Work engagement and burnout: testing the robustness of the Job Demands-Resources model

Christian Korunka, Bettina Kubicek, Wilmar B. Schaufeli and Peter Hoonakker

*Institute of Economic Psychology, Educational Psychology and Evaluation, University of Vienna, Austria;
*Department of Psychology, Leiden University, The Netherlands, 3Centers for Quality and Productivity Improvement, University of Wisconsin-Madison, U.S.A.

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This study focuses on work engagement and its negative antipode burnout, as well as their antecedents and consequences. According to the Job Demands-Resources (JD-R) model, two different processes have to be distinguished: a motivational process that links job resources with turnover intention through work engagement, and an energetic process that links job demands and health complaints via the mediating role of burnout. The robustness of the JD-R model was tested in a heterogeneous occupational sample (N=546). Structural equation modeling analyses yielded a slightly modified model with only exhaustion being indicative of burnout and vigor, dedication along with absorption being indicative of engagement. The results provide evidence for the bipartite structure of the JD-R model. Multigroup analyses revealed the model to be invariant across age and gender. Although strengths of path coefficients and factor loadings differed among white- and blue-collar workers, the basic structure of the model was also confirmed among these subgroups. Therefore, the findings underscore the robustness of the JD-R model.

Keywords: Job Demands-Resources model; work engagement; job burnout

Introduction

Throughout its history psychology has been preoccupied with the study and treatment of psychopathology and damage, neglecting those aspects of the human condition that foster well-being and fulfillment (Seligman & Csikszentmihalyi, 2000). Mirroring this almost exclusive focus on the negative, occupational health psychology emphasized performance deficits and work-related stress, rather than workers’ happiness, health, and betterment (Hill, 2003). It is only recently that researchers in the emerging field of positive psychology have proposed to restore this imbalance by studying optimal functioning and positive experiences (Linley, Joseph, Harrington, & Wood, 2006). Accordingly, a growing body of research into concepts such as occupational well-being (Warr, 1999), self-efficacy (Grau, Salanova, & Peiro, 2001), sense of coherence (Kivimäki, Feldt, Väinöla, & Nurmi, 2000), flow (Csikszentmihalyi, 1990; Salanova, Bakker, & Llorens, 2006), or resilience (Strumpfier, 2003) has begun to provide better understanding of positive work-related experiences. Taking up this interest in workers’ well-being, researchers supplemented and extended the concept of burnout, which has dominated the research agenda for over 25 years, by its positive antipode work engagement (Maslach, Schaufeli, & Leiter, 2001). To integrate both work engagement and job burnout into a comprehensive model of work-related well-being, the Job Demands-Resources (JD-R) model has recently been introduced (Bakker & Demerouti, 2007; Bakker, Demerouti, de Boer, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Schaufeli & Bakker, 2004).

So far, the JD-R model has been successfully tested in various countries such as Finland (Hakanen, Bakker, & Schaufeli, 2006), the Netherlands, and Spain (Llorens, Bakker, Schaufeli, & Salanova, 2006) whereby the model was shown to be invariant across Dutch and Spanish workers. Furthermore, the model has been applied to various occupational groups such as home care professionals (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003), teachers (Hakanen et al., 2006), and white- (Schaufeli & Bakker, 2004) and blue-collar workers (Bakker et al., 2003). However, no simultaneous test, comparing white- and blue-collar workers, has yet been conducted, nor has the model been examined for age or gender differences. Therefore, we examine the robustness of the JD-R model using a heterogeneous sample of Austrian workers.

The Job Demands-Resources model

The Job Demands-Resources model (Demerouti et al., 2001; Schaufeli & Bakker, 2004) specifies how working
conditions produce motivation and health impairments. It assumes that while employees in different occupational environments working environments, the characteristics of these environments can be classified into two broad categories, namely job demands and job resources. Job demands refer to the aspects of the job that require sustained physical or psychological (i.e., cognitive or emotional) effort and are therefore associated with certain physiological and/or psychological costs (Demerouti et al., 2001). Given the paucity of research on experiencing negative outcomes, such as burnout, when being confronted with demanding working conditions, occupational health psychology is interested in factors which keep people healthy even when they encounter high levels of workload (Richter & Hacker, 1998). These health-promoting factors are called resources.

According to Demerouti et al. (2001), job resources refer to those aspects of the job that are functional in achieving work goals, in stimulating personal growth and development, and in reducing job demands and the associated physiological and psychological costs. Hence, job resources play an intrinsic or an extrinsic motivational role. If job resources exert an intrinsic motivational effect they will satisfy basic human needs for autonomy, relatedness (social support), and competence. As a result, well-being and employee commitment to the organization will be more likely to experience growth and development (Houkes, Janssen, de Jonge, & Bakker, 2003). On the other hand, job resources may develop an extrinsic motivational effect in that they contribute to the successful completion of the work task, be it by providing required information or by fostering an innovative climate (Meijman & Mulder, 2002).

The JD-R model assumes that job resources and job demands evoke two different albeit related processes (see Figure 1): (1) a motivational process in which job resources stimulate employees' motivation and foster engagement and organizational commitment (Schaufeli & Bakker, 2004); (2) an energetic process of valuing job demands in which high job demands deplete employees' mental and physical resources and lead to job burnout, health impairments (Schaufeli & Bakker, 2004), and sick leave (Bakker et al., 2003).

![Figure 1. The Job Demands-Resources (JD-R) model.](image)

**Relations with age, gender, and occupational level**

Previous studies predominantly investigated relationships between the levels of engagement or burnout and various organizational factors such as age or gender (Maslach & Jackson, 1985; Maslach et al., 2001; Schaufeli, Bakker, & Salanova, 2006). For example, numerous studies considered age as a factor associated with job burnout but yielded inconclusive results (for a review see Brewer & Shapard, 2004). On the other hand, small but statistically significant positive relations were found between work engagement and age (Schaufeli, Bakker, & Salanova, 2006). Yet, researchers have seldom examined age as a factor that moderates the influence of job resources or job demands on employee’s well-being. Age-related changes in physiologic, and cognitive functioning (de Zwart, Frings-Dresen, & van Dijk, 1995; Hess, 2005; Park, Lautenschlager, Hedden, Davidson, Smith, & Smith, 2002) may weaken employees’ resilience and may, thus, lead to higher levels of burnout in the face of work demands. In a similar vein, one may assume that impaired well-being, as indicated by burnout, is more likely to result in health complaints among older workers than among their younger counterparts. From a more positive perspective, elderly employees may have accumulated more coping resources throughout their professional lives (e.g., Stu, Spector, Cooper, & Dunkley, 2001). Thus, our model uses burnout and job resources, thus fostering work engagement. We therefore expect that, depending on their age, employees differ in the impact of job resources and job demands on work engagement.

Apart from age, gender was systematically used as a classifier in a number of engagement and burnout studies. However, few studies succeeded in reporting robust gender differences in levels of engagement or burnout. If relations were found, they tended to be rather weak (for an overview see Greenhaus, 1991; Schaufeli, Bakker, & Salanova, 2006). Furthermore, gender differences in engagement and burnout are often found to be influenced by contextual factors and by gender role stereotypes (Oakland & Dippold, 2000). Therefore, gender differences in coping strategies in response to stressful situations as compared with men (Tamres, Janicki, & Helgeson, 2005) or with lifestyles (Kessler & McLeod, 1984, as cited in Krajeski & Goffin, 2005). Second, women tend to score lower in coping strategies in response to stressful situations. As compared with men, women perceive their job resources play divergent roles in the development of engagement and burnout among men and women. For example, Greenlass, Burke, and Komarzki (1998) reported that while co-worker support led to lower emotional exhaustion in women, supervisory and co-worker support resulted in higher levels of professional efficacy among men. It is therefore expected that job resources offer greater protection against burnout among women whereas they foster the development of engagement among men.

Hypotheses

The present study intends to investigate the robustness of the JD-R model across various occupational and age groups and across gender. Accordingly, the following hypotheses were tested.

**Hypothesis 1.** Job resources buffer the positive relationship between job demands and burnout. That is, the relationship between job demands and burnout is weaker when job resources are stronger.

**Hypothesis 2.** Job resources are negatively related to one’s intention to leave the organization via the intervening effect of work engagement. That is, work engagement fully mediates the relationship between job resources and turnover intention.

**Hypothesis 3.** Job demands are negatively related to health complaints via the intervening effect of burnout. That is, burnout fully mediates the relationship between job demands and health complaints.

**Hypothesis 4.** Given age-related changes in physiologically functioning and cognitive resources, we hypothesize that paths from job demands to burnout and to health complaints assume lower values among elderly workers than among younger workers. Furthermore we assume that job resources exert weaker effects on job engagement among elderly workers compared to their younger counterparts. Technically speaking, we expect path coefficients between latent variables, but not factor loadings or measurement errors to vary across age groups.

**Hypothesis 5.** The structural path linking job resources and burnout will reach a higher value among women whereas path coefficients linking job resources and engagement will assume higher values among men. That is, again we assume structural path coefficients, but not factor loadings or measurement errors to differ among subsamples.
Hypothesis 6. The importance of the specific job demands and job resources included in the model will vary across occupational groups. More precisely, we assume that the factor loading of quantitative workload will be higher and the factor loading of qualitative workload will be lower among blue-collar workers compared with white-collar workers. Co-workers support and decision latitude are presumed to assume higher factor loadings among white-collar workers than among blue-collar workers. Furthermore, we assume that the health impacts of job demands are stronger among blue-collar workers than among white-collar workers. That is, we assume the structural path from job demands to burnout and health complaints to assume higher values among blue-collar workers.

Method

Procedure and participants

Between September and December 2005, participants were recruited from eight different companies in Austria. Participating organizations belong both to manufacturing and to service industries. After information meetings of the personnel department and workers’ councils of the respective organizations, questionnaires were either distributed by the researchers (together with research assistants) or by the members of the workers’ council. The questionnaire was accompanied by a letter from the researchers, in which the aims of the study were briefly introduced and the confidentiality and anonymity of the answers were emphasized. In one company, employees also received a letter supporting the study from the management team. The participants were asked to fill out the questionnaire at their workplace and to either return it to the researchers or post it in a special box at their departments.

A total of 964 employees participated in the study. Eight participants had to be omitted from the sample because of missing data in the turnover intention variable, resulting in an overall return rate of 55.3% (N = 956). The sample consisted of blue- and white-collar workers, but the latter were stronger represented (77%). Two of these subgroups of employees may be defined in terms of their work tasks. While white-collar workers such as office or technical personnel predominantly work with information, written material, or people, blue-collar workers are predominately engaged in working with hands, tools, or equipment as exemplified by mechanics or assembly line workers.

The sample population was 59% male (N = 562) and ranged in age from 15 to 65 years, with a mean age of 36.4 years (SD = 11.1). Thirty-two percent of the participants were younger than 30 years of age (N = 306). 41% were between 30 and 44 years (N = 397), and 27% were 45 years or older (N = 253). The observed (relatively small) proportion of employees older than 45 years is typical for the Austrian working population (Statistik Austria, 2005).

The German language version of the Maslach Burnout Inventory-General Scale (MBI-GS) was used to assess job burnout (Schaufeli, Leiter, Maslach, & Jackson, 1996). The factorial validity of the MBI-GS has been confirmed across occupational groups and across nations (Schutte, Toppinen, Kalimo, & Schaufeli, 2000). We used two subscales, namely exhaustion and cynicism, which both consist of five items. Examples of the items are ‘I feel used up at the end of a working day’ and ‘I doubt the significance of my work.’ All items were scored on a 6-point rating scale ranging from 1 (never) to 6 (always).

A dichotomous turnover intention index was calculated from four items measuring turnover plans and turnover behavior, based on the Questionnaire Experience and Evaluation of Work (Vragenlijst Belevingen Beoordeling van de Arbeid; VVBA; Van Veldhoven & Meijman, 1994). For example, respondents had to indicate whether they intend to change jobs during the next year. Response categories for these items were dichotomous (yes or no).

Health complaints were measured using a modified version of Ducki’s (2008) psychosomatic complaints scale which comprises eight items. This scale assessed the degree to which respondents experienced psychosomatic complaints on a 5-point scale (1 = never, 5 = always). For example, the scale includes items like ‘I get heart palpitations when I am tired’ and ‘I feel I am in a bad mood for a long period of time when I am tired.’

Analysis

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Analysis

To test the adequacy of the Job-Demands Resources model among various subgroups we used structural equation modeling techniques. Analyses were based on the PRELIS 2.51 and LISREL 8.51 programs (Joreskog & Sörbom, 2001) and were conducted in four stages. First, scales were combined to form multiple measurement indicators of the various constructs. Decision latitude, supervisory support, and co-workers support were used to estimate the latent job resource variable whereas quantitative and qualitative workload represented the latent job demands variable. In accordance to recent findings (Schaufeli & Bakker, 2004, Schaufeli et al., 2002), burnout was measured by two indicators, exhaustion and cynicism, whereas engagement was assumed to consist of vigor, dedication, and absorption. Health problems comprised three indicators, namely, musculoskeletal, gastro-intestinal, and cardiovascular complaints. Turnover intention was measured with a single indicator. To account for potential measurement errors, the error variance was fixed by setting it equal to the product of the variance and the quantity one minus the estimated reliability as indicated by Cronbach’s alpha (Bollen, 1989). Second, observed data were fitted to the hypothesized model and subsequently assessed for goodness-of-fit. Before testing the whole model, interaction effects were analyzed using moderated structural equation modeling (MSEM). In a third step, we compared the hypothesized model with an alternative model, which included direct paths from job demands to turnover intention and from job demands to health complaints, to assess whether engagement and burnout fully mediated the effects of job resources and job demands on turnover intention and health complaints, respectively. Finally, we conducted several group comparisons to test for differences among age groups, gender, and blue- and white-collar workers.

In keeping with Baron and Kenny’s analysis on polyserial and polychoric correlations because of the categorical nature of some study variables. The estimation parameters were determined using weighted least squares procedures. We assessed the adequacy of the model by using five goodness-of-fit statistics (Hoyle & Panter, 1995). The chi-square goodness-of-fit statistic, the adjusted goodness-of-fit index (AGFI), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Bayesian Information Criterion (BIC). Given the known sensitivity of the chi-square test to sample size (that is the increasing probability of rejecting a hypothesized model with growing sample size) the AGFI, an absolute fit index, was employed, with values close to 1.00 being indicative of good fit (Hu & Bentler, 1995). Further, another fit index, the root mean square error of approximation (RMSEA), assesses how well the model would fit the population covariance matrix if it were available. According to Hu and Bentler (1999), a cutoff value close to 0.06 represents a relatively good fitting model.
In contrast to absolute fit indices, incremental fit indices measure the improvement in fit by comparing the model with an independent model, that is a model in which all the observed variables are uncorrelated (Hu & Bentler, 1999). Bentler's CFI represents such an incremental fit index that takes sample size into account. Although a value higher than 0.90 was originally considered representative of a well-fitting model, a revised cutoff value close to 0.95 has recently been advised (Hu & Bentler, 1999). Finally, we used the BIC to compare non-nested models. Following Raftery (1995), a BIC difference of 2–6 provides positive evidence and a BIC difference of 6–10 provides strong evidence that the model with the smaller (i.e., the more negative) BIC value yields a better fit.

Results

Descriptive statistics

Table 1 presents reliabilities, means, standard deviations, and polychoric and polychoric correlations for all study variables. Apart from qualitative workload (α = 0.64) and decision latitude (α = 0.69), all internal consistencies as indicated by Cronbach's alpha were satisfactory with values higher than .70. Results also show that all significant relationships between the variables were in the expected direction.

Testing latent interaction effects

For testing hypothesis 1 we conducted MSEM analyses, following the procedure proposed by Jaccard and Wan (1993). Indicator variables were centered. The products of the centered indicators were used to define the indicators of the latent interaction term. In addition, we imposed several non-linear constraints to specify the factor loadings and variances associated with the interaction term. As indicated in Table 2, none of the interaction effects was significant. Thus, we were neither able to show that job resources buffer the effect of job demands on burnout nor did our data support the hypothesis that job resources boost work engagement especially when job demands are high. Insignificant interaction terms were thus omitted from the model.

Table 1. Reliabilities, descriptive statistics, and intercorrelations among the study variables (total sample, N = 846).

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>1</th>
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<th>10</th>
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<th>12</th>
<th>13</th>
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</thead>
<tbody>
<tr>
<td>1. Quantitative workload</td>
<td>.76</td>
<td>.80</td>
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<tr>
<td>2. Qualitative workload</td>
<td>.64</td>
<td>.24</td>
<td>0.66</td>
<td>.36</td>
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<td>3. Co-workers support</td>
<td>.34</td>
<td>.78</td>
<td>.65</td>
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<td>4. Supervisory support</td>
<td>.80</td>
<td>1.54</td>
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<td>5. Decision latitude</td>
<td>.93</td>
<td>.27</td>
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<td>6. Exhaustion</td>
<td>.86</td>
<td>3.01</td>
<td>.42</td>
<td>.27</td>
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<td>7. Coping</td>
<td>.81</td>
<td>2.62</td>
<td>1.01</td>
<td>.24</td>
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<td>8. Vigor</td>
<td>.83</td>
<td>4.46</td>
<td>1.15</td>
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<td>9. Dedication</td>
<td>.88</td>
<td>4.76</td>
<td>1.32</td>
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<td>10. Absorption</td>
<td>.86</td>
<td>4.89</td>
<td>1.32</td>
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<td>11. Gastro-intestinal complaints</td>
<td>.75</td>
<td>1.84</td>
<td>0.75</td>
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<td>12. Musculoskeletal complaints</td>
<td>.29</td>
<td>0.98</td>
<td>0.15</td>
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<td>13. Cardiovascular complaints</td>
<td>.16</td>
<td>0.80</td>
<td>0.12</td>
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<td>14. Turnover intention</td>
<td>.28</td>
<td>1.14</td>
<td>.05</td>
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</table>

Note: Correlations of 1110 or higher are significant at p < 0.001.

Table 2. Results of moderated structural equation modeling: Interactions of job resources and job demands (total sample, N = 846).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Engagement</th>
<th>Burnout</th>
<th>Model fit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UPC/SE</td>
<td>SP</td>
<td>UPC/SE</td>
</tr>
<tr>
<td>Job resources</td>
<td>-1.11 (0.99)</td>
<td>-66***</td>
<td>-0.56 (1.06)</td>
</tr>
<tr>
<td>Job demands</td>
<td>-0.13 (1.04)</td>
<td>-64</td>
<td>-0.46 (1.09)</td>
</tr>
<tr>
<td>Job resources * Job demands</td>
<td>-0.08 (1.02)</td>
<td>-00</td>
<td>-0.06 (1.12)</td>
</tr>
</tbody>
</table>

Table 3. Fit indices of the structural equation models (total sample, N = 846).

Note: GFI = Goodness-of-Fit Index; ACFI = Adjusted Goodness-of-Fit Index; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; BIC = Bayesian Information Criterion.
Table 4. Results of multi-group analysis of the Job Demands-Resources model comparing employees 15-29 years old (N = 286), 30-44 years old (N = 332), and 45 years and older (N = 220).

<table>
<thead>
<tr>
<th>Model</th>
<th>Model description</th>
<th>χ²</th>
<th>df</th>
<th>Δχ²</th>
<th>Δdf</th>
<th>RMSEA</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3a</td>
<td>Constrained model (M2)</td>
<td>575.68</td>
<td>240</td>
<td>-</td>
<td>-</td>
<td>0.07</td>
<td>0.86</td>
</tr>
<tr>
<td>M3b</td>
<td>Structural paths freely estimated</td>
<td>536.03</td>
<td>228</td>
<td>39.65</td>
<td>12</td>
<td>0.07</td>
<td>0.87</td>
</tr>
<tr>
<td>M3c</td>
<td>Structural paths, structural covariances, and structural variances freely estimated</td>
<td>432.72</td>
<td>216</td>
<td>142.31</td>
<td>30</td>
<td>0.06</td>
<td>0.90</td>
</tr>
<tr>
<td>M3d</td>
<td>All structural and measurement parameters freely estimated</td>
<td>377.15</td>
<td>174</td>
<td>198.53</td>
<td>66</td>
<td>0.03</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Note: RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.

Table 5. Results of multi-group analysis of the Job Demands-Resources model comparing male (N = 543) and female (N = 301) employees.

<table>
<thead>
<tr>
<th>Model</th>
<th>Model description</th>
<th>χ²</th>
<th>df</th>
<th>Δχ²</th>
<th>Δdf</th>
<th>RMSEA</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4a</td>
<td>Constrained model (M2)</td>
<td>347.94</td>
<td>149</td>
<td>-</td>
<td>-</td>
<td>0.06</td>
<td>0.89</td>
</tr>
<tr>
<td>M4b</td>
<td>Structural paths freely estimated</td>
<td>341.69</td>
<td>143</td>
<td>6.25</td>
<td>6</td>
<td>0.06</td>
<td>0.88</td>
</tr>
<tr>
<td>M4c</td>
<td>Structural paths, structural covariances, and structural variances freely estimated</td>
<td>324.79</td>
<td>134</td>
<td>23.65</td>
<td>15</td>
<td>0.06</td>
<td>0.89</td>
</tr>
<tr>
<td>M4d</td>
<td>All structural and measurement parameters freely estimated</td>
<td>388.89</td>
<td>116</td>
<td>39.05</td>
<td>33</td>
<td>0.06</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.

Table 6. Results of multi-group analysis of the Job Demands-Resources model comparing blue-collar (N = 162) and white-collar workers (N = 674).

<table>
<thead>
<tr>
<th>Model</th>
<th>Model description</th>
<th>χ²</th>
<th>df</th>
<th>Δχ²</th>
<th>Δdf</th>
<th>RMSEA</th>
<th>CFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3a</td>
<td>Constrained model (M2)</td>
<td>569.05</td>
<td>149</td>
<td>-</td>
<td>-</td>
<td>0.08</td>
<td>0.81</td>
</tr>
<tr>
<td>M3b</td>
<td>Structural paths freely estimated</td>
<td>538.15</td>
<td>143</td>
<td>49.90</td>
<td>6</td>
<td>0.06</td>
<td>0.83</td>
</tr>
<tr>
<td>M3c</td>
<td>Structural paths, structural covariances, and structural variances freely estimated</td>
<td>466.58</td>
<td>134</td>
<td>93.47</td>
<td>15</td>
<td>0.08</td>
<td>0.84</td>
</tr>
<tr>
<td>M3d</td>
<td>All structural and measurement parameters freely estimated</td>
<td>347.45</td>
<td>116</td>
<td>212.60</td>
<td>33</td>
<td>0.07</td>
<td>0.89</td>
</tr>
<tr>
<td>M3e</td>
<td>Final model</td>
<td>408.77</td>
<td>137</td>
<td>151.28</td>
<td>11</td>
<td>0.07</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.

(Δχ² χ² = 198.53), suggesting that relations between latent and observed variables are age invariant. Thus Hypothesis 3 was not confirmed; the model works similarly for all age groups.

Testing for differences across gender

Using the same procedure we tested whether the model was invariant across male (N = 543) and female (N = 301) employees. As apparent in Table 5, the constrained model (M4a) fitted the data quite well. Testing increasingly less constrained models did not result in a significant improvement of model fit. Neither the structural nor the measurement components were shown to vary across gender. Therefore we also had to reject Hypothesis 4; the model works similar for men and women.

Testing for differences across white- and blue-collar workers

In a final series of structural equation modeling analyses we evaluated the invariance of the model across occupational levels (white-collar workers, N = 674; blue-collar workers, N = 162). Table 6 presents the results of these analyses. In contrast to age and gender, model parameters were found to vary across occupational levels. As can be seen in Table 6, all less restrictive models significantly deviated from the baseline model which assumed all parameters to be equal across groups. To determine which parameters accounted for not achieving invariance, an iterative process was applied. With the fully constrained model as a starting point we allowed parameters one by one to be freely estimated. When model fit did not improve significantly after testing a parameter independently for both groups, equality constraints were retained. This procedure led to a final model, which yielded an overall χ² value of 408.77, with CFI = 0.89 and RMSEA = 0.07. Non-standardized model coefficients of this model are depicted in Figure 2. For non-invariant parameters two values are displayed: one for each subgroup. As apparent in Figure 2, white- and blue-collar workers differed in (1) the factor loadings of satisfaction and support, support from co-workers, absorption and cardiovascular health complaints; (2) path coefficients linking job demands to burnout and burnout to health complaints (i.e., the health impairment process) and the path coefficients linking job resources to burnout; and (3) the error covariances of engagement.

As can also be seen from Figure 2, path coefficients were not equally strong in both mediating processes. While job resources and work engagement as well as work engagement and turnover intention were strongly associated (0.61 and 0.77, respectively), associations related to the health impairment process were only moderate (0.31, 0.66 and 0.29, 0.27, respectively). Accordingly, more variance was explained in engagement (76.53 percent) and turnover intention (22.28 percent) compared to burnout (18.39 percent) and health complaints (11.12 percent). Taken together, these results suggest that the motivational process is more crucial than the energetic process.

Discussion

The Job Demands-Resources model

The aim of the present study was to test the robustness of the Job Demands-Resources model as proposed by Schaufeli and Bakker (2004) in a diverse sample of Austrian white- and blue-collar workers. The model assumes two different processes: (1) a motivational process that starts with job resources which may lead to work engagement and consequently to employees' intention to remain with their current employer and (2) an energetic process that starts with high job demands which may lead to burnout and consequently to health complaints. Furthermore, the JD-R model proposes that job resources may buffer the impact of job demands on job strain, such as burnout. In contrast to recent research findings (Bakker & Demerouti, 2007; Bakker et al., 2003, 2005), we were not able to confirm this interaction effect of job resources and demands on burnout or engagement. Instead, we replicated the disparate structure of the JD-R model by slightly modifying the original model. Given the importance of exhaustion in developing burnout symptoms (Cox et al., 1993; Toppenhofer-Tanner et al., 2002), we concentrated on a core model, with only exhaustion being indicative of burnout. As Kristensen and his colleagues (2005) pointed out in their comprehensive critique of the Maslach burnout concept it is unclear why exhaustion, depersonalization, cynicism, and professional efficacy which have their own precursors and consequences (e.g., Lee & Ashforth, 1996) should be viewed as facets of the same phenomenon. Furthermore, as noted by Taris et al. (2005), the three components are not based on sound theorizing or clinical observations rather they have been intuitively developed by factor-analyzing. Thus, in lieu of conceptualizing burnout as a three-dimen- sional syndrome, Kristensen et al. (2005) consider fatigue or exhaustion to be the core dimension of burnout. Our findings support this assumption and...
question the original definition of burnout as a syndrome combining three different albeit related dimensions. Therefore, more work on the theoretical foundations of burnout is needed to further elucidate the construct (Shirom, 2005). Despite these modifications, we were able to confirm the main assumption of the original JD-R model, namely the differentiation between two underlying processes. The motivational process linking job resources with turnover intention via engagement showed, however, stronger path coefficients than the health impairment process in which burnout played a mediating role. This result contradicts with previous findings. Besides Schaufeli and Bakker (2004), Hakameno found the health impairment process to be more prominent than the motivational one. Irrespective of these differences in effect sizes, the model still has the potential to integrate more traditional studies on work stress and positive scholarship on workers’ well-being by connecting positive and negative consequences of work environments.

In order to test the robustness of the JD-R model we conducted multi-group analyses, comparing different groups of employees. First, in contrasting three age groups (12–29, 30–44, and 45 + years) the JD-R model proved to be age invariant. This finding challenges manager’s assumption that older workers are less able to mobilize job resources to cope with job demands (e.g., Chiu, Chan, Napier, & Redman, 2001). In addition, analyses revealed that the re-specified model works similar among male and female workers. Contrary to age and gender, we did not find the model to be invariant across white- and blue-collar workers. Path coefficients as well as factor loadings were found to be affected by occupational level. The basic structure, however, remained unchanged. We therefore conclude that different occupational groups vary regarding the strength of correlations, but not regarding the underlying processes per se. Hence, our findings confirmed the JD-R model in a diverse Austrian sample using German language questionnaires and other types of job demands and job resources compared to previous studies.

Study limitations and directions for future research
Perhaps the primary limitation of the present study concerns reliance on cross-sectional data. Therefore, although the directions of arrows in the research model suggest causality, no causal inferences should be drawn. Rather longitudinal studies are needed to confirm the proposed processes. Second, the measurement of the study variables was solely based on self-reports. Observed relationships may, thus, be due to common method variance (Campbell & Fiske, 1959). To avoid this bias, more objective indicators of health status and observer ratings of working conditions should be included in future studies. It has, however, been argued that measuring variables such as job resources or workplaces should not automatically inflate relationships between these variables. Instead of thinking of common method variance as a ‘universal inflator of correlations,’ Spector (2006, p. 224) suggests a complex approach to dealing with biases that involves their identification and control to rule them out as explanations for observed associations. To reduce potential biases (e.g., justification bias) in the present study the working condition variables are based on questions asked prior to health and turnover intention variables. A third potential limitation of the present study is its reliance on turnover intentions as an indicator of organizational outcomes. Future research needs to employ more objectively measured behavioral indicators, such as current personnel turnover or absenteeism rates. On the contrary, empirical studies (e.g., Parasuraman, 1982) as well as meta-analyses (Griffeth, Hom, & Gaertner, 2000; Steel & O’vall, 1984) provided evidence that the most proximate predictor of actual voluntary turnover is the behavior intention to leave one’s employer. As proposed by existing theoretical perspectives (Fishbein & Ajzen, 1975), proximal precursors in the withdrawal process, such as quitting intentions, are known to be among the best predictors of turnover with average intercorrelations between 0.33 and 0.38 (Griffeth et al., 2000; see also Warr, 1999). Nonetheless, future studies should take positive outcomes of work engagement, such as job performance or work attitudes, into account.

Implications for positive psychology
According to Linley et al. (2006), who distinguished among four levels of analysis for positive psychology (wellbeing, processes, mechanisms, and outcomes), the present study focused exclusively on outcomes. In line with previous findings, our results emphasize that working environments are essential for understanding the development of positive as well as negative work-related states of mind. Therefore, this study contributes to positive psychology in investigating those extra-personal factors that facilitate work-related well-being. The Job Demands-Resources model suggests two options to foster employees’ well-being. Whereas efforts aiming at the reduction of job demands may counteract burnout symptoms and health complaints, activities to increase job resources may contribute to a higher level of engagement. The results of the present study, thus, emphasize that different organizational and individual interventions are warranted in order to increase well-being (engagement) and to decrease unwell-being (burnout) and that these interventions should be applied simultaneously. Since we found the underlying motivational and energetic processes to be invariant across age groups, the implications of the JD-R model on work resources workshops should not only focus on older workers but need to occur early in the working life. Fostering job resources and reducing job demands in all age groups seems to be warranted for they play an important role in the development of engagement and well-being on the one hand and burnout symptoms and health complaints on the other hand. In addition, future research should focus on further resources (e.g., personal resources such as self-efficacy) that enhance the development of positive well-being and facilitate the reduction of burnout.

Finally, a small but growing body of research stresses the positive impact of occupational well-being on economic outcomes (Harter, Schmidt, & Hayes, 2002; Keyes & Magrane-Moe, 2007; Salanova, Agut, & Peiro, 2005). Businesses with more employees showing high levels of well-being tend to report greater customer satisfaction and loyalty, higher productivity, and lower turnover rates. It is therefore in companies’ interest to develop techniques for promoting employees’ well-being and engagement.

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References


