Employees' job demands–resources profiles, burnout and work engagement: A person-centred examination

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Abstract

The present study aimed to add to the extensive variable-centred literature on the Job Demands–Resources (JD–R) model by validating the model using a person-centred approach. A two-step cluster analysis in a sample of Flemish community employees ($N = 307$) showed that job demands and job resources co-occur in four job profiles: demanding (high demands, low resources), resourceful (low demands, high resources), poor (low demands and low resources) and rich (high demands and high resources) jobs. In line with the JD–R model, employees in demanding jobs evidenced the poorest well-being (high burnout and low work engagement). Resourceful as well as rich jobs were the most optimal job profiles: employees with such profiles reported the least burnout and the most work engagement. The discussion centres on the theoretical lessons learned from the differences among the job profiles, the practical importance of cluster analysis as a diagnostic tool and the presence of job resources.

Keywords

Cluster analysis, Job–Demands Resources model

The Job Demands–Resources model (JD–R model; Bakker and Demerouti, 2007; Demerouti et al., 2001) is an encompassing job characteristics model. It taps into

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health-impairing (e.g. workload) and health-enhancing job aspects (e.g. social support), and their interaction in the prediction of burnout and work engagement. Most of the studies examining the JD–R model have adopted a variable-centred approach. Although such an approach has a number of advantages, some downsides are also evident. Methodologically, a variable-centred approach reduces the complexity of the work context to the level of variables (i.e. job demands and job resources) and allows examination of their covariation and interaction effects. A variable-centred approach is therefore useful in studying general trends that apply to all sample participants. Job demands and resources might, however, in constellation influence employees' well-being in a complex way because of their interrelations and the simultaneous occurrence of their main and interaction effects (Kompier, 2002).

The present study therefore aims to complement the variable-centred line of research in the realm of the JD–R model using a person-centred approach which can capture this complexity (Gore, 2000). From a theoretical point of view, first, a person-centred approach may unravel the natural co-occurrence of job demands and job resources and therefore helps to understand their interrelation. Second, a person-centred approach allows examination of the naturally occurring levels of burnout and work engagement resulting from the joint effects of job demands and job resources in the emerging groups. Accordingly, from a practical point of view, a person-oriented approach may help identify which individuals are most at risk for burnout or, conversely, are most likely to thrive when considering a variety of job characteristics. In addition, a person-centred approach may signal whether the increase of job resources or rather the decrease of job demands is most important to enhance well-being, or provide insight into the conditions wherein these interventions are most instructive. Before detailing the analysis, we first present the JD–R model and the hypotheses in the following sections.

The Job Demands–Resources model

The JD–R model expands on previous models such as the Job Demands Control model (Karasek, 1979) and the Effort Reward Imbalance model (Siegrist, 1996) by assuming that a broad variety of general and job-specific characteristics influence employees' well-being. According to JD–R scholars, the variety of job characteristics affecting employees' well-being can be meaningfully grouped into job demands and job resources (Bakker and Demerouti, 2007). *Job demands* are defined as those physical, psychological, social or organizational aspects of the work context that tax employees' personal capacities and that are, therefore, associated with certain psychological and/or physiological costs (Bakker et al., 2003c; De Jonge and Dormann, 2006). Depending on the job context under study, the category of job demands contains job characteristics as diverse as workload, emotional dissonance and organizational change (e.g. Bakker et al., 2003b). *Job resources* are defined as those physical, psychological, social or organizational aspects of the work context that (1) can reduce job demands and their health-impairing impact, (2) are functional in achieving work goals and (3) stimulate personal growth, development and learning (Schaufeli and Bakker, 2004). Job resources include job characteristics as diverse as opportunities for skill utilization, supervisor support and career opportunities (e.g. De Lange et al., 2008).

In the JD–R model, job demands are expected to give rise to burnout, while job resources are maintained to reduce burnout and to enhance work engagement (Bakker and Demerouti, 2007). Burnout is characterized by two key components, that is, exhaustion and cynicism (Maslach et al., 2001). Exhaustion is defined as a state of general mental fatigue; cynicism is defined as a mentally distancing from one's work. Work engagement can be understood as the complement of burnout (González-Romá et al., 2006). It is defined by vigour (i.e. high levels of mental energy) and dedication (i.e. strong involvement and feelings of pride; Bakker et al., 2008). Several cross-sectional and longitudinal studies have confirmed the JD–R model supporting that job demands cause burnout (Hakanen et al., 2008; Schaufeli et al., 2009), while job resources decrease burnout and enhance work engagement (e.g. Hakanen et al., 2008; Xanthopoulou et al., 2009).

In addition to these main effects, job demands and resources are thought to interact. First, job resources are assumed to *buffer* the health-impairing impact of job demands. The buffering hypothesis builds on the assumption of the Conservation of Resources (COR) theory (Hobfoll, 2002), which states that especially individuals who lack sufficient resources are prone to the negative impact of negative life events. It suggests that employees encountering high job demands may feel less burned out if they dispose of many job resources. This assumption elaborates upon earlier job characteristics models which are more limited in scope (e.g. Karasek, 1979) in suggesting that several different job resources can play a buffering role for several different job demands (Bakker et al., 2005). Various studies have provided evidence for this hypothesis (Bakker et al., 2005; Hakanen et al., 2005).

Second, job demands are expected to *boost* the health-enhancing effect of job resources (Bakker and Demerouti, 2007), that is, job resources enhance work engagement particularly when job demands are high. This hypothesis also builds on the COR theory, which suggests that individuals strive to protect, maintain and increase their resources (Hobfoll, 2002). Specifically, COR theory states that resources become particularly salient under demanding conditions (Hobfoll, 2002). Having resources or experiencing an increase in resources under demanding circumstances may therefore boost individuals' well-being. The combination of high job demands and high job resources may therefore result in exceptionally high levels of work engagement. Hakanen et al. (2005) provided initial evidence for the boosting hypothesis. Specifically, they showed that job resources, such as variability in skill utilization and positive patient contact, were more strongly related to dentists' work engagement when qualitative workload or physical work demands were high. Similarly, Bakker et al. (2007) found that for teachers judging their pupils' behaviour as highly stressful, job resources such as innovativeness and social support were more strongly related to work engagement. Note that, in this view, job demands may contribute to poor well-being, as they elicit burnout, but may also enhance well-being by boosting the associations between job resources and work engagement.

Insights from a person-centred approach

A plethora of studies have provided evidence for the JD–R model (Bakker and Demerouti, 2007). However, all these studies have adopted a variable-centred approach. Therefore,

some issues remain. The first of these pertains to the co-occurrence of job demands and job resources. In the JD–R model, job resources are, by definition, assumed to reduce job demands, suggesting that job demands and job resources are negatively correlated. However, empirical studies show negative (e.g. Bakker et al., 2003c; Lewig et al., 2007), as well as non-significant (e.g. Schaufeli and Bakker, 2004) and even positive (e.g. Hakanen et al., 2006) correlations between job demands and job resources. These findings raise questions about the naturally occurring constellations of job demands and job resources, and the percentage and type of workers these constellations represent. A person-centred approach may shed light on the relation between demands and resources, by detailing their natural co-occurrence. As such a person-centred approach sheds light on the degree to which job resources may prevent the presence of job demands, thereby providing insight in the instrumentality and necessity of studying their joint effects. As job demands and job resources are generally only moderately interrelated, we may hypothesize that high job demands may combine with both low and high resources, and vice versa, resulting in four job profiles: *demanding jobs* with few job resources, *resourceful jobs* with few job demands, *rich jobs* containing high job demands and high resources and *poor jobs* with low job demands and low job resources (Hypothesis 1).

Second and related to the previous issue, a person-centred approach allows one to gain insight into the complex joint outcomes of job demands and job resources. Previous studies provided evidence for the main and interaction effects of the dimensions of job demands and job resources using variable-centred regression or structural equation analysis, or relied on arbitrary cut-off values in median split analysis to examine the joint effects of job demands and job resources (Bakker et al., 2007). The naturally resulting levels of burnout and work engagement remain unclear. A person-centred approach may tap into this issue.

With respect to burnout, we need to take into account the main effects of job demands which may increase burnout, the main effect of job resources decreasing burnout, as well as the buffering role of job resources attenuating the development of burnout in the case of high job demands. Together, these effects should result in the highest levels of burnout among employees in demanding jobs. Second would be employees experiencing high demands and high resources and then employees encountering low job demands and low job resources. Particularly low levels of burnout are likely among employees in resourceful jobs (Hypothesis 2).

Concerning work engagement, the positive main effect of job resources as well as the boosting hypothesis come into play. Accordingly, the highest levels of work engagement are likely among employees experiencing both high job demands and high job resources, followed by employees reporting low demands and high resources. Finally, the lowest levels of work engagement would be reported by workers experiencing both low job demands and low job resources and workers combining high demands with low resources (Hypothesis 3).

Method

Procedure and participants

In line with Warr's (1990) advice to include a broad variety of jobs for studying job characteristics in relation to well-being, we sampled an organization employing workers with

different occupational levels and different functions. Specifically, respondents comprised 307 employees from a Flemish community, working, for instance, as administrative personnel, social workers, green keepers or fire-fighters. Data collection was part of an electronic survey on occupational health and motivation. To encourage respondents' candidness, participation was voluntary and the confidentiality and anonymity of the responses was emphasized. The response rate was 54%, which is comparable to response rates in other organizational studies (Baruch and Holtom, 2008).

The total sample included 51% male and 49% female participants. Participants' age ranged from 23 to 63 years ($M = 43.60$ years; $SD = 9.21$ years). Two percent had completed primary school, 50% had attended secondary education, 31% had acquired a bachelors' degree and 17% had obtained a master's degree. About 18% of participants were blue-collar workers, 43% were employed as administrative personnel, 16% were professionals and 23% were middle or senior managers. The majority of the participants were full-time workers (80%) and were permanently employed (89%). Tenure ranged from less than a year to 38 years ($M = 15.60$ years; $SD = 10.26$ years).

Measures

Scale-scores were computed by averaging the respective items. Information about means, standard deviations, Cronbach's alphas and correlations among the variables is reported in Table 1.

Job characteristics. We selected four job demands (i.e. workload, emotional demands, role conflict and cognitive demands) and four job resources (i.e. task autonomy, skill utilization, social support from colleagues and feedback) which are commonly included in JD-R studies and which are likely present across the various jobs in the current organization. All job characteristics were measured on a five-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The items for *workload*, *emotional demands* and *role conflicts* were taken from the Short Inventory to Monitor Psychosocial Hazards (SIMPH; Notelaers et al., 2007). *Workload* included four items such as 'I have to work fast in my job'. *Emotional demands* were measured with three items such as 'My job is emotionally demanding'. An example of the four-item scale for *role conflict* reads: 'I receive conflicting orders from my supervisor'. *Cognitive demands* were assessed with seven items developed by Van Veldhoven and Meijman (1994). A sample item is 'My work requires a lot of concentration'. *Autonomy* was measured with six items such as 'I can vary my work methods' developed by Rosenthal et al. (1996). *Skill utilization* and *social support of colleagues* were assessed with the four- and five-item scales of the SIMPH (Notelaers et al., 2007), including items such as 'My job offers me possibilities to grow and develop' and 'I can count on my colleagues when I have difficulties in my job', respectively. Feedback was assessed with three items borrowed from Morgeson and Humphrey (2006). A sample item is: 'My work provides me with feedback'. Confirmatory factor analysis was conducted based on the six job characteristics scales. To achieve a reasonable number of participants per estimate ratio, each of the job characteristics scales were represented by three indicators (Schreiber et al., 2006). Parcels were computed for scales that included more than three items (Marsh et al., 1998). Estimation of the two-factor measurement model yielded a good fit; $SBS-\chi^2(221) = 461.28$,

Table 1. Means, standard deviations and correlations among job demands, job resources, burnout and engagement (alphas within parentheses on the diagonal) ($N = 307$).

	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Emotional demands	2.62	1.01	(.87)											
2. Cognitive demands	4.04	0.57	.27**	(.91)										
3. Workload	2.69	0.88	.31**	.38**	(.92)									
4. Role conflict	2.28	0.67	.15**	.02	.25**	(.87)								
5. Social support	4.00	0.65	-.09	.05	-.33**	-.16**	(.93)							
6. Task autonomy	3.31	0.73	-.13*	-.06	-.14*	.14*	.14*	(.81)						
7. Skill utilization	3.70	0.63	.15*	.25**	.00	-.29**	.29**	.29**	(.81)					
8. Feedback	3.33	0.69	.02	.15**	-.02	-.10	.19**	.28**	.37**	(.84)				
9. Exhaustion	1.38	1.13	.17**	.11	.24**	.36**	-.21**	-.17**	-.24**	-.20**	(.92)			
10. Cynicism	1.23	1.13	.13*	-.15**	.12*	.42**	-.26**	-.11	-.40**	-.29**	.59**	(.91)		
11. Vigour	4.45	1.06	.00	.22**	-.01	-.22**	.22**	.04	.38**	.27**	-.33**	-.49**	(.92)	
12. Dedication	4.50	1.19	.07	.29**	.03	-.28**	.26**	.09	.57**	.31**	-.30**	-.58**	.67**	(.96)

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

$p < .001$; CFI = .96, RSMEA = .056; NNF = .95; which was better than the fit of the alternative one-factor model; SBS- χ^2 ; (222) = 613.89, $p < .001$; CFI = .92, RSMEA = .073; NNF = .91; Δ SBS- χ^2 ; (1) = 152.61, $p < .001$, which supports the discriminant validity of the job demands and job resources.

Well-being. *Burnout* was measured with the Dutch version of the Maslach Burnout Inventory General Survey (MBI-GS, Schaufeli et al., 1996; Schaufeli and Van Dierendonck, 2000) including five items for exhaustion (e.g. 'I feel totally exhausted in my job') and four items for cynicism (e.g. 'I have become more cynical about whether my work contributes anything'). Responses were coded on a seven-point Likert scale from 0 (*never*) to 6 (*always, every day*). *Work engagement* was measured with the dimensions vigour and dedication of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2002). Vigour included five items such as 'At my work, I feel bursting with energy'. The scale for dedication included five items such as 'My job inspires me'. Like burnout, participants responded to these items on a seven-point Likert scale from 0 (*never*) to 6 (*always, every day*). Principal component analysis using promax rotation suggested these four factors, explaining 78.86% of the total variance.

Results

Job characteristics profiles through cluster analysis

As cluster analysis is sensitive to outliers (Garson, 1998), we first standardized the job demands and job resources dimensions and removed seven univariate outliers (i.e. values more than 3 standard deviations below or above the mean) and two multivariate outliers (i.e. individuals with high Mahalanobis distance values). Then, cluster analysis was conducted using a two-step procedure (Gore, 2000). In the first step, hierarchical cluster analysis based on squared Euclidian distances was carried out using Ward's method, to obtain the optimal number of clusters. A four-cluster solution was selected based on the hypotheses, explanatory power and parsimony. This solution explained 58% and 64% of the variance in job demands and job resources, respectively, while the three-cluster solution explained 56% and 38%, respectively and therefore did not meet the criterion of explaining approximately 50% of the variance in job resources. The five-factor solution explained 59% and 75%, respectively, but showed – in addition to the hypothesized four clusters – a fifth cluster characterized by low job demands and mean levels of job resources and was thus less parsimonious. Therefore, in the second step of the cluster analysis, we used the initial cluster centres of the four-cluster solution as non-random starting points in an iterative or *k*-means cluster analysis, which aims to optimize the preliminary cluster solution through an iterative process (Gore, 2000).

Figure 1 presents the final cluster solution. The *y*-axis in Figure 1 represents *z*-scores, which may be interpreted as effect sizes (Scholte et al., 2005). Analogous to Cohen's (1988) *d*, .20 SD is considered a small effect, .50 SD is a medium or moderate effect and .80 SD is a large effect.

The four clusters could be labelled in line with Hypothesis 1. Low demands and low resources characterized the first cluster (i.e. demanding jobs). In the second cluster,

Figure 1. Z-scores of job demands and job resources of the four-cluster solution.

employees encountered high job demands and high job resources (i.e. rich jobs). In the third cluster respondents obtained low scores on job demands and as well as on job resources (i.e. poor jobs). Finally, low scores for job demands and high scores for resources characterized the fourth cluster (i.e. resourceful jobs). The four clusters represented 22%, 21%, 28% and 29% of the sample, respectively.

To examine the stability of the cluster solution, the total sample was randomly split into two subsamples. First, the full two-step procedure was applied to each subsample (Tinsley and Brown, 2000). Then participants of each sample were assigned to new clusters on the basis of their Euclidean distances to the cluster centres of the other subsample. Finally, the two resulting solutions were compared with the original clusters by means of Cohen's kappa and the two kappas were averaged. The average kappa in the present study was .84, attesting to the stability of the four-cluster solution (Asendorpf et al., 2001).

Job characteristics profiles and background variable

As displayed in Table 2, employees in the four job profiles differed with respect to all demographic variables, except for tenure. Notably, employees in the demanding job profile were on average older than employees in the other profiles. They were predominately lower educated: in comparison with the other clusters, more participants in the demanding jobs had only completed secondary education and less employees had obtained a master's degree. Demanding jobs were most prominent among part-time and lower ranked employees, that is, blue-collar workers and administrative personnel.

Table 2. Differences in cluster membership: background characteristics (column percentages).

	Demanding jobs	Rich jobs	Poor jobs	Resourceful jobs	χ^2 -values
	N = 68	N = 64	N = 87	N = 88	
Gender					
Male	41%	58%	45%	74%	$\chi^2 (3) = 16.00^{***}$
Female	59%	42%	55%	26%	
Education					
Primary education	4%	3%	0%	0%	$\chi^2 (9) = 35.85^{***}$
Secondary education	65%	55%	40%	35%	
Bachelor's degree	30%	35%	43%	38%	
Master's degree	1%	7%	17%	27%	
Professional level					
Blue-collar	24%	13%	10%	12%	$\chi^2 (9) = 64.87^{***}$
Administration	62%	51%	41%	10%	
Professionals	9%	17%	21%	19%	
Managers	5%	19%	28%	58%	
Type contract					
Full-time	70%	78%	84%	92%	$\chi^2 (3) = 10.57^{**}$
Part-time	30%	22%	16%	8%	
Types employment					
Permanent	89%	90%	86%	96%	$\chi^2 (3) = 3.56$
Temporary	11%	10%	14%	4%	
	Demanding jobs	Rich jobs	Poor jobs	Resourceful jobs	F-values
Age					
Mean	47.78 ^a	44.78 ^{bc}	46.38 ^{bc}	43.31 ^c	$F (3, 271) = 2.93^*$
Tenure					
Mean	11.71	9.07	11.75	9.28	$F (3, 272) = 2.11$

* $p < .05$; ** $p < .01$; *** $p < .001$.

Note: Mean levels without the same superscript differ from each other.

Employees in resourceful jobs, in contrast, were predominately male, were more likely to have a master's degree and occupied higher ranked positions such as professional and managerial functions. They were chiefly employed full-time. Rich jobs were somewhat more common among males, participants who completed secondary school and employees working in administrative or professional jobs. Poor jobs were most prominent among female participants, professionals and temporary workers.

Table 3. Differences in cluster membership: burnout and engagement.

	Demanding jobs	Rich jobs	Poor jobs	Resourceful jobs	F-values
Burnout					
Exhaustion	2.06 ^a	1.22 ^b	1.34 ^b	0.89 ^b	$F(3, 295) = 14.47^{***}$
Cynicism	1.80 ^a	0.99 ^{bc}	1.35 ^{ab}	0.68 ^c	$F(3, 295) = 13.90^{***}$
Engagement					
Vigour	4.13 ^b	4.84 ^a	4.18 ^b	4.73 ^a	$F(3, 295) = 9.71^{***}$
Dedication	4.13 ^b	5.02 ^a	4.06 ^b	4.98 ^a	$F(3, 295) = 17.387^{***}$

Note: Mean levels without the same superscript differ from each other.

The job characteristics profiles, burnout and work engagement

To compare the job characteristics profiles on burnout and work engagement, a MANOVA with listwise deletion of missing data was conducted with cluster membership as independent variable and vigour, dedication, exhaustion and cynicism as dependent variables (Table 3). Based on Wilks' lambda, statistically significant multivariate cluster differences were found (Wilks' $\lambda = .75$; $F(12, 772.85) = 7.28, p < .001$). Concerning burnout, follow-up univariate F -values and pairwise comparisons (using Tukey's Honestly Significant Difference test) indicated that employees in the demanding jobs reported highest scores for exhaustion, which is in line with Hypothesis 2. The other clusters, however, did not differ. Employees in demanding jobs – but also in poor jobs – showed highest levels of cynicism, followed by employees in rich jobs and resourceful jobs. Concerning work engagement, employees in resourceful and rich jobs reported equal levels of vigour and dedication, which were higher compared to employees in demanding or poor jobs, which did not differ. Hypothesis 3 was therefore partially corroborated.

Discussion

The present study aimed to complement the extant, primarily variable-centred, research in the realm of the JD–R model by adopting a person-centred approach. Specifically, using cluster analysis, we examined (1) the natural co-occurrence of job demands and job resources and (2) the levels of burnout and work engagement in each of the obtained clusters. Addressing these issues seems important. From a theoretical point of view, they might further the understanding of the naturally occurring constellations of job demands and job resources and help gain insight into the complex joint effects of job demands and job resources. The use of clusters might also assist practitioners in clarifying the relative importance of demands and resources, and identifying those employees who are susceptible for burnout, or, instead, are likely to become work engaged.

Our results provided evidence for a four-cluster solution. In line with Hypothesis 1, these could be characterized as *demanding jobs* including few job resources, *rich jobs* with many job demands and many job resources, *poor jobs* lacking both job demands and job resources and *resourceful jobs* including few job demands and many job

resources. Participants were more or less equally distributed among the four clusters. This indicates that presence of job resources does not necessarily result in an absence of job demands, despite that job resources are defined to reduce job demands (Bakker and Demerouti, 2007). In general, these findings add to the JD–R model and to the ecological validity of examining the joint associations of job demands and job resources in particular.

The finding that employees can be meaningfully grouped into four clusters shows similarities to previous findings in the realm of the Job Demands Control model (Karasek, 1979), which differentiates between passive, low strain, high strain and active jobs (see also Demerouti et al., 2001). The current results however also expand on this model in two ways. First, they show that the different types of jobs can be found if a large variety of job demands and job resources are included, rather than the restricted set of job characteristics of the Job Demands Control model (i.e. workload and autonomy). Second, the results of cluster analysis show that these four profiles emerge naturally and thus reflect ecological valid groups, rather than profiles that are imposed on the data based on a median split procedure relying on arbitrary cut-off values. Furthermore, with respect to demographics, results indicated that predominately employees with a precarious position on the labour market (i.e. older, lower-educated and lower-ranked employees) were over-represented in demanding jobs, whereas employees with a strong position (i.e. male, higher-educated and higher-ranked employees) occupied predominately resourceful jobs. Employees with precarious labour market positions thus seem to obtain the most precarious jobs, while those with a strong market position obtained the least precarious job.

In line with Hypothesis 2, employees confronted with demanding jobs reported the highest levels of burnout as indexed by exhaustion and cynicism (Maslach et al., 2001). However, contrary to expectations, few differences were found among the other profiles. Interestingly, employees in rich jobs experienced as much emotional exhaustion and cynicism as employees occupying resourceful jobs. This may suggest that job resources may fully buffer the health-impairing impact of high demands. Moreover, employees in resourceful jobs reported less cynicism (but not less exhaustion) than employees in poor jobs. This suggests that job resources may primarily be stimulated to prevent cynicism, an observation that was also made by Demerouti et al. (2001).

With respect to work engagement, employees encountering high job resources (i.e. in rich and resourceful jobs) experienced more vigour and dedication (i.e. the main components of work engagement; Bakker et al., 2008) than employees lacking job resources (i.e. in demanding and poor jobs). This observation is in line with the expected main effect of job resources on work engagement, and provides partial evidence for Hypothesis 3. However, the high resources profiles did not differ from each other. Hence, the boosting hypothesis was not corroborated. The present findings thus suggest that only the presence of job resources adds to work engagement. The experience of job demands may be regarded as health-impairing rather than health-enhancing, which is much in line with their original definition in the JD–R model.

In sum, by adopting a person-centred approach, the present study found support for the main effects of job demands and job resources, and the buffering hypothesis as maintained in the JD–R model. The boosting hypothesis was, however, not supported.

Limitations and suggestions for future research

Some limitations need to be taken into account in interpreting these results. First, this study included only a selection of job demands and job resources, that is, those job characteristics that are most frequently studied in the realm of the JD–R model. Future studies may aim to replicate these results with other, perhaps also job- and organization-specific job demands and job resources (e.g. Bakker et al., 2007). Second, although the present study included employees with different jobs at different occupational levels to increase the generalizability of the results, future studies employing larger or representative samples may add to the understanding of the actual size and composition of the different clusters. Third, due to its cross-sectional character, the present study only allows examination of concurrent differences in burnout and work engagement among the job characteristics profiles. Future studies may, however, also adopt a person-centred approach to examine longitudinally whether dynamics in employees' profile membership are associated with changes in employees' well-being. Such studies may take into account personal characteristics that may drive employees' transitions between different types of jobs. Such studies would align with the growing interest in personal characteristics in the JD–R model (e.g. Van den Broeck et al., 2008; Xanthopoulou et al., 2007) and the practice of job crafting (Wrzesniewski and Dutton, 2001).

Implications for future research and practice

The present study confirms the ecological validity of the JD–R model and suggests that it is both useful and instructive to examine the joint effects of job demands and job resources in determining employees' burnout and work engagement. Notably, the findings also call for future research on the boosting hypothesis, as this hypothesis was not corroborated in the present study. Future studies might evaluate whether job-specific rather than general job demands boost work engagement, as has been shown previously (Bakker et al., 2007; Hakanen et al., 2005) and might examine whether the boosting effect is particularly evident for employees experiencing low rather than high resources.

On the practical level, the present study shows that cluster analysis may be a valuable tool to determine the types of jobs people experience, to identify the workers that run high risk of developing burnout and, accordingly, to tailor particular interventions to their situation. As such, cluster analysis is a valuable precursor for individual job redesign as, for example, advocated by the Social Technical Systems Design (De Sitter et al., 1997; Parker and Wall, 1998). Specifically, the current results indicate that employees in demanding jobs may particularly benefit from an increase in job resources rather than from a decrease of job demands. Indeed, in contrast to poor jobs, rich jobs seemed to elicit equally low levels of burnout and equally high levels of work engagement as resourceful jobs. Practitioners may bear this in mind particularly when assisting employees with precarious positions on the labour market, as these employees were overrepresented in demanding jobs. Increasing job resources rather than decreasing job demands may also be beneficial from an organizational point of view, as employees occupying rich and resourceful jobs were in general less cynical and more engaged than employees in poor jobs and low cynicism and high work engagement have previously been proposed as important determinants of organizational commitment (Bakker et al., 2003a; Hakanen et al., 2006).

Conclusion

Taking a person-centred approach, the current article has provided evidence for the principal assumptions of the JD–R model. The results do not, however, support the boosting hypothesis at the employees' level of experience. The results, furthermore, attest to the primary importance of job resources, for both research and practice. Finally, they indicate that cluster analysis is a valuable tool for diagnosis and interventions concerning job design.

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