of employees. In particular, family support is an important resource for reducing displeasure among female employees and enhancing pleasure among male employees. The findings also indicate that anxiety mediates the impact of job demands and managerial support on pleasure.

Key words: Job demands, control, Support, employee wellbeing.

1. Introduction

Karasek's Job Demands, Control and Support (JDCS) Model has had a major impact on research examining the wellbeing of employees at the workplace. While there are debates about the best way to configure the model, there is widespread support for its use as a foundation for research examining the way in which the work environment impacts upon how workers feel about their jobs, the work that they do and their workplaces. However, the nature of workplaces and the workforce has changed significantly in recent years (Brown et al., 2009), and there may be a need to re-configure the JDCS Model to take account of these changes.

Wellbeing is not just a health issue; it affects individuals' mental health and quality of life (Diener *et al.*, 2003). A healthier workforce means more productive and happier members of the society. Thus, wellbeing is not only important for the betterment of communities and societies; it is also in the best interest of organizations (Black, 2008; Waddell & Burton, 2006). Two strands of research can be clearly observed in the studies

on employee wellbeing: (1) a stress perspective, and (2) a positive feelings perspective. Proponents of stress perspective (French et al., 1982) argue that when work demands exceed resources, individual employees experience an undesirable state (e.g. anxiety or stress) that hinders their performance. On the other hand, the proponents of positive feelings perspective (Warr, 1999) argue that when work demands match resources, individual employees experience positive emotional states (satisfaction, joy, commitment, contentment) that accentuate their performance.

The psycho-social work environments can play a vitally important role in promoting employee wellbeing since employees spend a significant portion of their waking hours in their workplaces (Black, 2008). Of the models of psychosocial work environments (Amick & Celentano, 1991; French *et al.*, 1982; Cooper *et al.*, 2001; Karasek, 1979; Karasek & Theorell, 1990; Lansisalmi & Kivimaki, 1999; Niedhammer *et al.*, 1998; Siegrist, 1996; Warr, 1990; Ylipaavalniemi *et al.*, 2005), the demand–control model (Karasek, 1979), subsequently called the demand-control-support model (Johnson and Hall, 1988; Karasek & Theorell, 1990), has received most of the attention in the studies of employee wellbeing (e.g. Van der Doeff & Maes, 1999; de lange *et al.*, 2003; Hauser *et al.*, 2010). While it has not been universally supported in the empirical literature (e.g. Van der Doeff, 1999), there is sufficient supporting evidence for it to be used as an organising device for much research on work and wellbeing. In the process, many criticisms have been made of the model, or at least particular variants of it.

This paper focuses on testing one set of these criticisms, namely the empirical specification of the concept ‘*support*’. It is suggested that it has been specified far too narrowly, and has crucially ignored the availability of support for family responsibilities – an important aspect of the work environment in an era of increasing numbers of dual-career families, single parent families, and family members with care giving responsibilities.

To date almost all studies have concentrated on its predictions for employee wellbeing using the strain-axis (e.g. Van der Doef & Maes, 1999; de Lange *et al.*, 2003; Hausser *et al.*, 2010). The suggestion is also made, and tested, that activity axis (Karasek, 1979), also called learning axis, has important implications for employee wellbeing. Therefore, job type, based on the typology of Karasek (1979), has been included as a moderator of the relationship between job demands, control, social and family support, and employee wellbeing.

It is also suggested in this paper that a re-consideration needs to be made the key indicators of wellbeing that are examined using the JDCS model. Specifically, it is contended that indicators of displeasure, such as anxiety, can best be viewed as antecedents of pleasure, such as job satisfaction. Moreover, following the literature on high performance work systems (Messersmith *et al.*, 2011; Takeuchi *et al.*, 2009), it is also suggested that organizational commitment should be examined as an indicator of employee wellbeing, namely satisfaction with the employing organization.

The paper deploys the fifth British ‘Workplace Employment Relations Survey’ (WERS2004) for the analysis. This nationally-representative data-set has information on

a wide range of factors central to the Karasek model, and crucially, contains matched employer/employee data.

The present study therefore extends previous research on the JDCS-wellbeing link in several ways. First, an additional support measure, the ‘perceived availability of family support’ is included as a work environment characteristic. Second, organizational commitment is included as an indicator of wellbeing, in addition to the more traditional job satisfaction measures. Third, anxiety is included as a mediator between job characteristics and both job satisfaction and organizational commitment. Fourth, job type (active-passive, low-high strain) is included as a moderator.

2. The JDC/JDCS Model

The Job Demands-Control (JDC) model, introduced by Robert Karasek in 1979 and subsequently expanded to include social support, is one of the dominant and widely studied models on the link between job characteristics and employee wellbeing. The original JDC model identified *job demands* and *job control* as the two central aspects of the work environment influencing wellbeing. Job demands refer to the psychological stressors present in the work environment and have mainly been operationalized as workload, time pressure and role conflict (Karasek, 1985). Job control, also known as decision latitude, refers to employees’ ability to control their job tasks and general work activities to meet their job demands (Karasek & Theorell, 1990).

To answer criticisms of simplicity, Johnson and Hall (1988) expanded the JDC model by adding the *social support* dimension and renamed it the ‘Job Demands-Control-Support’ (JDCS) model. Social support refers to workplace social integration and the overall level of help available on the job from both managers and co-workers (Payne, 1979). Researchers have used ‘supervisor/managerial support’ or ‘co-worker support’ or both to describe social support (ter Doest & de Jonge, 2006; Brough & Pears, 2004; Pelfrene *et al.*, 2002; Baker *et al.*, 1996; Bourbonnais *et al.*, 1996; Cahill and Landsbergis, 1996; Roxburgh, 1996; Johnson *et al.*, 1995; Moyle, 1995; Amick & Celentano, 1991).

The JDC model has two axis, called strain and activity/learning axis (Karasek (1979). The first hypothesis of the JDC model, the *strain hypothesis*, predicts that employees working in a *high-strain job* (high demands, low control) experience low wellbeing whereas for employees working in low strain jobs, the occurrence of reduced wellbeing is rather unlikely. The equivalent for the JDCS model, the *iso-strain hypothesis*, states that adverse wellbeing will be experienced by employees working in high *iso-strain* jobs (high demands, low control and low support). On the other hand, it is more likely for employees working in low *iso-strain* jobs to experience increased wellbeing. The second hypothesis of the JDC model, the *learning hypothesis*, predicts that employees working in *active* jobs (high demands and control) experience an increase in the overall activity and learning and self development (Karasek, 1979). On the other hand, employees working in *passive* jobs (low demands and low control) experience a decline in the overall activity and little (if any) opportunity for learning or personal development. As mentioned above, the JDC model was extended by integrating ‘social support’ as a third dimension. The

JDCS equivalent hypothesis predicts that *active jobs* (high demands, high control and high support) stimulate learning and personal growth, thereby increase wellbeing.

The changing nature of the workforce demographics call for the efforts to expand JDCS model to better reflect twenty-first century jobs (Bond *et al.*, 2002; 2005). Now, more workers are expected to be women, single parents, partners in dual earner couples, and family members with care giving responsibilities (Desai *et al.*, 1999; Dunnell, 2007; Northcott, 1991), and these workers experience daily challenges in meeting both work and family responsibilities (Voydanoff, 2002). Thus, the studies on psychosocial work environment should extend beyond the job characteristics, and we suggest that new research should focus on the family friendly policies. Our argument is based on the assumption that feeling unable to meet family role obligations due to the time and energy required in the work role is a source of job distress (Frone, 2003; Frone *et al.*, 1997; Greenhaus & Beutell, 1985) resulting from the frustration that employee experiences when cognitively searching for the solutions to the conflict while at work (Thomas & Ganster, 1995; Thompson *et al.*, 1999). In this search, the employee may come up short, particularly when the demands of the work role are a prominent feature of the work environment (Hammer *et al.*, 2004).

In the present study, building on Karasek's job demand, control, and social support (JDCS) model, we test the taxonomy of the psychosocial work environments in which we examine the contributions of perceived family supportiveness of workplaces for employee wellbeing. Findings have the potential to inform research and policies aimed at improving employee wellbeing in UK.

3. The changing work population and the JDCS Model

Perceived availability of family support and wellbeing

Frequent changes at the workplace and in society have led researchers to devote increased attention to the interaction between work and personal life (Bond *et al.*, 2002). Friedman & Greenhaus (2000) argue that, since dual-earner/dual-career families are becoming the norm, organizations need to redesign work to allow greater flexibility to individuals over the long term. Family support practices involving flexible work schedules (such as flexible working hours, part-time working, job sharing, compressed week arrangements, term-time only commitments and increased working from home) and family-friendly policies (such as dependent care benefits, family leaves of absence, parental leave, help with child care) are perceived by employees as a means of balancing work and family roles and reducing conflicts (Allen, 2001; Cully *et al.*, 1999; Friedman & Johnson, 1997; Glass & Finley, 2002; Johnson *et al.*, 2008; Lewis, 2001; Mauno *et al.*, 2006).

Research on work-life balance has mainly examined family support policies and their impact on employees' work performance and domestic lives. In response to EU pressure to introduce legislation to reconcile work and family life, promote gender equality in workplaces and provide better quality care for employees' children and dependents (Budd & Mumford, 2005; Caracciolo, 2001), the UK Government has

introduced labour market oriented policies for low-income poor families (Blundell & Hoynes, 2001). However, previous research has noted that the success of these policies may be impaired if issues like childcare, flexibility to care for, say, a sick child or attend a parent teaching meeting cannot be catered for in the employment relationship (Metcalf, 1990). As a consequence, the UK Government has taken a number of initiatives to encourage family-friendly work environments which include the National Childcare Strategy, extended maternity and paternity entitlements, the National Minimum Wage, the New Deal for Lone Parents, and the Working Families Tax Credit. In addition, the Work-Life Balance campaign provides awareness to employees and organizations concerning their legal entitlements and obligations, ways family-friendly policies can be implemented in workplaces, and the potential gains from doing so.

Until recently, there were no studies examining the impact of family-friendly policies on British employees' wellbeing. Research was typically limited to either case studies of model programmes in specific organizations or surveys of organizations (Dex & Scheibl, 2001; Hogarth *et al.*, 2001). The release of WERS98 and WERS2004 resulted in an upsurge of work addressing various aspects of family-friendliness of British workplaces (e.g. Budd & Mumford 2002; Wood *et al.*, 2003; Kersley *et al.*, 2006). Consistent with some US studies (Goodstein, 1994; Ingram & Simons, 1995; Osterman, 1995), these studies investigated which workplaces offered family-friendly policies by using proxies for family-friendly policies as dependent variables and independent variables comprised of proxies such as workplace size, percentage of females in workforce, percentage of working parents, public/ private sectors, percentage of employees aged 40 over above.

At the individual level of analysis, some studies examined UK employees' perceptions of family-friendly policies (e.g. Mumford & Budd, 2006; Budd & Mumford, 2004). However, only Gazioglu & Tansel (2004), using WERS98 data, examined the impact of these policies on employee wellbeing. The results suggested a significant association between the availability of flexible working hours and various measures of job satisfaction, whereas all other flexible work environment variables (such as job sharing, parental leave and working from home) were statistically insignificant. The mainstream US literature, however, has reported that employees' perceptions of the availability of family support is positively associated with job satisfaction and organizational commitment, and negatively associated with work-family conflict (e.g. Thomas & Ganster, 1995; Allen, 2001; Mauno *et al.*, 2006). In addition, Grover & Crooker (1995) found that employees who had access to family support benefits showed significantly higher organizational commitment and lower quit intentions than employees who did not. Similarly, in a sample of female employees, Scandura & Lankau (1997) found that women's' perception that their organizations are supportive of their family commitments led to higher level of organizational commitment and job satisfaction, and vice versa.

Work-life balance and the JDCS Model

The JDCS model, which includes only social support, has been frequently criticized for not incorporating other types of support (Kristensen, 1995; de Jonge & Kompier, 1997; Van Der Doeff & Maes, 1999). These may include natural, physical, technical, intellectual and interpersonal support (Payne, 1979; Wood, 2008). The availability of family support is one such type of support. Researchers have observed a tremendous change in workforce characteristics in recent years, as more and more non-traditional employees including women with young children, the disabled, students, and single parents with family responsibilities have been joining the labour force (Allen, 2001; Saltzstein *et al.*, 2001). Especially with the increased participation of women with young children and single parents in the workforce, work and family issues have become increasingly important for employees. Since women have become more inclined to combine child-rearing and employment, men have responded to these changes by accepting an increasing share of domestic responsibilities (Friedman & Greenhaus, 2000). Husbands in dual career families face higher work-family conflict from the demands of sharing family responsibilities (Ginsberg, 1998; Lewis, 2001), whereas women face conflicts in their work and traditional family roles such as looking after children, homes and elderly parents or disabled dependents (Higgins *et al.*, 1992; Saltzstein *et al.*, 2001). Employed students and older workers require flexibility to cope with both their work and family demands (Saltzstein *et al.*, 2001). Therefore, in the context of the changing demands of the working population, it is important to study the availability of 'family support' available for employees to help them cope with the pressures their dual roles promote.

Despite their popularity, the success of family-friendly initiatives depends on the job control (Thompson & Prottas, 2005) and social support (Allen, 2001; Anderson *et al.*, 2002; Thompson *et al.*, 1999; Thompson & Prottas, 2005). The nature of the job itself has an impact on the ability of employees to integrate work and family roles (Perlow, 2001; Thomas & Ganster, 1995; Thompson *et al.*, 1990; Thompson *et al.*, 1992). Specifically, a job that allows employees more discretion in how and when the job gets done (Clark, 2001) should enable employees to have more control over other aspects of their lives. A variety of family-friendly benefits can either increase perceptions of control or decrease them. For example, allowing employees to share a job, increase or decrease work hours, or occasionally work from home may increase their control perceptions. On the other hand, denying employees' request for time off may decrease their sense of control (Greenberger & Strasser, 1986). Greater perceptions of family support (Thompson *et al.*, 1990; Thomas & Ganster, 1995) and decision latitude (Grzywacz & Marks, 2000; Voydanoff, 2004) have been related to positive spill over between work and family roles which is crucial to employee wellbeing.

In addition to job control, social support increases the likelihood that employees will feel comfortable using family-friendly benefits without worrying about the possible negative career consequences (Thompson *et al.*, 1999). The empirical literature has been supportive of the idea that individuals may experience negative career consequences for

availing family-friendly benefits (Allen, 2001; Anderson *et al.*, 2002; Finkel *et al.*, 1994; Judge *et al.*, 1995; Lewis & Taylor, 1996; Perlow, 1995). Supervisors play a key role in the effectiveness of family-friendly policies and programs (Perlow, 1995; Starrels, 1992; Thompson *et al.*, 1992). In a non-supportive role, managers may undermine the effectiveness of these policies by refusing to allow their employees to participate in them to integrate their work and family lives. However, in a supportive role, managers would show sensitivity towards employees' having to meet family responsibilities and encourage employees to participate in family-friendly programs (Perlow, 1995). Employees who have supportive supervisors are more likely to perceive their organization as family supportive (Allen, 2001) or perceive that they have more control over work and family (Thomas & Ganster, 1995).

Thus we hypothesize that employees who experience higher supervisor support and job control are more likely to perceive their workplaces as family supportive (Allen, 2001; Thomas & Ganster, 1995; Thompson *et al.*, 1990). Furthermore, together with increased job control and supervisor support, perceived family supportiveness of the workplaces increases employees' wellbeing. To the extent that high perceived support increases job satisfaction and commitment to the employing workplace, reduces anxiety and strain than when a workplace does not provide these supports.

Gender differences and JDCS

Gender offers the most important stratification of employees. In a review of 63 studies based on the JDC(S) model, Van der Doef & Maes (1999) found support for the iso-strain hypothesis in the male sample studies, but a large number of the female samples did not support the hypothesis. This suggests that the wellbeing of male and female employees is affected differently by high-strain jobs. Similarly, the literature on occupational stress has also suggested that gender differences do exist in wellbeing (Geller & Hobfoll, 1994; Niedhammer *et al.*, 2006; Roxburgh, 1996; Theorell & Karasek, 1996). This is in line with the assertion that a combination of work and unique family role (such as child bearing and childcare) exposes women to higher distress or dissatisfaction (Allen *et al.*, 2000; Anderson *et al.*, 2002; Frone *et al.*, 1992; Higgins *et al.*, 1992; Kinnunen *et al.*, 2004; Mauno *et al.*, 2006; Yavas *et al.*, 2008). This body of research supports the contention that family role pressures have increased due to an increase in the number of dual-earner/dual-career couples (Parasuraman *et al.*, 1992) and single parents (Duxbury *et al.*, 1994; Valcour, 2007). In the absence of any support policies to help them cope with their family responsibilities, women's wellbeing may be seriously compromised. In addition, women may be more vulnerable to stressful work, conditions such as low pay, high workload, lower job control and challenge and lower social support (Jacobs and Steinberg, 1990; Karasek *et al.*, 1982; Niedhammer *et al.*, 2006; Pugliesi, 1995; Roxburg, 1996).

Pleasure and Displeasure

Wellbeing researchers view pleasure and displeasure as important indicators of subjective wellbeing or happiness (Cacioppo & Berntson, 1994; Diener, 1984; Kahneman, 1999; Kahneman, Diener, & Schwarz, 1999; Kahneman, 2000; Oishi, Schimmack, & Diener, 2001). Where pleasure refers to the degree to which a person feels joyful, pleased or happy in a situation (Bigne *et al.*, 2005; Diener & Iran-Nejad, 1986), displeasure refers to the degree to which a person feels unhappy, frustrated, worried or anxious (Diener & Iran-Nejad, 1986). Arguably, pleasure and displeasure are two distinctive feelings that can be experienced concurrently (Cacioppo & Berntson, 1994; Schimmack, 2001). Thus, pleasure and displeasure are best represented by two uni-polar dimensions; one dimension ranges from the absence of pleasure to the maximum level of pleasure, whereas the other dimension ranges from the absence of displeasure to the maximum level of displeasure (e.g. Schimmack, 2001). Both pleasure and displeasure are affected by the nature of the work environment. It is contended that favourable work situations (low strain jobs or active jobs) produce pleasure, whereas unfavourable work situations (high strain or passive jobs) produce displeasure (Schimmack *et al.*, 2001; Diener & Iran-Nejad, 1986).

Another point of contention is that where both wellbeing indicators (pleasure and displeasure) tend to have predictable common antecedents, it is not clear how displeasure is related to the pleasure being experienced in a job. It is contended here that displeasure (job-related anxiety) may serve a critical role in explaining how work situations affect the degree of pleasure (job satisfaction and organizational commitment) experienced at work. It is suggested that induced displeasure inhibits the intensity of pleasure and that the inhibition effect is reciprocal to the intensity of displeasure (Schimmack, 2001; Diener & Iran-Nejad, 1986). In line with this argument, if work environment characteristics induce the feelings of anxiety, this in turn will affect job satisfaction and organizational commitment.

Organizational Commitment

Recent years have seen the development of a wide range of organizational strategies aimed at increasing competitive advantage. These have been generically labelled high performance work systems. While they vary substantially in terms of practices, objectives and impact, most have in common the desire to increase the level of commitment of employees towards the organization. Indeed, many have been called high commitment work systems.

There is a heated debate, however, as to whether such high performance systems obtain their performance impacts, if any, via the so-called golden path of generating high commitment or via an alternative causal path involving work intensification and/or reduced employee turnover (golden handcuffs) (Sengupta *et al.*, 2007). There is a suggestion that the development of high performance work systems has underpinned the rise in job observed in Western industrialised countries (Green, 2006).

In JDCS research, however, organizational commitment has been largely ignored as an outcome variable. In this study ‘organizational commitment’ is included as an

indicator of the pleasure that workers feel for being part of their employing organization, albeit tapping a different dimension of wellbeing than job satisfaction.

Research Model and Hypotheses

The research model used in this paper, which builds on JDCS theory, is outlined in Figure One and the following hypotheses are suggested by the discussion above:

- Hypothesis 1:* Job demands are positively related to displeasure at work (H1a), and inversely related to pleasure at work (H1b).
- Hypothesis 2:* Job control is inversely related to displeasure at work (H2a), and positively related to pleasure at work (H2b).
- Hypothesis 3:* Managerial support is inversely related to displeasure at work (H3a), and positively related to pleasure at work (H3b).
- Hypothesis 4:* The perceived availability of family support is negatively related to displeasure at work (H4a), and positively related to pleasure at work (H4b).
- Hypothesis 5:* Displeasure at work mediates the relationship of job demands-control-support and pleasure at work (H5a, H5b, H5c).
- Hypothesis 6:* Gender may moderate the relationships in hypotheses 1 (H6a), 2 (H6b), 3 (H6c), and 4 (H6d).
- Hypothesis 7:* Job type may moderate the relationships in hypotheses 1 (H7a), 2 (H7b), 3 (H7c), and 4 (H7d).
- Hypothesis 8:* Organizational commitment has similar relationships to the other variables as job satisfaction. (H8a, H8b, H8c, H8d).

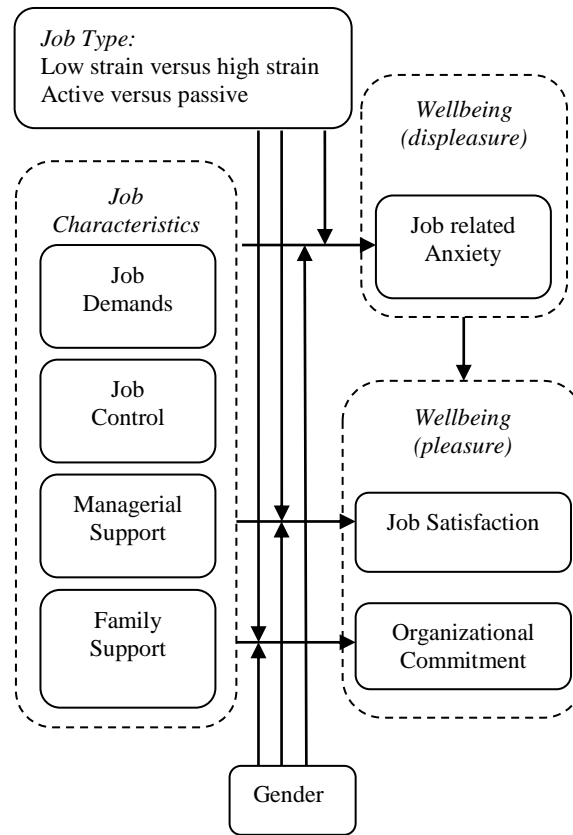


Figure 1: The research model

4. Method

Dataset

The data are from two elements of the nationally-representative British Workplace Employment Relations Survey of 2004 (WERS2004) – the *Management Questionnaire* and *Survey of Employees Questionnaire*. For the management survey, face-to-face interviews were conducted with managers in a total of 2,295 workplaces representing a 64 percent response rate. The sample covers both the public and private sectors. For the employee survey, a self-completion questionnaire was used to collect data from 22,451 employees, which represented a response rate of 61 percent.

Measures

The measure *Employee perceptions of their work environment* was drawn from the *Survey of Employees Questionnaire* on a scale consisted of twenty-two items describing four a priori constructs i.e. *work demands* (2 items, $\alpha=0.61$), *autonomy* (5 items, $\alpha=0.83$), *managerial support* (6 items, $\alpha=0.94$), and *available family support* (9 items, $\alpha=0.76$). The *availability of family support* was measured by two dimensions: (1) *flexible work*

arrangements (7 items) and (2) *childcare benefits* (2 items). *Wellbeing* was measured by one indicator of displeasure i.e. *job-related anxiety* (3 items, $\alpha=0.85$), and two indicators of pleasure such as *job satisfaction* (7 items, $\alpha=0.83$), and *organizational commitment* (3 items, $\alpha=0.85$) and the measures were drawn from the *Survey of Employees Questionnaire*. *Gender* is included as a categorical variable with two options: 1 if the employee was *male* and 2 if employee was *female*. Furthermore, job type was included as a categorical variable with options: *active*, *passive*, *low strain*, and *high strain* jobs.

The precise definitions of the variables are shown in Table 1.

Statistical Method

The statistical analysis was based on a combination of exploratory factor analysis (EFA), the cluster analysis, the estimation of a measurement model and the estimation of a full structural model. The EFA was performed on the full twenty-two job characteristics scale, with the aim of seeing if the items loaded onto their respective factors rather than other constructs. Hierarchical cluster analysis was used to determine the various job types. Further data analysis was carried out in accordance with a two-step methodology (Anderson & Gerbing, 1988) where the measurement model is first developed and evaluated separately from the full structural equation model. Accordingly, the first step was to establish the uni-dimensionality, reliability, convergent, and discriminant validity of the constructs with confirmatory factor analysis (CFA). Furthermore, to test the hypothesized indirect and mediating effects, we used Mackinnon's bootstrap procedures (e.g. MacKinnon *et al.*, 2002; MacKinnon *et al.*, 2004; MacKinnon, 2008). We bootstrapped 500 samples to obtain 95% bias-corrected confidence intervals to detect the presence of indirect effects. Figure 2 depicts the proposed structural model. For simplification, the observed indicators and their variances are omitted. All of the hypothesized relationships in the model are tested using the entire sample, across gender, and job types.

5. Results

Exploratory factor analysis (EFA).

The EFA results, presented in Table 1, confirmed that that all the items loaded substantially onto their respective factors and not on the other constructs, thus supporting the proposition that the given twenty-two indicators of job characteristics can be grouped into the four proposed constructs. However, EFA results did not show any pattern for the sub-scales for family support. Hence, the respective items were modelled into a single factor named *family support*.

Measurement model. The CFA results, summarised in Table 1, suggests that all standardized regression weights are greater than 0.50 and significant at $p = 0.05$. The adjusted χ^2 (χ^2/df) is 3.76 and other goodness-of-fit statistics (CFI=0.91, TLI=0.92, and RMSEA=0.051) indicate that the model achieved a good fit to the observed data, thus satisfying the conditions of uni-dimensionality (Schumacher and Lomax, 2004). Turning

to the assessment of measure of reliability, Table 1 indicates that the reliability of individual items based on the R^2 values for all indicators range from 0.17 to 0.77. Hence, some values are below the acceptable level of 0.40 (Taylor and Todd, 1995). However, in terms of composite reliability measures, all constructs exceed the value of 0.60 recommended by Bagozzi & Yi (1989), the Cronbach alpha coefficient exceed the cut-off value of 0.7 (Nunnally & Berstein, 1994), and all items have shown significant loadings onto their respective constructs. These indicators suggest that a high internal reliability for the data exists.

Discriminant validity was tested by comparing the square root of average variance extracted with the correlations between the constructs (Fornell & Larcker, 1981). Since, the square root of variance extracted is greater than the correlations in Table 2, this provides good evidence of discriminant validity (Bagozzi & Yi, 1989). Furthermore, composite reliabilities in Table 1 for all constructs are larger than their respective AVE's, hence convergent validity is established (Hair *et al.*, 2010).

TABLE 1
 EFA and CFA results

Construct (Cronbach's alpha, composite reliability, and average variance extracted) ^a	Exploratory Factor Analysis				CFA	R ²
	F1	F2	F3	F4		
	<u>Job Characteristics</u>					
<u>Job Demands</u> (0.67, 0.68, 0.53)						
Challenge My job requires that I work very hard.	0.8				0.55*	0.31
	1					*
Stress I never seem to have enough time to get my work done.	0.8				0.82*	0.68
	4					*
<u>Job Control</u> (0.81, 0.83, 0.51)						
Influence you have over the tasks you do in your job.	0.7				0.78*	0.61
	9					*
Influence you have over the pace at which you work.	0.7				0.74*	0.55
	8					*
Influence you have over the how you do your work.	0.8				0.83*	0.68
	2					*
Influence you have over the order in which you carry out tasks.	0.8				0.78*	0.60
	0					*
Influence you have over the time you start and finish your working day.	0.5				0.51*	0.26
	8					*
<u>Managerial Support</u> (0.96, 0.92, 0.70)						
Managers here can be relied upon to keep their promises.			0.8		0.88*	0.78
			7			*
Managers are sincere in understanding employees' views.			0.8		0.91*	0.83
			9			*

	Managers here deal with employees' honestly.	0.90	0.91*	0.82*
	Managers here treat employees fairly.	0.87	0.87*	0.75*
	Managers encourage people to develop their skills.	0.78	0.75*	0.59*
	Managers understand about employees having to meet responsibilities outside work.	0.77	0.77*	0.57*
<i>Family Support</i> (0.76, 0.95, 0.66)				
Flexible Work Arrangements	Flexi-time.	0.58	0.76*	0.58*
	Job sharing.	0.68	0.81*	0.65*
	Chance to reduce working hours.	0.76	0.83*	0.69*
	Chance to increase working hours.	0.72	0.67*	0.45*
	Working at or from home.	0.43	0.64*	0.40*
	Change shift time.	0.60	0.67*	0.43*
	Workings same number of hours across fewer days.	0.68	0.77*	0.57*
Childcare Benefits	Working only during school term time.	0.44	0.54*	0.29*
	Paid parental leave.	0.50	0.61*	0.38*
Wellbeing				
<i>Job Related Anxiety</i> (0.85, 0.86, 0.67)				
In past few weeks how much of the time has your job made you feel:				
	Tense.		0.76*	0.68*
	Worried.		0.87*	0.76*
	Uneasy.		0.83*	0.57*
<i>Job Satisfaction and Commitment</i> (0.89, 0.89, 0.58)				
	The sense of achievement you get from your work.		0.66*	0.49*
	The scope for using your own initiative.		0.72*	0.52*

The amount of influence you have over your job.	0.78*	0.60 *
The training you receive.	0.60*	0.40 *
The amount of pay you receive.	0.51*	0.26 *
Job security.	0.56*	0.32 *
The work itself.	0.65*	0.42 *
I share many of the values of my organization.	0.68*	0.46 *
I feel loyal to my organization	0.69*	0.48 *
I feel proud to tell people who I work for	0.70*	0.49 *

Fit indices for a four factor solution

CFI = 0.95; TLI = 0.93; RMSEA = 0.061

Fit indices for the measurement model

χ^2 (df) = 5400.45* (501); CFI = 0.93; TLI = 0.92; GFI = 0.92; RMSEA = 0.051

Note: Estimator: WLSM; Rotation: GEOMIN; Type of rotation: Oblique; Maximum number of iterations: 1000; only loadings over 0.4 are displayed; * Significant at $p = 0.05$ level

a = Entries in parentheses for constructs are Cronbach's alpha, composite reliability, and average variance extracted respectively

TABLE 2
 Descriptive statistics, correlation matrix and square root of AVE

<i>Constructs</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. Job Demands	0.73					
2. Job Control	0.01	0.71				
3. Managerial Support	-	0.39	0.84			
	0.07					
4. Family Support	-	0.24	0.36	0.81		
	0.02					
5. Job Related Anxiety	0.55	-	-	-	0.82	
		0.12	0.24	0.11		
6. Pleasure	-	0.64	0.79	0.36	-	0.76
	0.07				0.31	

Note: square root of AVE in diagonal and correlations off diagonal. All correlations are significant at 0.05 levels.

Analysis to identify job types. Hierarchical cluster analysis, with ward’s partitioning and Euclidean distance, was used to determine the number of distinct groups from work environment characteristics. The four groups, so obtained, confirmed that existence of *low strain, high strain, active, and passive* jobs as described by Karasek (1979). The results of the ANOVA tests showed that the four groups so obtained are different in terms of the work characteristics.

TABLE 3
 Job types based on job characteristics

	1		2			3			4		F
	Passive		Low Strain			High Strain			Active		
	M	SD	M	SD	(1,3, 3)	M	SD	(1,2, 4)	M	SD	
Demands	5.8	1.1	7.2	1.5	7.7	1.5	8.49	1.1	646.89		
Control	15.02	2.91	17.00	2.70	10.37	3.18	17.15	2.38	1213.99		
M-support	19.04	4.86	23.63	4.43	13.52	4.81	21.76	4.80	805.69		
F-support	1.42	1.29	5.51	1.66	1.10	1.01	1.50	1.22	2057.48		

Note: Numbers in italics indicate the highest group centroid for that measure.

a. Group members from which the group was significantly differently at 0.05 level indicated by the Tukey pair wise comparison procedure.

Structural model results. Table 4 presents the parameter estimates of the full structural model. The fit indices imply that the model has achieved a good fit. The results support most of the hypothesized relationships for the all 3 samples.

Hypothesis 1. The direct relationship of job demands with pleasure is positive and significant ($p < 0.05$) for males ($\beta = 0.04$), females ($\beta = 0.08$), and all employees ($\beta = 0.06$), although the relationship do not differ significantly between male and female employees ($z = 1.01$). However, job demands have a significant negative impact on pleasure indirectly through anxiety ($\beta = -0.08$) and the effect is significant in both male ($\beta = -0.08$) and female ($\beta = -0.08$) samples too. Thus, the total effect of job demands on pleasure is insignificant ($p > 0.05$) in all, male and female samples ($\beta = -0.02$; $\beta = -0.03$; $\beta = -0.01$). This finding contradicts hypothesis H1b and the results of some previous studies (Ahuja *et al.*, 2007; Currivan, 1999; Cuyper & Witte, 2006), where a significant negative relationship was reported between job demands and both job satisfaction and organizational commitment. Furthermore, job demands are positively and significantly ($p < 0.05$) associated with job-related anxiety for males ($\beta = 0.53$), females ($\beta = 0.56$), and all employees ($\beta = 0.54$), consistent with hypothesis 1a. The magnitude of this relationship, however, is significantly larger for female employees ($z = 2.34$). Thus female employees experience more displeasure at work due to work demands.

Hypothesis 2. Consistent with hypothesis 2b, job control shows a significant ($p < 0.05$) positive relationship with pleasure for males ($\beta = 0.40$), females ($\beta = 0.36$), and all employees ($\beta = 0.39$). In addition, consistent with hypothesis 2a, job control is negatively associated with job-related anxiety ($p < 0.05$) for males ($\beta = -0.05$) and all employees ($\beta = -0.04$). The influence of job control on pleasure and displeasure do not differ significantly between male and female employees ($z = 0.34$; $z = 0.37$). Furthermore, the total effect of job control on pleasure, accounting for both direct and indirect through anxiety, is positive and significant ($p < 0.05$) for male ($\beta = 0.41$), female ($\beta = 0.37$), all ($\beta = 0.39$) employees.

Hypothesis 3. Managerial support had a significant ($p < 0.05$) direct positive impact on pleasure for males ($\beta = 0.58$), females ($\beta = 0.60$) and all employees ($\beta = 0.59$). The results also revealed a significant negative relationship ($p < 0.05$) between managerial support and job related anxiety for males ($\beta = -0.17$), females ($\beta = -0.21$) and all employees ($\beta = -0.19$). The total effect of managerial support on pleasure is significant ($p < 0.05$) and positive for males ($\beta = 0.61$), females ($\beta = 0.63$), and all employees ($\beta = 0.62$) sample. These results are consistent with previous research (Fletcher & Jones, 1993; Kushnir & Melamed, 1991; Landsbergis *et al.*, 1992; Wall *et al.*, 1996; Warr, 1990), and with hypotheses 3a and 3b. However, no differences were found between male and female samples for the relationship between managerial support and pleasure ($z = 0.60$) or displeasure ($z = -1.86$).

Hypothesis 4. The availability of family support showed a significant ($p < 0.05$) relationship with pleasure ($\beta = 0.037$) and displeasure ($\beta = -0.044$) in the all employee sample. Thus availability of family support not only reduces displeasure, it enhances pleasure as well. The effect sizes are small however this by no means that these are trivial. Furthermore, availability of family support has a significant ($p < 0.05$) negative impact on displeasure in female sample ($\beta = -0.043$), whereas it has a significant ($p < 0.05$) positive impact on pleasure in male sample ($\beta = 0.047$). These differences across gender are significant ($z = -1.99$; $z = 2.10$) respectively. The results of our study concur with earlier

studies (Mauno *et al.*, 2006; Ng *et al.*, 2006; Chen *et al.*, 2006; Thompson *et al.*, 1999) which supported a positive association between the perceived availability of family support and both job satisfaction and organizational commitment. The results suggested support for hypotheses 4a and 4b.

Hypothesis 5. Displeasure (Job-related anxiety) showed a significant negative association ($p < 0.05$) with pleasure for males ($\beta = -0.15$), females ($\beta = -0.15$) and all employees ($\beta = -0.15$). Furthermore, displeasure significantly ($p < 0.05$) mediated the relationship between job demands and pleasure ($\beta = -0.078$) and managerial support and pleasure ($\beta = 0.027$). The results provide support for hypotheses H5a and H5c.

Hypothesis 6. In general, the results for the male and female samples are very similar. The main difference relates to the relationship of family support and anxiety (hypothesis H4a), and family support and pleasure (hypothesis H4b). Where the relationship between family support and anxiety is negative and significant only for women, the relationship between family support and pleasure is positive and significant only for men. The other main gender difference relates to the relationship of job demands and anxiety (hypothesis H1a), which is stronger for women. Hypotheses 6a and 6d are therefore supported but hypotheses 6b and 6c are not.

Hypothesis 7. The results for the relationships across *active* and *passive*, and *low strain* and *active* job types are very similar. The main differences related to the *low strain* and *high strain* groups. First, job control, managerial support, and family support have a significant ($p < 0.05$) negative impact on displeasure ($\beta = -0.11$; $\beta = -0.25$; $\beta = -0.11$) and family support have a significant ($p < 0.05$) positive impact on pleasure ($\beta = 0.12$) in high strain group only and these differences are significant across the two groups ($z = -1.98$; $z = -3.38$; $z = -2.12$; $z = 1.99$). Thus, family support along with job control and managerial support are important resources for improving employee wellbeing in the high strain group.

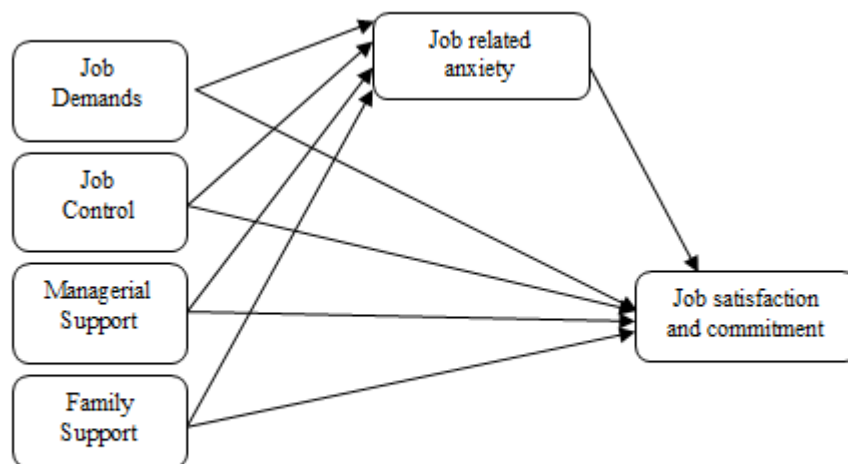


Figure 2: Structural model for the hypothesized relationships.

TABLE 4
 Standardized path coefficients and indirect (mediating) effects

Relationship	Standardized path coefficients			
	All sample	Gender		z-scores
Male		Female		
Direct effects:				
Job Demands → Anxiety	0.54**	0.53**	0.56**	2.34*
Job control → Anxiety	-0.04*	-0.05*	-0.03	0.37
M-Support → Anxiety	-0.19**	-	-	
		0.17**	0.21**	-1.86
Family Support → Anxiety	-0.04*	-	-	
		-0.001	0.043*	-1.99*
Family Support → Pleasure	0.037*	0.05**	0.02	2.12*
M- Support → Pleasure	0.59**	0.58**	0.60**	0.59
Job control → Pleasure	0.39**	0.40**	0.36**	0.34
Job demands → Pleasure	0.06**	0.04*	0.08**	1.01
Anxiety → Pleasure	-0.14**	-	-	
		0.15**	0.15**	0.42
Indirect effects:				
Job demands → Anxiety → Pleasure	-0.08*	-0.08*	-0.08*	-
Job control → Anxiety → Pleasure	0.01	0.01*	0.005	-
M-support → Anxiety → Pleasure	0.03*	0.02*	0.03*	-
Family support → Anxiety → Pleasure	0.01	0.001	0.004	-
Total effects:				
Job demands → Pleasure	-0.02	-0.032	-0.01	-
Job control → Pleasure	0.39**	0.41*	0.37*	-
M- Support → Pleasure	0.62**	0.61**	0.63**	-
Family Support → Pleasure	0.04*	0.048*		
		*	0.025	-
Fit indices	χ^2 (df) = 5400.45 (501); CFI = 0.93; TLI = 0.92; GFI = 0.92; RMSEA = 0.051	χ^2 (df) = 5903.5 (1004); CFI = 0.93; TLI = 0.92; GFI = 0.92; RMSEA = 0.036		

Note: ** Significant at $p < 0.01$, * Significant at $p < 0.05$.

Table 5

Standardized path coefficients, indirect mediating effects in *low strain* and *high strain* groups

	Strain group			Learning group			High wellbeing group		
	low	high	z-scores	Passive	Active	z-scores	Low strain	Active	z-score
Anxiety<--- demand	0.46**	0.49**	- 2.10*	0.23**	0.32**	0.79	0.46**	0.33**	0.55
Anxiety<--- control	- 0.09	- 0.11*	- 1.98*	0.02	0.09	1.74	- 0.10*	- 0.10*	0.25
Anxiety<--- Msupp	- 0.08	- 0.25**	- 3.38*	- 0.15**	- 0.20**	1.29	- 0.08*	- 0.19**	2.01*
Anxiety<--- Fsupp	- 0.01	- 0.11*	- 2.12*	-	-	-	-	-	-
Pleasure<--- Fsupp	0.04	0.12*	1.99*	-	-	-	-	-	-
Pleasure<--- Msupp	0.62**	0.66**	3.45*	0.73**	0.67**	0.70	0.62**	0.67**	1.00
Pleasure<--- control	0.40**	0.44**	2.88*	0.25**	0.29**	-0.75	0.40**	0.29**	1.95
Pleasure<--- demand	0.10*	0.01	- 1.57	-	-	-	-	-	-
Pleasure<--- Anxiety	- 0.16**	- 0.23**	- 2.32*	- 0.20**	- 0.11**	- 2.48*	- 0.16**	- 0.10**	-1.53

Note: ** Significant at $p < 0.01$, * Significant at $p < 0.05$.

6. Discussion

The present study found that excessive job demands induce displeasure whereas job control, managerial support, and availability of family support promote pleasure and reduce displeasure. The results show that job demands are positively associated with job-related anxiety. This finding concurs with that of many other studies (Barnett & Brennan 1995; De Jonge & Schaufeli, 1998; Fletcher & Jones, 1993; Green & McIntosh, 2001; Landsbergis *et al.*, 1992; Wood, 2008). There is a general agreement that time pressures and work intensity are linked to the experiences of anxiety. For many people, work is what they choose to spend much of their time doing, and generally enjoy doing. However, such one-sidedness has negative effects for other aspects of wellbeing. Excessive workloads can be experienced as oppressive. Many people find that they are increasingly isolated from their family in an ever-increasing climate of work-life intensity. A rise in the level of anxiety due to cumulative work intensity can therefore mask the positive relationship between job demands and pleasure.

Thus job control, managerial support, and family support are crucial resources to enhance employee wellbeing. These results are consistent with earlier findings (Allen, 2001; Aryee & Stone, 1996; Behson, 2005; Currivan, 1999; Cahill & Landsbergis, 1996; De Jonge & Schaufeli, 1998; Diefendorff *et al.*, 2006; Fletcher & Jones, 1993; Gbadamosi *et al.*, 2007; Iverson, 1996; Iverson, 1999; Kim, 1999; Landsbergis *et al.*, 1992; Mansell *et al.*, 2006; Rooney & Gottlieb, 2007; Schaubroeck & Fink, 1998; Sprigg *et al.*, 2000; Wood, 2008). Our results suggest that work demands are a source of displeasure for women and availability of family support reduces displeasure among women. Women generally spend more hours in family work than men (Voydanoff, 2002) thus are more vulnerable to excessive cumulative work demands (Pleck, 1985; Wortman *et al.*, 1991). Excessive job demands placed on them makes it difficult for them to manage family responsibilities, which adds to their level of anxiety. Women see family support as an essential resource which not only helps them to balance their family role demands along with the demands of work role, but it also helps them to reduce the frustration that arises from being unable to meet family role obligations due to the work demands. Thus, availability of family support reduces displeasure from work among women. In addition, managerial support is regarded as an important resource which helps them to reduce displeasure at work and make it easy to perform adequately in other role. Job control and managerial support are crucial to enhancing pleasure among female employees.

The results also show that family support has a positive impact on the pleasure from work in male employees. Since men's involvement in the family role has been on a rise since 1960's particularly in dual earner couples (Lamb, 2004), they may view family support as an important resource which is available for them as and when needed. They recognize organizational efforts to help them cope with their family role demands and may then feel obligated to respond to these positive organizational efforts with increased job satisfaction and commitment to the employing organization (Eisenberger *et al.*, 1990; Eisenberger *et al.*, 2001; Rhoades & Eisenberger, 2002; Shore & Wayne, 1993). In addition to family support, job control and managerial support are crucial resources for increasing pleasure among men. With regard to displeasure, where job demands are a source of displeasure for men, managerial support is crucial to reducing displeasure among male employees.

Furthermore, family support is not only necessary to deal with job demands, but they also are important in their own right e.g. family support policies reduce work interference with family domain which is expected to be related to wellbeing in family domain (Kinnunen & Mauno, 1998).

Where earlier findings have suggested an inverse relationship between job demands and pleasure (Ahuja *et al.*, 2007; Chen *et al.*, 2006; Currivan, 1999; Cuyper & Witte, 2006; Iverson & Deery, 1997; de Jonge & Schaufeli, 1998), others have suggested a direct relationship between job demands and pleasure (Brown & Peterson, 1993; James & Jones, 1980; Mathieu & Zajac, 1990; Locke, 1976; Schneider & Snyder, 1975). These conflicting findings indicate that researchers have failed to examine the underlying mechanisms through which job demands relate to pleasure. We found that the direct

effects are positive and significant while indirect effects (about the same magnitude) through anxiety are negative and significant. However, the total effect of job demands on pleasure is insignificant.

Furthermore, we tested the impact of work environment characteristics on both indicators of wellbeing in four job types where high demands are matched with high resources (active jobs) and low demands are matched with low levels of resources (passive jobs), low demands with high levels of resources (low strain jobs) and high demands with low levels of resources (high strain jobs). The results show that, in jobs where demands are resources are matched (e.g. passive and active jobs), managerial support and control are important resources for enhancing pleasure and reducing displeasure. In jobs where job resources exceed job demands (low strain jobs), control and support enhance pleasure however no impact on displeasure from work. Finally, in jobs where job demands exceed resources (high strain jobs), job demands increase displeasure from work. Job control, managerial support and family support are important resources in coping with demands, achieving work goals, and act as a protector against reduced wellbeing. These three resources not only help in reducing displeasure from work but also enhance pleasure derived from work.

The present study thus indicated that perceived work situations are relatively important predictors of employee wellbeing. Workplace interventions such as decreasing or stabilizing job demands and increasing job control, managerial support and family support are useful strategies for improving employee wellbeing.

7. Conclusions, Limitations and Implications

In conclusion, the findings of this study not only lend support to the JDACS model, but also suggest the usefulness of family support policies for improving employee wellbeing, particularly female employees. At the individual level, the availability of family support has a negative impact on work related anxiety among female employees. Thus, at the very least, if women dominate the workforce in an organization, managers should help them balance work and family life by offering family support.

The finding that the relationship between job demands and pleasure (job satisfaction and organizational commitment) is mediated by anxiety has important implications for organizations. Managers need to be aware that attempts to make jobs more complex and demanding will increase job-related anxiety which, in turn, will negatively affect job satisfaction and organizational commitment. However, increasing job control, managerial support, and family support may help in lowering anxiety and increasing job satisfaction and organizational commitment.

The key weakness of this study is that it is based on cross-sectional data. A longitudinal research design would have enabled stronger causal conclusions to be drawn (Zapf *et al.*, 1996). However, a review of the earlier studies testing the Karasek model suggests that results do not differ significantly between cross-sectional and longitudinal studies (de Lange *et al.*, 2003).

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