Original Article

# Beyond the Demand-Control Model

## Thriving on High Job Demands and Resources

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**Abstract.** This study among 12,359 employees working in 148 organizations tested the interaction hypothesis of the Job Demands-Resources (JD-R) model. Accordingly, employees endorse most positive work attitudes (task enjoyment and organizational commitment) when job demands and job resources are both high. Results of moderated structural equation modeling analyses provided strong support for the hypothesis: 15 of the 16 hypothesized interactions were significant for task enjoyment and 13 of the 16 interactions were significant for organizational commitment. Job resources (skill utilization, learning opportunities, autonomy, colleague support, leader support, performance feedback, participation in decision making, and career opportunities) predicted task enjoyment and organizational commitment particularly under conditions of high job demands (workload and emotional demands). These findings clearly expand the Demand-Control model and support the JD-R model. Moreover, the results illustrate what managers can do to secure employee well-being.

**Keywords:** Demand-Control model, Job Demands-Resources model, organizational commitment, task enjoyment

Most managers are aware that their role is to maximize the efforts of their employees toward achieving the organization's goals. Although a high workload may be needed to realize these goals, possible side effects include exhaustion and negative work attitudes. What can managers do to secure employee well-being (e.g., task enjoyment and organizational commitment)?

Many previous studies have used the Demand-Control model (DCM; Karasek, 1979; Karasek & Theorell, 1990) to explain employee well-being in the context of high job demands. A central hypothesis in the DCM is that strain will be highest in jobs characterized by the combination of high job demands and low job control. Such jobs are called "high-strain jobs." In contrast, the active-learning hypothesis in the DCM states that task enjoyment, learning, and personal growth will be highest in jobs characterized by the combination of high job demands and high job control. Although such jobs are intensively demanding, employees with sufficient decision latitude are expected to use all available skills, enabling a conversion of aroused energy into action through effective problem solving. Karasek (1979) has labeled these jobs "active-learning jobs."

In the present study among more than 12,000 employees from different occupational groups, we go beyond the DCM and propose that task enjoyment and organizational commitment may be the result of combinations of many different job demands and job resources and not only of quantitative job demands and control. We argue that enjoyment and commitment will be highest when employees are confronted with challenging and stimulating tasks, and have sufficient resources at their disposal (e.g., performance feedback, high-quality relationships with colleagues). Some previous studies with the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) have produced evidence for a range of Demands × Resources interaction effects (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Hakanen, Bakker, & Demerouti, 2005). In the present study, we will test several Demands × Resources combinations that – to the best of our knowledge – have not been examined in previous research.

Supporting the interaction hypothesis for different combinations of selective, yet significant, job demands and job resources in a heterogeneous sample of employees contributes to the literature in the following ways. First, such evidence would clearly expand the DCM by emphasizing the importance of taking a variety of job characteristics into account. Second, it would support the JD-R model by stressing the importance of demanding but challenging jobs. Validation of the Demands × Resources interaction for many different combinations of specific demands and resources would suggest that the same mechanism applies for every other Demand × Resource combination on motivational outcomes. Consequently, this may be important for job (re)design because it implies that high job demands may empower the motivating role of job resources across all contexts and occupations.

## DCM Versus JD-R Model

The DCM has acquired a prominent position in the literature. However, the empirical evidence for the model is mixed (De Jonge & Kompier, 1997; De Lange, Taris, Kompier, Houtman, & Bongers, 2003; Taris, Kompier, De Lange,




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Schaufeli, & Schreurs, 2003; Van der Doef & Maes, 1999). Additive effects of job demands and job control on employee well-being and motivation have often been found, but many studies failed to produce the interaction effects proposed by the DCM. Moreover, in a reanalysis of the 64 studies reviewed by Van der Doef and Maes (1999), Taris (2006) showed that only 9 of 90 tests provided support for the Demand × Control interaction effect. Several scholars attribute this lack of evidence to the conceptual and methodological limitations of the model (Carayon, 1993; De Jonge, Janssen, & van Breukelen, 1996; Kasl, 1989; Kristensen, 1995; Taris et al., 2003).

The most common conceptual criticism is that the DCM is too simplistic and fails to capture the complexity of work environments. Johnson and Hall (1988) have argued that job control is not the only resource available for coping with job demands and proposed that social support from colleagues or superiors may also play an important role. Some studies have indeed confirmed this hypothesis (see De Lange et al., 2003; Van der Doef & Maes, 1999), while others have included physical and emotional demands in the DCM in addition to workload (e.g., De Croon, Blonk, De Zwart, Frings-Dresen, & Broersen, 2002; Van Vegchel, De Jonge, Bakker, & Schaufeli, 2002).

This failure of the DCM to capture the complexity of work environments has constituted the starting point of the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001). At the heart of the JD-R model lies the assumption that whereas every occupation may have its own job characteristics, these factors can be classified in two general categories (i.e., job demands and job resources). *Job demands* refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs (Demerouti et al., 2001). Examples are a high work pressure and emotionally demanding interactions with clients. Although job demands are not necessarily negative, they may turn into job stressors when meeting those demands requires high effort from which the employee has not adequately recovered (Meijman & Mulder, 1998). *Job resources* refer to those physical, psychological, social, or organizational aspects of the job that are either/or: (1) functional in achieving work goals; (2) reduce job demands and the associated physiological and psychological costs; and (3) stimulate personal growth, learning, and development (Bakker & Demerouti, 2007). Hence, resources are not only necessary to deal with job demands, but they are also important in their own right.

Job resources either play an *intrinsic* motivational role because they foster employees' growth, learning, and development, or they play an *extrinsic* motivational role because they are instrumental in achieving work goals, or both (Bakker & Demerouti, 2007). In the former case, job resources fulfill basic human needs, such as the needs for autonomy, relatedness, and competence (Deci & Ryan, 1985). For instance, decision latitude and social support satisfy the need for autonomy and the need to belong, respectively. The intrinsic motivational potential of job resources is also recognized by a leading theory in motivational job design-job characteristics theory (JCT; Hackman & Lawler, 1971; Hackman & Oldham, 1980). JCT postulates that five core job characteristics (skill variety, task identity, task significance, autonomy, and job feedback) contribute positively to experienced meaningfulness, experienced responsibility, and knowledge of results. Stronger experiences of these "critical psychological states", in turn, lead to more positive attitudinal (e.g., increased job satisfaction) and behavioral (e.g., better performance) responses to work (Fried & Ferris, 1987; Humphrey, Nahrgang, & Morgeson, 2007).

Job resources may also play an extrinsic motivational role, because work environments that offer many resources foster the willingness to dedicate one's efforts and abilities to the work task (Meijman & Mulder, 1998). In such environments it is likely that the task will be completed successfully and that the work goal will be attained. For instance, supportive colleagues and performance feedback increase the likelihood of being successful in achieving one's work goals. In either case, be it through the satisfaction of basic needs or through the achievement of work goals, the outcome is positive and engagement is likely to occur (Schaufeli & Bakker, 2004).

A central hypothesis in the JD-R model is that many different combinations (interactions) of specific job demands and specific job resources determine employee well-being (Bakker & Demerouti, 2007). More specifically, it is proposed that the combination of high demands and low resources produces the highest levels of burnout, whereas the combination of high demands and high resources produces the highest levels of motivation. These hypotheses are conceptually consistent with the DCM (Karasek, 1979). However, the JD-R model expands the DCM by claiming that several different job resources (e.g., skill variety, performance feedback, and learning opportunities) interact with several different job demands (e.g., work overload and emotional demands) in producing employee well-being.

Moreover, the JD-R model expands the DCM model by emphasizing the *unique* role of job resources as main predictors of motivation/learning-related outcomes. According to the interaction hypothesis of the DCM, job resources function *only* as moderators in the relationship between job demands and strain (De Lange et al., 2003), or learning (Taris et al., 2003). The JD-R model goes one step further by suggesting that job demands are the most crucial predictors of job strain, while job resources are the most crucial predictors of work motivation, learning, commitment, and engagement. Consistently, job resources function mainly as *moderators* in interactions with strain as the dependent variable (here job demands are the main predictors; e.g., Bakker, Demerouti, & Euwema, 2005; Xanthopoulou et al., 2007), and as predictors in interactions with motivation and learning as the dependent variables (here job demands are the moderators; e.g., Bakker et al., 2007).

Only two previous studies used Job resources × Job demands interactions to predict work engagement – a clear motivational variable (Bakker et al., 2007; Hakanen et al., 2005). To illustrate, Bakker et al. (2007) tested the JD-R interaction hypothesis in a sample of Finnish teachers. It was predicted and found that job resources are most beneficial in maintaining work engagement under conditions of high job demands (e.g., pupil misbehavior). For example,

 

innovativeness, appreciation, and positive organizational climate boosted work engagement particularly when pupil misbehavior was high. This indicates that resources become most salient under demanding conditions. In other words, there is a need for a challenge (i.e., a demanding condition) in order for job resources to be translated into engagement. This is in line with the hypothesis of the JD-R model that resources acquire their saliency in the context of high job demands (see also Hobfoll, 2002).

## The Present Study

We propose that job resources interact with job demands in predicting motivational outcomes. Although there is some empirical evidence regarding this interaction hypothesis of the JD-R model, previous studies have solely examined homogeneous samples. In addition, one study that examined a relatively small heterogeneous sample did not find evidence for interaction effects (Bakker, Demerouti, & Verbeke, 2004). Thus, till now findings cannot be generalized across occupations. Several authors have argued that the lack of consistent findings on interaction effects for the DCM may be partially attributable to the research strategy of testing such interactions in homogeneous samples (De Jonge & Kompier, 1997; Westman, 1992). In effect, such studies are not researching true variation in environmental job attributes. Whereas this remark holds for any study that tries to understand the impact of environmental job attributes, it is especially relevant for studies on interaction effects (McClelland & Judd, 1993). In an attempt to address this limitation, the present study uses a large, national dataset providing enough statistical power to detect interaction effects. Additionally, we have used reliable and valid measures for a wide range of job demands and job resources.

The central hypothesis tested in this study is that particularly the combination of high job demands and high job resources is predictive of task enjoyment and organizational commitment. *Task enjoyment* is a measure of subjective work-related well-being. The construct needs to be understood from the perspective of Warr's (1990a) circumplex model of well-being at work. Accordingly, task enjoyment (or enthusiasm) combines the feelings of high arousal and high pleasure. Its opposite, task resistance (depression) combines the feelings of low arousal and low pleasure. *Organizational commitment* is an indicator of involvement at the level of the organization, and has been defined as "the strength of an individual's identification with an organization" (Mowday, Steers, & Porter, 1979, p. 226).

The proposed interactions will be tested using two specific demands (workload and emotional demands) and eight specific resources (skill utilization, learning possibilities, task autonomy, colleague support, leader support, performance feedback, participation in decision making, and career opportunities). These specific job demands and resources have been consistently recognized as crucial for the majority of employees across different occupations (Bakker & Demerouti, 2007; Humphrey et al., 2007). For example, a recent study showed that emotional demands (e.g., demanding interactions with clients or colleagues) are prevalent in the Dutch workforce, since 77% of the working population works with other people (Ybema & Smulders, 2002). Furthermore, almost two-thirds of the European employees report autonomy over the work processes, while about 30% reported having learning possibilities (e.g., training) provided by the employer (Parent-Thirion, Fernádez Macías, Hurley, & Vermeylen, 2007).

It should be noted that the job resources included in our study have been part of several job strain and motivation models, including the DCM, the Michigan model, the Vitamin model, the JCM, and the Effort-Reward Imbalance model (for an overview, see LeBlanc, De Jonge, & Schaufeli, 2008). Furthermore, a clear advantage of the present study is that we did not only select resources that have been included in previous JD-R interaction studies, but also resources that have not been examined before in this context. As a result, several of the Demands × Resources combinations are tested for the first time, namely Emotional demands × Skill utilization; Emotional demands × Participation in decision making; Emotional demands × Career opportunities; Workload × Skill utilization; Workload × Participation in decision making; and Workload × Career opportunities. This is another unique contribution of the present study.

We hypothesize that job resources will predict task enjoyment and organizational commitment *particularly* under conditions of high job demands. Note that the JD-R model proposes that *all* demands and resources have certain "global" functions (i.e., their health impairment and motivational potential, respectively) that apply irrespective of the specific types of demands and resources involved. Thus, the same assumption stands for every specific combination of job demands and resources.

## Method

### Procedure and Participants

Several large Dutch occupational health services providers accumulated data from organizational survey studies on psychosocial job conditions and employee well-being in a national database. Response rates for organizational projects added to the database typically varied between 60% and 80%. The cumulative sample available for our study consists of 12,359 individual employees working in 148 organizations. Women represent 52% of this sample. The average age is 38.2 years ($SD$ = 10.1 years). In terms of education level, 10.1% of the sample has finished university level education, 23.6% higher level vocational education, 32.3% middle level vocational education, another 23.6% lower level vocational education, and finally 10.8% primary education or equivalent educational status. Respondents are employed in all major branches of industry in The Netherlands, with as largest subgroups financial services (30.1%), health care (24.0%), government (14.1%), manufacturing (12.0%), business services (6.8%), building and construction (4.3%), and other, nonprofit institutions (4.2%). Although the database is representing all parts of the Dutch workforce, it is not

 

completely representative in terms of gender (somewhat more females), education (somewhat higher education levels), and branches (some branches larger than in the workforce, others smaller). The age distribution is rather similar to the Dutch workforce. As the focus in this study is rather on the impact of job factors than on institutional factors, representativeness at the national level is considered less important to our study than adequate heterogeneity regarding individual, job, and organizational characteristics.

## Measures

All measures were based on scales from the validated extended version of the Questionnaire on the Experience and Evaluation of Work (VBBA; Van Veldhoven & Meijman, 1994). The VBBA was modeled after internationally well-known instruments like the Job Content Questionnaire (JCQ; Karasek, 1985), and similarly has core and extended versions. In the VBBA all items on job demands and job resources have a four-point answering scale (1 = never, 2 = sometimes, 3 = often, and 4 = always), consistent with the idea that this provides relevant information – through job incumbents – on the amount of exposure to environmental job characteristics (Dewe, 1991). Outcome measures in the VBBA (e.g., enjoyment and commitment), however, are based on a simple yes/no-response to several statements about the job or the organization. This was requested by occupational physicians in order to provide them with simple options for individual case detection from the questionnaire, much in the way that they are familiar with regard to health complaints checklists. In order to have a similar score range for all scales used in this study, we calculated sum scores for each scale, which were then transformed to a range from 0 to 100. Previous research has found evidence for the validity of the VBBA scales (e.g., Van Veldhoven, De Jonge, Broersen, Kompier, & Meijman, 2002; Van Veldhoven, Taris, De Jonge, & Broersen, 2005).

*Job demands* are often classified into quantitative and qualitative demands. In the present study, we measured quantitative demands with a scale on workload. Qualitative demands were measured with a scale on emotional job demands.

*Workload* has been based on the JCQ (Karasek, 1985) and is assessed with 11 items that refer to quantitative workload: How much work is there to be done in how much time? An item example is "Do you work under time pressure?"

*Emotional job demands* is a 7-item scale that asks the respondent to rate to what extent he/she is confronted with emotionally challenging situations, events, or circumstances. In some items emotional workload in general is surveyed. In other items specific types of emotional aspects in the job are surveyed, like difficult patients or customers (see also Bakker et al., 2004). An example of an item is: "Do you have contact with difficult clients or patients in your work?"

### Job Resources

A wide variety of *job resources* scales is available in the VBBA relating to job content, social organization, and HR practices.

*Skill utilization* is measured with six items tapping skill variety, opportunities for skill use and creativity that are present in the job. Item content resembles the way this concept is measured in the JCQ (Karasek, 1985) and in the job diagnostic survey (Hackman & Oldham, 1975). This is a sample item from this scale: "Does your work require creativity?"

*Learning possibilities* are measured by four items dedicated to the extent the job itself provides opportunities for learning and development. Item content is similar to earlier scales by Karasek (1985) and Hackman and Oldham (1975), for example: "Do you learn new things in your work?"

*Task autonomy*. The items of this scale refer to a range of job control aspects at the task level (in contrast with group or organizational level). The scale contains 11 items about a range of task aspects that can or cannot be controlled by the individual employee. In its item content, this scale resembles the scale of Wall, Jackson, and Mullarkey (1995). One item from this scale is: "Can you organize your work yourself?"

*Colleague support and leader support*. Two separate scales are included in the questionnaire, one for colleagues and one for the direct boss/leader. Both are 9-item scales that contain a mix of positive and negative ways to describe the quality of the relationship. Question content ranges from (lacking) social support to overt aggression; and from items about solidarity in behavior to items about general work atmosphere. The scales take a broad view on the social support dimension (Johnson & Hall, 1988; Karasek & Theorell, 1990). Item example: "Do you get on well with your colleagues/boss?"

*Performance feedback*. Jobs differ in the amount and quality of feedback about performance provided either by people or by job design. This scale uses seven items to survey this job characteristic, which is an important element in the JCT (Hackman & Oldham, 1975). Here is an example: "Does your work give you the opportunity to check on how well you are doing at your work?"

*Participation in decision making*. This 8-item scale touches on the ability to discuss problems with the supervisor, the amount of influence in the work group, and the employee's role in decision making (see also, Van Veldhoven et al., 2005). One item is: "Can you participate in decisions affecting issues related to your work?"

*Career opportunities*. Item content resembles that of Turner and Lawrence (1965) and Hackman and Oldham's (1975) scales. The scale contains four questions about several possibilities for future development and career within the current organization. An example is "Does your job offer you the possibility to progress financially?"

### Task Enjoyment

The 9-item task enjoyment scale contains negative and positive items referring to one's depression-enthusiasm on the job. Where the scale devised by Warr (1990b) is strictly a state measure, the current scale also aims for a general assessment of one's well-being on the job in general and thus, it also includes items referring to enduring work enjoyment. Items relate to feelings of task resistance/depression

 

(on the negative side) and willingness to invest work effort/enthusiasm (on the positive side). One example is: "Mostly, I am pleased to start my day's work."

### Organizational Commitment

The VBBA includes eight items to measure commitment to the organization. The items are based on Allen and Meyer (1990) and ask respondents to make evaluations about their affective ties with the organization. An example is: "I feel very much at home working for this organization."

## Strategy of Analysis

Considering the hierarchical nature of our data (i.e., individuals nested within 148 organizations), an imperative first step was to examine whether there is significant interdependence between the levels of analysis or whether individual observations are statistically independent. Therefore, we computed the intraclass correlation ($\rho$) for each dependent variable separately. According to Hox (2002), the statistical interdependence can be neglected if the variance attributed to the grouping variable is around 5% or less. Calculations of $\rho$ showed that 4.6% of the variance in task enjoyment and 6.0% of the variance in organizational commitment could be attributed to the organization level. Since the grouping variable accounted for only a very small proportion of the variance, we treated our observations as statistically independent.

In addition, because our study variables were measured with self-reports, we examined the degree to which common-method variance could be a threat to our analyses. We performed Harman's single-factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Analyses of principal axis factoring with varimax rotation generally resulted in the expected factors that explained 48% of the total variance. The first factor referred to autonomy and explained only 7% of all the variance. These results clearly show that our study variables can be empirically discriminated and suggest that common-method variance is not a serious problem in our study.

To test our hypotheses, we performed moderated structural equation modeling (MSEM) analyses with the AMOS 6.0 software package (Arbuckle, 2005). The main advantages of using MSEM instead of hierarchical regression analyses are that (1) MSEM allows assessing and correcting for measurement error and (2) it provides measures of fit of the models under study. We followed the procedure proposed by Mathieu, Tannenbaum, and Salas (1992), as described by Cortina, Chen, and Dunlap (2001). For each hypothesized interaction effect we tested a model that included three exogenous factors (one of the eight job resources, one of the two job demands, and their interaction) and two endogenous factors (task enjoyment and commitment). In total, we tested 16 different models, one for each possible interaction. Each exogenous variable had only one indicator, namely the standardized scale score of the respective factor (cf. Mathieu et al., 1992). The indicator of the latent interaction factor was the product of the standardized scale scores of the job resource and the job demand tested in each of the 16 models.

For the endogenous latent variables we used item parcels. Following Yuan, Bentler, and Kano (1997), we first performed factor analyses and then we averaged those items that

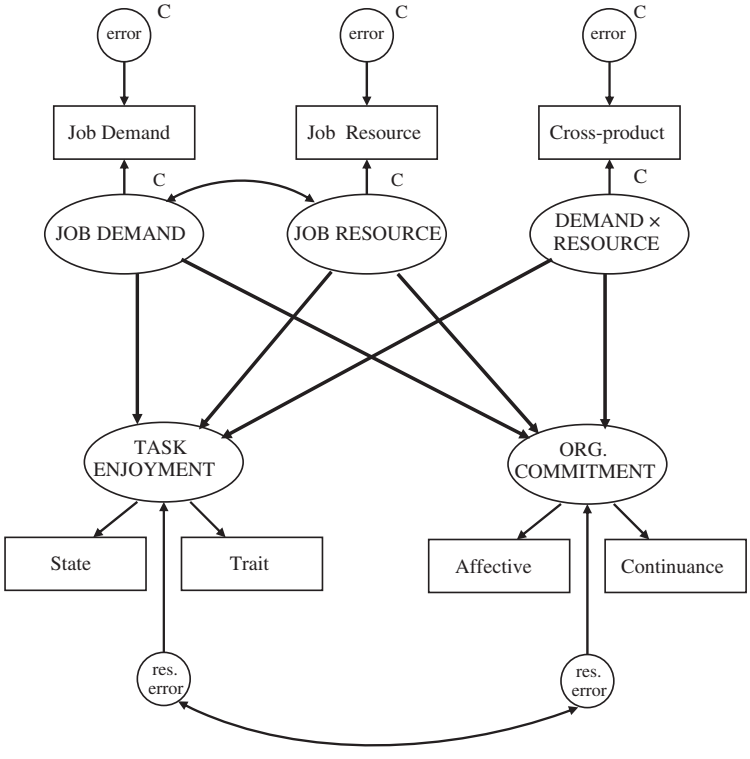


*Figure 1.* The structural model.
*Note*. All constrained paths and error variances are marked with C; res. error = residual error.

loaded on the same factor. Factor analyses regarding task enjoyment resulted in two factors. The first factor (items one, two, three, seven, eight, and nine) refers to day-to-day (i.e., state) enjoyment and explained 32% of the variance, while the second factor (items four, five, and six) refers to enduring enjoyment (i.e., "trait") and explained 21% of the variance in enjoyment. Based on these results, we formed two composites for task enjoyment, named "state" and "trait" enjoyment (see Figure 1). Similarly, the factor analysis regarding the commitment scale resulted in two distinct factors. The first factor (items one, two, three, four, seven, and eight), which explained 30% of the total variance, captures the affective aspect of commitment, while the second factor (items five and six), which explained 20% of the total variance in commitment, concerns continuance. Again, we formed two composites that were used as indicators of the commitment scale, which were named "affective commitment" and "continuance," respectively (see Figure 1).

The models tested included direct paths from the three exogenous factors (job resources, job demands, and their interaction) to the two endogenous factors (task enjoyment and commitment). The job resources and job demands factors were allowed to correlate, while correlations between job resources/job demands and the interaction term were expected to be zero. Further, the residual errors of the two outcome variables were allowed to correlate. Finally, the paths from the latent exogenous factors to their indicators were fixed using the square roots of the scale reliabilities, while the error variances of each indicator were set equal to the product of their variances and one minus their reliabilities. For the formula used to calculate the reliability score of the interaction term, we refer to Cortina et al. (2001). Figure 1 graphically represents the structural model that was applied to test each of the hypothesized interaction effects.

The fit of the models was assessed with the chi-square ($\chi^2$) statistic, the goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). For the GFI and the CFI values of .90 are acceptable, whereas values of .95 or higher are indicative of excellent fit (Hu & Bentler, 1999). For the RMSEA values up to .08 represent reasonable errors of approximation (Browne & Cudeck, 1993). A significant interaction effect is evident when the path coefficient from the interaction term to the endogenous factors is statistically significant. The final step to confirm the significance of an interaction is to compare the fit of a model with and a model without the path from the latent interaction factor to the endogenous factors.

## Results

### Descriptive Statistics

Table 1 presents the means, standard deviations, correlations, and the internal consistencies of the scales included in this study. All scales showed acceptable internal consistencies with Cronbach's alphas > .75. Correlations were as expected with all job demands being negatively and all job resources being positively correlated with both task enjoyment and commitment.

### Direct Effects

Results of the MSEM analyses are presented in Tables 2 and 3. In line with our expectations all eight job resources were positively related to both task enjoyment and commitment. Furthermore, workload was negatively related to the two

*Table 1*. Means, standard deviations, internal consistencies (Cronbach's alphas on the diagonal), and correlations among the variables, $N = 12{,}359$

| | Variable | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Gender | 1.49 | .50 | – | | | | | | | | | | | | | | |
| 2 | Age | 38.15 | 9.80 | .02* | – | | | | | | | | | | | | | |
| 3 | Education | 4.30 | 1.23 | −.02 | −.07** | – | | | | | | | | | | | | |
| 4 | Workload/Pace | 46.61 | 15.62 | .02* | .11** | .09** | .88 | | | | | | | | | | | |
| 5 | Emotional demands | 30.21 | 14.72 | .03** | .13** | .14** | .38** | .78 | | | | | | | | | | |
| 6 | Skill utilization | 63.13 | 19.44 | .04** | .09** | .22** | .13** | .32** | .83 | | | | | | | | | |
| 7 | Learning possibilities | 52.37 | 21.24 | .03** | −.09** | .18** | .02* | .17** | .65** | .82 | | | | | | | | |
| 8 | Autonomy | 58.48 | 18.96 | .02* | .06** | .16** | −.14** | .03** | .42** | .41** | .90 | | | | | | | |
| 9 | Colleague support | 76.94 | 13.92 | −.04** | −.04** | −.00 | −.21** | −.22** | .11** | .20** | .20** | .82 | | | | | | |
| 10 | Leader support | 75.99 | 17.17 | −.00 | −.03** | −.02 | −.24** | −.23** | .13** | .26** | .24** | .51** | .88 | | | | | |
| 11 | Feedback | 51.60 | 18.95 | .02* | .01 | .06** | −.13** | −.08** | .29** | .40** | .34** | .34** | .45** | .85 | | | | |
| 12 | Participation | 51.96 | 20.64 | .07** | .06** | .11** | −.08** | .03** | .42** | .45** | .52** | .27** | .50** | .55** | .88 | | | |
| 13 | Career opportunities | 37.68 | 24.12 | .03** | −.28** | .15** | −.08** | −.03** | .31** | .59** | .28** | .18** | .26** | .35** | .36** | .79 | | |
| 14 | Task enjoyment | 86.17 | 19.55 | .01 | .08** | −.04** | −.15** | −.07** | 33** | .35** | .20** | .24** | .29** | .27** | .31** | .20** | .77 | |
| 15 | Commitment | 65.78 | 25.90 | .03** | .14** | –.07** | –.11** | –.06** | .23** | .31** | .20** | .21** | .32** | .33** | .36** | .24** | .45** | .75 |

*$p < .05$; **$p < .01$.

 

*Table 2*. Results of MSEM: Interactions of job resources and workload, $N$ = 12,359

| | Task enjoyment | | | Commitment | | | Fit | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Predictors | UPC | (*SE*) | SPC | UPC | (*SE*) | SPC | $\chi^2$ | GFI | RMSEA | CFI |
| Skill utilization | 2.70 | (.07) | .51*** | 3.80 | (.13) | .30*** | | | | |
| Workload | −1.36 | (.06) | −.26*** | −2.57 | (.13) | −.20*** | | | | |
| Skill utilization × Workload | .17 | (.05) | .04*** | .23 | (.11) | .02* | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 30 | (0.4)% | [.004] | 11 | (0.2)% | [.002] | 612.11 | .99 | .07 | .94 |
| Learning Possibilities | 2.79 | (.08) | .51*** | 4.95 | (.13) | .37*** | | | | |
| Workload | −1.04 | (.06) | −.19*** | −2.11 | (.12) | −.16*** | | | | |
| Learning possibilities × Workload | .53 | (.06) | .11*** | .61 | (.11) | .05*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 31 | (1.3)% | [.01] | 16 | (0.1)% | [.001] | 683.28 | .98 | .08 | .94 |
| Autonomy | 1.41 | (.07) | .25*** | 2.79 | (.12) | .21*** | | | | |
| Workload | −.85 | (.07) | −.15*** | −1.60 | (.13) | −.12*** | | | | |
| Autonomy × Workload | .73 | (.13) | .15*** | .99 | (.11) | .09*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 12 | (2.2)% | [.02] | 7 | (0.7)% | [.007] | 510.84 | .99 | .07 | .95 |
| Colleague support | 1.79 | (.08) | .32*** | 3.08 | (.14) | .23*** | | | | |
| Workload | −.69 | (.07) | −.12*** | −1.34 | (.13) | −.10*** | | | | |
| Colleague support × Workload | .23 | (.06) | .05*** | −.05 | (.12) | .00 | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 14 | (0.2)% | [.002] | 7 | (0)% | [.00] | 552.14 | .99 | .07 | .94 |
| Leader support | 2.10 | (.08) | .37*** | 4.83 | (.13) | .35*** | | | | |
| Workload | −.55 | (.07) | −.10*** | −.78 | (.13) | −.06*** | | | | |
| Leader support × Workload | .37 | (.05) | .08*** | .25 | (.10) | .02** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 17 | (0.1)% | [.001] | 14 | (0.2)% | [.002] | 730.37 | .98 | .08 | .93 |
| Feedback | 2.05 | (.07) | .37*** | 4.76 | (.12) | .37*** | | | | |
| Workload | −.75 | (.07) | −.13*** | −1.29 | (.12) | −.10*** | | | | |
| Feedback × Workload | .54 | (.06) | .11*** | .50 | (.11) | .04*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 18 | (1.6)% | [.02] | 16 | (0.2)% | [.002] | 625.10 | .99 | .07 | .94 |
| Participation | 2.27 | (.07) | .41*** | 5.21 | (.12) | .39*** | | | | |
| Workload | −.83 | (.07) | −.15*** | −1.50 | (.12) | −.11*** | | | | |
| Participation × Workload | .52 | (.05) | .11*** | .55 | (.10) | .05*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 21 | (0.5)% | [.005] | 18 | (0.2)% | [.002] | 715.27 | .98 | .08 | .94 |
| Career opportunities | 1.40 | (.07) | .26*** | 3.46 | (.12) | .27*** | | | | |
| Workload | −.94 | (.07) | −.17*** | −1.71 | (.12) | −.12*** | | | | |
| Career opportunities × Workload | .72 | (.07) | .13*** | .86 | (.13) | .06*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 12 | (1.9)% | [.02] | 10 [.004] | (0.4)% | [.004] | 733.14 | .98 | .08 | .93 |

*Note.* UPC, unstandardized path coefficient; *SE*, standard error; SPC, standardized path coefficient; $\chi^2$, chi-square; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation; CFI, confirmatory fit index; the $f^2$ refers to the interaction effect; the *df* of all models is 9.
*$p$ < .05; **$p$ < .01; ***$p$ < .002.

dependent variables in all examined models (Table 2), while emotional demands correlated negatively with enjoyment and commitment in the majority of tests (Table 3). Emotional demands were positively but not significantly related to task enjoyment in the model testing the Colleague support × Emotional demands interaction, while emotional demands were not significantly related to task enjoyment and organizational commitment in the model testing the leader Support × Emotional demands interaction.

## Interaction Effects

Results of MSEM analyses provided strong support for the hypothesized interaction effects. As can be seen in Table 2, all interactions were significant suggesting that workload moderates the relationships between job resources on the one hand and enjoyment and commitment on the other hand. The only nonsignificant exception was the colleague Support × Workload interaction effect on commitment. Further, Table 3 shows that all hypothesized interaction effects between the eight job resources and emotional demands on enjoyment and commitment were significant, with the exception of three cases. The interaction between skill utilization and emotional demands did not predict enjoyment or commitment; and the interaction between colleague support and emotional demands did not have a significant effect on commitment.

All models fit the data very well (Tables 2 and 3). In all cases where MSEM analyses resulted in a significant

 

*Table 3*. Results of MSEM: Interactions of job resources and emotional demands, $N = 12{,}359$

| | Task enjoyment | | | Commitment | | | Fit | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Predictors | UPC | (*SE*) | SPC | UPC | (*SE*) | SPC | $\chi^2$ | GFI | RMSEA | CFI |
| Skill utilization | 3.22 | (.09) | .62*** | 4.82 | (.15) | .39*** | | | | |
| Emotional demands | −1.84 | (.08) | −.34*** | −3.46 | (.16) | −.27*** | | | | |
| Skill utilization × Emotional demands | .07 | (.05) | .02 | .02 | (.10) | .00 | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 33 | (0)% | [.00] | 14 | (0)% | [.00] | 862.82 | .98 | .09 | .93 |
| Learning possibilities | 2.99 | (.08) | .56*** | 5.53 | (.13) | .42*** | | | | |
| Emotional demands | −1.12 | (.08) | −.20*** | −2.56 | (.14) | −.19 | | | | |
| Learning possibilities × Emotional demands | .32 | (.05) | .07*** | .60 | (.10) | .06*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 31 | (0.9)% | [.01] | 18 | (0.6)% | [.006] | 907.85 | .98 | .09 | .92 |
| Autonomy | 1.58 | (.07) | .29*** | 3.15 | (.12) | .25*** | | | | |
| Emotional demands | −.54 | (.08) | −.09*** | −1.43 | (.14) | −.11*** | | | | |
| Autonomy × Emotional demands | .36 | (.06) | .08*** | .58 | (.10) | .06*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 9 | (1)% | [.01] | 7 | (0.4)% | [.004] | 828.49 | .98 | .08 | .91 |
| Colleague support | 1.92 | (.08) | .35** | 3.26 | (.14) | .25*** | | | | |
| Emotional demands | .03 | (.08) | .00 | −.45 | (.15) | −.03** | | | | |
| Colleague support × Emotional demands | .25 | (.06) | .06*** | −.08 | (.11) | −.01 | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 12 | (0.3)% | [.003] | 7 | (0)% | [.00] | 471.55 | .99 | .04 | .95 |
| Leader support | 2.24 | (.08) | .40*** | 5.05 | (.13) | .37*** | | | | |
| Emotional demands | .14 | (.08) | .02 | .10 | (.15) | .01 | | | | |
| Leader support × Emotional demands | .25 | (.06) | .05*** | .33 | (.10) | .03*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 16 | (0.1)% | [.001] | 14 | (0.3)% | [.003] | 700.65 | .98 | .08 | .94 |
| Feedback | 2.08 | (.07) | .38*** | 4.92 | (.12) | .39*** | | | | |
| Emotional demands | −.28 | (.08) | −.05*** | −.84 | (.14) | −.06*** | | | | |
| Feedback × Emotional demands | .36 | (.06) | .08*** | .59 | (.11) | .06*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 16 | (1)% | [.01] | 16 | (0.5)% | [.005] | 575.21 | .99 | .07 | .94 |
| Participation | 2.35 | (.07) | .43*** | 5.43 | (.12) | .41*** | | | | |
| Emotional demands | −.58 | (.08) | −.10*** | −1.52 | (.14) | −.11*** | | | | |
| Participation × Emotional demands | .25 | (.06) | .05*** | .45 | (.11) | .04*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 19 | (0.1)% | [.001] | 18 | (0.1)% | [.001] | 719.50 | .93 | .08 | .93 |
| Career opportunities | 1.40 | (.07) | .27*** | 3.56 | (.12) | .28*** | | | | |
| Emotional demands | −.42 | (.08) | −.07*** | −1.13 | (.14) | −.08*** | | | | |
| Career opportunities × Emotional demands | .40 | (.08) | .07*** | .92 | (.14) | .07*** | | | | |
| $R^2$ ($\Delta R^2$ attributed to interaction) [$f^2$] | 8 | (0.7)% | [.007] | 9 | (0.7)% | [.007] | 876.65 | .98 | .09 | .91 |

*Note.* UPC, unstandardized path coefficient; *SE*, standard error; SPC, standardized path coefficient; $\chi^2$, chi-square; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation; CFI, confirmatory fit index; the $f^2$ refers to the interaction effect; the *df* of all models is 9.
*$p < .05$; **$p < .01$; ***$p < .002$.

interaction effect, $\chi^2$-difference tests showed that the fit of the models with the path from the latent interaction factor to the endogenous factors was significantly better than the models without this path. These model comparisons are summarized in Table 4. Taken together, 15 of the 16 hypothesized interaction effects had a significant and unique effect on enjoyment, and 13 of the 16 interactions had a significant and unique effect on commitment. Additionally, all 15 supported interaction effects for enjoyment and 11 of the 13 supported interaction effects for commitment were significant at the $p < .002$ level, which was set after Bonferroni correction. This indicates that potential effects of chance capitalization are ruled out. Thus, the results strongly support our hypothesis.

Significant interactions were probed with the simple effects approach and were plotted by using one standard deviation above and one below the mean of the predictor and moderator variables (Aiken & West, 1991). Plotting procedures further confirmed our hypothesis by showing that *all* significant interactions were in the expected direction. For illustrative purposes, Figures 2 and 3 display representative interaction effects with workload as a moderator, while Figures 4 and 5 display interaction effects with emotional demands as a moderator. The remaining plots are available from the third author upon request.

Finally, Table 1 shows that demographic characteristics were significantly related to the dependent variables. We reanalyzed all 16 models including gender, age, and educa-

 

*Table 4*. Support of interaction effects: Model comparisons, $N = 12{,}359$

| Interaction effect | Model with paths from the interaction term to the outcome(s) | Model without paths from the interaction term to the outcome(s) | Model comparison | |
|---|---|---|---|---|
| | $\chi^2$ (*df*) | $\chi^2$ (*df*) | $\Delta\chi^2$ | $\Delta df$ |
| *Workload* | | | | |
| Skill utilization × Workload | 612.11 (9) | 622.41 (11) | 10.30** | 2 |
| Learning possibilities × Workload | 683.28 (9) | 778.03 (11) | 94.75*** | 2 |
| Autonomy × Workload | 510.84 (9) | 682.99 (11) | 172.15*** | 2 |
| Colleague support × Workload | 552.14 (9) | 570.03 (11) | 17.89*** | 2 |
| Leader support × Workload | 730.37 (9) | 774.32 (11) | 43.95*** | 2 |
| Feedback × Workload | 625.10 (9) | 711.04 (11) | 85.94*** | 2 |
| Participation × Workload | 715.27 (9) | 813.72 (11) | 98.45*** | 2 |
| Career opportunities × Workload | 733.14 (9) | 835.59 (11) | 102.45*** | 2 |
| *Emotional demands* | | | | |
| Learning possibilities × Emotional demands | 907.85 (9) | 959.26 (11) | 51.41*** | 2 |
| Autonomy × Emotional demands | 828.49 (9) | 878.43 (11) | 49.94*** | 2 |
| Colleague support × Emotional demands | 471.55 (9) | 497.94 (11) | 26.39*** | 2 |
| Leader support × Emotional demands | 700.65 (9) | 721.26 (11) | 20.61*** | 2 |
| Feedback × Emotional demands | 575.21 (9) | 624.85 (11) | 49.64*** | 2 |
| Participation × Emotional demands | 719.50 (9) | 744.93 (11) | 25.43*** | 2 |
| Career opportunities × Emotional demands | 876.65 (9) | 923.41 (11) | 46.76*** | 2 |

*Note. df*, degrees of freedom. $^{**}p < .01$; $^{***}p < .001$.

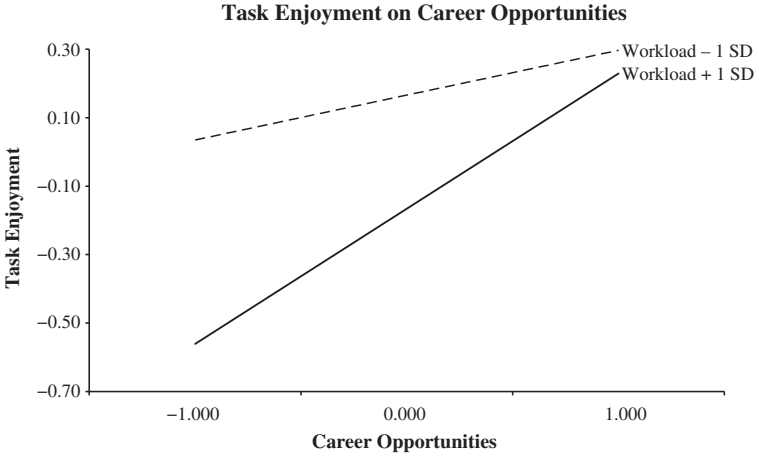


*Figure 2.* Interaction effect of career opportunities and workload on task enjoyment.

tion as manifest variables with paths to task enjoyment and commitment. Results indicated that demographic characteristics were weakly or nonsystematically related to the dependent variables. Most importantly, findings concerning both direct and interaction effects *did not* differ from those resulting from the previous analyses, where demographics were not taken into account.

## Discussion

The central aim of the present study among a large and heterogeneous sample of employees from various occupations was to go beyond the DCM (Karasek, 1979). Using the JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001) we tested the hypothesis that the combination of many different (high) job demands and (high) job resources is predictive of task enjoyment and organizational commitment. Particularly, we predicted that job resources (skill utilization, learning opportunities, autonomy, colleague support, leader support, performance feedback, participation in decision making, and career opportunities) would be positively related to task enjoyment and organizational commitment particularly under conditions of high job demands (workload and emotional demands). Results provided strong support for our hypothesis: 15 of the 16 hypothesized interactions were significant for task

 

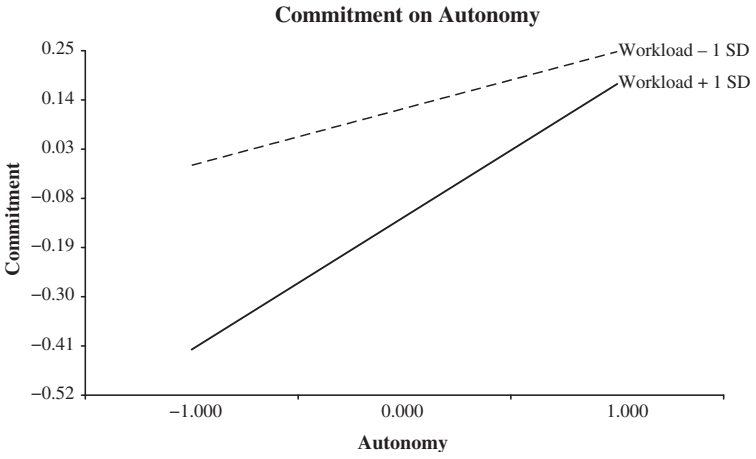


*Figure 3.* Interaction effect of autonomy and workload on commitment.

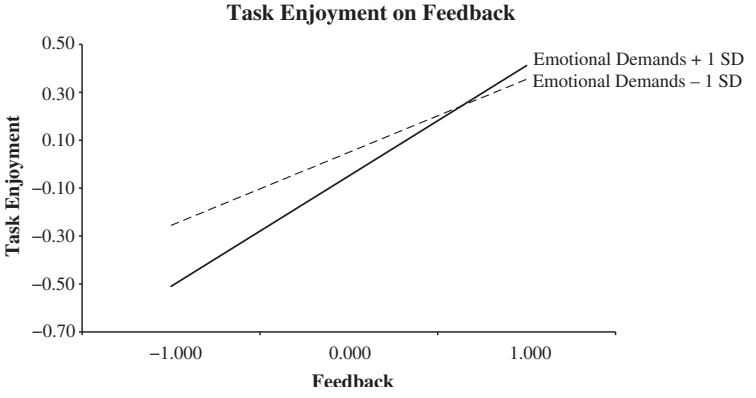


*Figure 4.* Interaction effect of feedback and emotional demands on task enjoyment.

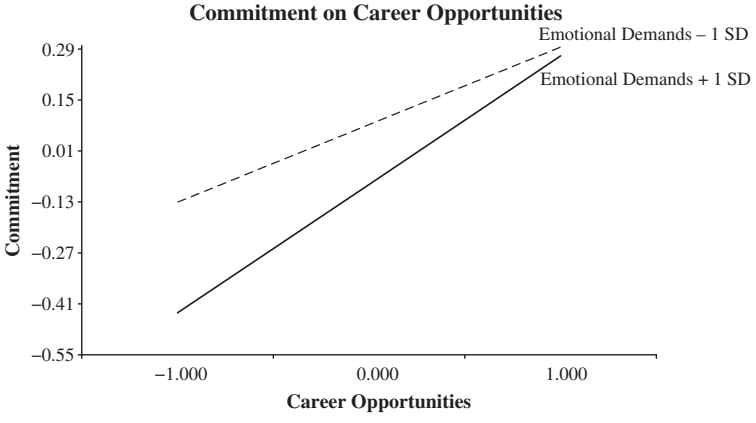


*Figure 5.* Interaction effect of career opportunities and emotional demands on commitment.

enjoyment and 13 of the 16 interactions were significant for organizational commitment.

Our findings are in line with Karasek's (1979) active-learning hypothesis by demonstrating that employees do particularly well when high resources are combined with high demands. Moreover, our findings clearly expand the DCM and support the basic assumptions of the JD-R model. This study shows that besides job control or autonomy there are many other important job resources that may determine psychological well-being. Although many work design studies have provided evidence for this contention (see, for a meta-analysis, Humphrey et al., 2007), an exceptional characteristic of the present study is that it emphasizes the unique quality of job resources in predicting motivational-affective outcomes, and underscores that their effect is particularly evident under demanding conditions. In line with

 

the JD-R model, our results imply that any specific type of job resource may interact with any specific type of job demand in predicting motivational outcomes in a similar way. Providing evidence for this hypothesis in a heterogeneous sample and for many different combinations of demands and resources allows establishing the global function of the Demands × Resources interaction.

## Thriving on High Job Demands and Resources

The findings of the present study clearly indicate that employees thrive on high job demands, if a sufficient amount of job resources is available. Employees enjoy their tasks and are committed to their organization if high job demands go along with high resources. This finding is consistent with previous research indicating that high demands and high resources combinations result in the experience of work engagement (Bakker et al., 2007; Hakanen et al., 2005). High job demands do not seem to be very problematic as long as employees have sufficient job resources. High job demands seem to induce people to make full use of the available job resources, which results in high levels of task enjoyment and organizational commitment. This is in line with the proposition of the JD-R model (Bakker & Demerouti, 2007) that job resources interact with job demands through the satisfaction of basic needs or through the achievement of work goals. Learning possibilities, performance feedback, and career opportunities presumably satisfy the need for competence and help to achieve work goals. Autonomy and leader support satisfy the need for autonomy and relatedness, respectively.

The present findings are also consistent with conservation of resources (COR) theory (Hobfoll, 2002), which suggests that resources alone only have a modest effect on well-being. In contrast, resources acquire their saliency in the context of resource loss – under demanding or challenging circumstances. In line with this proposition, Seers, McGee, Serey, and Graen (1983) showed that social support was predictive of job satisfaction only for those employees who had to cope with high role conflict. Namely, individuals facing high levels of stressors were more likely to use their resources as a coping mechanism. The present findings should be understood in a similar way.

Since previous studies have generally examined homogeneous samples (Bakker et al., 2007; Hakanen et al., 2005), a unique contribution of this study among a large and heterogeneous sample is that the findings can be generalized across occupations. This means that independently of the work context and the specific demands and resources involved, job resources are particularly beneficial when conditions are fairly demanding. For example, when employees have too much work to do, they are likely to make full use of the feedback or support they receive from their direct boss in order to finish their work in time. As a result, they are more likely to enjoy a task that otherwise would be overwhelming for them and to feel committed to the organization. In situations where job demands coincide with the availability of job resources, job demands are more likely to be experienced as challenges rather than stressors. Another contribution of this study is that we provided evidence for the hypothesized interaction effect using several unique combinations of demands and resources that have not been examined before, including, for example, the interaction of job demands with skill utilization, participation in decision making, and career opportunities.

Two job resources did not act as predicted. Colleague support did not interact with workload and emotional demands in predicting organizational commitment, whereas skill utilization did not interact with emotional demands in its effects on task enjoyment and organizational commitment. Nevertheless, colleague support did show interaction effects with both workload and emotional demands on task enjoyment. Thus, the lack of interaction findings is restricted to the attitude toward the organization. One reason for this might be that in larger organizations there is a considerable distance between (a) the small group in which an employee is functioning and receives support from colleagues and (b) the organization at large. Whereas support from colleagues is beneficial for one's own functioning, it is perhaps less consequential for organizational commitment. The nonsignificant interaction effect of skill utilization and emotional demands on task enjoyment is perhaps the result of the strong main effect of skill utilization. Further, it should be noted that skill utilization showed the highest negative correlation with emotional demands (higher than any other job resource). This may mean that working with people is inherently varied. The statistical overlap between the two independent variables may have made it difficult to find an interaction effect.

## A Wider Vision of Resources

Taken together, the JD-R model extends the narrow vision of control in the DCM to a wider vision of resources. This extension is both specific and global. On the one hand, specific types of resources interact with specific types of demands depending on the specific work context (Bakker et al., 2007; Xanthopoulou et al., 2007). It is important to note that the specificity assumption of the JD-R model mainly determines the strength (and not the significance) of the interaction effects, where interactions concerning the most substantial demands and resources for each context are expected to be stronger (for further discussion and empirical evidence, see Xanthopoulou et al., 2007). On the other hand, a set of main or most common resources interacts with the main or most common demands in most contexts, as the current study shows. This conclusion, apart from validating the interaction hypothesis of the JD-R model, is consistent with an important wider debate in the HR literature, known as the best practice-best fit debate (Boxall & Purcell, 2003; Paauwe, 2004). HR researchers have argued that managing human resources is mainly a matter of implementing certain best practices (e.g., practices that work in any context). In our terms, job resources may be good for all workers. Alternatively, some authors have argued that this is impossible, and it all depends on the context. They consider it all to be a matter of best

 

practices-context fit. In our terms, which resources are particularly valuable in a certain context depends on the specific demands characterizing this context. It is currently quite common in the HR literature to argue that elements of both best practices and best fit are needed in any HR strategy for an organization, an argument strongly supported by the present findings.

In addition, job resources are stronger predictors of task enjoyment and organizational commitment than job demands. Hence, resources are not only necessary to deal with job demands, but they also are important in their own right (Hobfoll, 2002). Although this may seem rather strange for researchers in the field of job stress, in the HR literature, job demands are usually left completely out of the picture. When the outcome is organizational performance rather than individual well-being this is not uncommon. The present findings suggest that it makes sense to consider job demands more explicitly. High-commitment Human Resource Management (HRM) may be all about getting employees to thrive on high job demands under conditions of high job resources.

### Limitations

One limitation of the present study is its cross-sectional nature, which implies that it is impossible to make causal statements because of temporal ambiguity. However, the findings are clearly in line with two theories, namely the JD-R model (Bakker & Demerouti, 2007) and COR theory (Hobfoll, 1989, 2002). Additionally, it would be difficult to defend that task enjoyment and organizational commitment are the predictors instead of outcomes of the exact combinations of job demands and resources as found in the present study. A second limitation of this study is that it was based on self-report questionnaires. Although employees' perceptions of the work environment – as expressed through the questionnaires – are important sources of information, perceptions do not necessarily reflect objective reality. Nevertheless, the results of Harman's single-factor test (Podsakoff et al., 2003) together with the consistency of our findings with the theory suggest that common-method bias is not a major drawback of our study. However, it would be useful if future research could replicate our findings by using a combination of self-reports and other-ratings of demands and resources.

Finally, it should be noted that the effect size of the interactions is rather small. This suggests that the Job demands × Job resources interactions in themselves do not explain much of the variance in task enjoyment and commitment after controlling for the main effects. However, the interactions do qualify the main effects in a significant and systematic way, and therefore add to our understanding of how job characteristics impact on task enjoyment and commitment.

### Practical Implications

Our study showed that high job demands boost the positive relationship between job resources on the one hand and task enjoyment and commitment on the other hand. Empirical evidence for such interaction effects is very important for practice because it suggests that high demands may have beneficial effects when resources are high as well. On the basis of these findings, two specific suggestions can be made. Firstly, our study emphasizes the importance of allocating resources to employees, particularly when demands are high. Secondly, resourceful work environments alone do not guarantee the existence of fulfilled and committed employees. Instead, employees need to face certain challenges in order to set their resources in motion.

We have recently developed several Internet applications of the JD-R model, in which employees who fill in an electronic questionnaire receive online feedback on their computer screen about their most important demands and resources. Specifically, tailor-made feedback is offered to make participants aware of their most important job demands, and to point at the availability of job resources. Such information may be used for individual level job (re)design. Furthermore, applications of the JD-R model may be used for organizational level interventions. For example, the results of the present study have been discussed in several seminars and workshops for Dutch organizations to facilitate the identification and promotion of job resources and to meet the often inevitable job demands.

## Conclusion

The present study went beyond the DCM and found that task enjoyment and organizational commitment are the result of combinations of many different job demands and job resources. Enjoyment and commitment were high when employees were confronted with challenging and stimulating tasks, and simultaneously had sufficient resources at their disposal. This suggests that high job demands are not necessarily negative, since employees may thrive on high job demands and high job resources.

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