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When do job demands particularly predict burnout?

The moderating role of job resources

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Abstract

Purpose – The purpose of this paper is to focus on home care organization employees, and examine how the interaction between job demands (emotional demands, patient harassment, workload, and physical demands) and job resources (autonomy, social support, performance feedback, and opportunities for professional development) affect the core dimensions of burnout (exhaustion and cynicism).

Design/methodology/approach – Hypotheses were tested with a cross-sectional design among 747 Dutch employees from two home care organizations.

Findings – Results of moderated structural equation modeling analyses partially supported the hypotheses as 21 out of 32 (66 per cent) possible two-way interactions were significant and in the expected direction. In addition, job resources were stronger buffers of the relationship between emotional demands/patient harassment and burnout, than of the relationship between workload/physical demands and burnout.

Practical implications – The conclusions may be particularly useful for occupational settings, including home care organizations, where reducing or redesigning demands is difficult.

Originality/value – The findings confirm the JD-R model by showing that several job resources can buffer the relationship between job demands and burnout.

Keywords Home care, Stress, Job analysis, Demand management, Resources, The Netherlands

Paper type Research paper

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Research has shown that job demands have a profound influence on burnout and indirectly lead to increased absenteeism (e.g. Bakker *et al.*, 2003a) and impaired organizational performance (e.g. Bakker *et al.*, 2004). This phenomenon is particularly evident in home care settings where the repeated confrontation with demanding patients fosters feelings of exhaustion and cynicism (i.e. burnout; Bakker *et al.*, 2003b; Büssing and Höge, 2004). Occupational health psychologists have long tried to detect which job resources may diminish the impact of job demands on burnout. The most studied resources that may act as buffers are job control and social support (Van der Doef and Maes, 1999). The present study uses the Job Demands-Resources (JD-R) model (Demerouti *et al.*, 2001) in the context of home care organizations to test the hypothesis that different kinds of job resources buffer the impact of different kinds of job demands on burnout.

Theoretical background

The importance of the buffer hypothesis was initially emphasized in Karasek's (1979) Demand–Control model and its extension by Johnson and Hall (1988) – the Demand-Control-Support (DCS) model. These researchers propose that control and/or support may offset the negative impact of high job demands (i.e. workload and time pressure) on negative job strain. However, reviews of DCS research provide only modest support for its buffer hypothesis (De Lange *et al.*, 2003; Van der Doef and Maes, 1999). Specifically, Van der Doef and Maes (1999) conclude that the buffer hypothesis has been mainly supported for specific occupational subgroups (in terms of person characteristics or position in the organization) and when a specific (e.g. time pressure) instead of a broader (e.g. quality concern) type of demand interacts with a specific type of control (e.g. authority over pace). Based on the patterns of the significant interactions found, the so-called "matching hypothesis" was introduced (De Jonge and Dormann, 2006) according to which buffer effects should occur when similar types of demands (e.g. emotional demands) match with similar types of resources (e.g. emotional support), and produce similar types of outcomes (e.g. emotional exhaustion).

De Jonge and Kompier (1997) attribute the limited evidence for the buffer hypothesis of the DCS model to methodological issues, including the calculation of the interaction term. Moreover, they point out that the use of representative samples, although important, may have led to low statistical power in buffer studies because in such samples participants are exposed to average and not extreme levels of job characteristics. Therefore, Kristensen (1996) suggested that one way to avoid Type II errors caused by range restriction is to include sample units that represent large exposure contrasts on the predictor and moderator variables.

However, the main criticism against the DCS model, which also explains the modest support for its buffer hypothesis, is that it is too restrictive and therefore unable to capture the complexity of different work environments (e.g. De Jonge and Kompier, 1997; Van der Doef and Maes, 1999). In fact, the model focuses only on quantitative (i.e. work pressure) and not qualitative (e.g. emotional) job demands, and includes only two types of job resources. The study of the processes explaining burnout cannot be restricted to workload, control and support because: each occupational setting is characterized by different types and levels of work characteristics (Bakker and Demerouti, 2007); and many more work-related factors have been identified as

predictors of burnout, including emotional demands and lack of feedback (Lee and Ashforth, 1996).

Similar kinds of criticism have been formulated against the Effort-Reward-Imbalance (ERI) model (Siegrist, 1996) which proposes that adverse health effects occur when there is an imbalance between (high) efforts and (low) rewards. Critics again emphasize that the ERI model conceptualizes effort (i.e. demands) and rewards (i.e. resources) in a very general way, and argue that the test of specific types of efforts and rewards would be more valuable (Van Vegchel *et al.*, 2005b). Furthermore, the interaction effect between effort and rewards has also received little empirical support (Van Vegchel *et al.*, 2005a). Because of the limitations of the DCS and the ERI models, there is a need for a more comprehensive model that specifies the job demands and resources that characterize the particular occupational group under study. In this context, the JD-R model may be considered a promising alternative framework for testing the buffer hypothesis.

The Job Demands-Resources Model

Whereas the JD-R model (Bakker and Demerouti, 2007; Demerouti *et al.*, 2001) fits the tradition of the DCS and the ERI models it satisfies the need for specificity by including various types of job demands and resources depending on the occupational context under study. Thus, the JD-R model encompasses and extends both models and is considerably more flexible and rigorous. For instance, Lewig and Dollard (2003) showed that the JD-R model resulted in stronger findings in comparison with both the DCS and the ERI model, emphasizing the value of such a situation/occupation specific model. The JD-R model proposes that the characteristics of working environments can be classified into two general categories, job demands and job resources, which incorporate different specific demands and different specific resources respectively. Job demands refer to physical, social or organizational job aspects that require sustained physical and/or psychological effort and are associated with certain physiological and/or psychological costs. Job resources refer to physical, psychological, social or organizational job aspects that may: be functional in achieving work-related goals; reduce job demands and the associated physiological and psychological costs; and stimulate personal growth and development (Demerouti *et al.*, 2001, p. 501).

The main proposition of the JD-R model is that the risk of burnout is highest in working environments where job demands are high and job resources are low (Demerouti *et al.*, 2001). Complementary to these additive effects, the buffer hypothesis states that high job resources may offset the negative impact of job demands on burnout (Bakker and Demerouti, 2007). Results of a study on the JD-R model in home care settings showed that employees facing high job demands were less exhausted when sufficient job resources were available (Bakker *et al.*, 2003b). However, in this study the way of testing interaction effects (i.e. various job demands and job resources were indicators of a latent demands and a latent resources variable, respectively) did not allow an examination of which concrete job resources moderated which specific job demands.

A recent study among employees of an institute for higher education provided stronger support for the buffer hypothesis of the JD-R model (Bakker *et al.*, 2005). Of the interactions in this study 56 per cent was significant, showing that high levels of workload, emotional demands, physical demands and work-home interference did not result in high levels of exhaustion and cynicism if employees experienced adequate levels

of autonomy, received feedback and social support, or had a high-quality relationship with their supervisors. However, this study concerned a certain group of employees and did not test specific demands (e.g. patient harassment) that typify the health care occupations, which constitute a classical burnout domain (Büssing and Höge, 2004).

The present study

The central question of our study is whether specific job resources can buffer those job specific demands that are considered burnout inducing for home care employees. Employees in "caring" occupations are considered to be highly susceptible to burnout, because they are regularly confronted with demanding patients, who often show no appreciation for the care they receive (Bakker *et al.*, 2000). Empirical support for the buffering role of job resources in this context is crucial both theoretically (i.e. enhance understanding of the mechanisms that lead to burnout) and practically (burnout prevention). That is because such evidence would indicate that the allocation of specific job resources could be profitable for employees who must deal with high job demands (Van der Doef and Maes, 1999).

We examined whether four typical home care job resources can offset the effect of four typical home care job demands on burnout. Traditionally, burnout is defined as a syndrome of exhaustion, cynicism towards work and reduced professional efficacy, occurring among individuals in their work environment (Maslach *et al.*, 1996). According to Schaufeli and Taris (2005), exhaustion (i.e. energy depletion) and cynicism (i.e. callous attitudes towards work and clients) are the core dimensions of burnout. Professional efficacy has consistently been found to show a relatively low correlation with exhaustion and cynicism and a different pattern of correlations with other variables (Halbesleben and Buckley, 2004). Additionally, Bakker *et al.* (2005) found that job resources did not moderate the relationship between job demands and professional efficacy. Due to this ambivalent nature of professional efficacy, we followed Schaufeli and Bakker's (2004) recommendation and examined only the core dimensions of burnout in the present study.

Four job demands (emotional demands, patient harassment, workload and physical demands) and four job resources (autonomy, social support, performance feedback and opportunities for professional development) were included in the study. This selection is supported by previous research that recognized the importance of these job characteristics for most employees (Hackman and Oldham, 1980; Lee and Ashforth, 1996) and for home care professionals in particular (Bakker *et al.*, 2003b; Büssing and Höge, 2004). In home care settings, employees are often isolated from the organization and their colleagues because they work with their patients "behind closed doors" (Barling *et al.*, 2001). Thus, additional to typical resources like autonomy or instrumental support, which might be of limited help when employees are alone when facing demanding patients, other resources like feedback or opportunities for professional development might be crucial (Büssing and Höge, 2004). For example, when home care employees receive information from their work environment regarding the ways they have dealt with difficult situations in the past and how they could have done it better (feedback), or when they participate in workshops (opportunities for development) and learn how to deal with "difficult" patients, they may be more prepared to confront such situations. As a result, they may dispose less energy and feel less cynical about their work, because they are more effective in dealing with its demanding aspects.

In the context of the JD-R model, job resources by definition act as buffers of job demands on burnout (Demerouti *et al.*, 2001, p. 501). Thus, where job demands equal job resources (in low demands-low resources or high demands-high resources conditions) low levels of burnout will be experienced (Bakker and Demerouti, 2007; Van Vegchel *et al.*, 2005b). The latter combination represents the buffer effect and suggests that although demands are high, high levels of resources prevent the occurrence of burnout. Therefore, the relationship between job demands and burnout will be particularly strong when job resources are low. This reasoning leads to:

H1. All four job resources will buffer the positive relationship between each of the four job demands and the two core dimensions of burnout.

Furthermore, since emotional demands originating from the interaction with patients and harassment from patients are apparently the most qualitatively important demands in the health care settings (Barling *et al.*, 2001; Büssing and Höge, 2004; Dollard *et al.*, 2003, 2007) we anticipate that home care employees will mainly use their job resources in order to mitigate the strong effect of these two specific job demands. If home care employees recognize these two job demands as the most crucial threats of their well-being, they will initially try to protect themselves from these demands as a form of coping (Aspinwall and Taylor, 1997). This leads to:

H2. Job resources will buffer the relationship between emotional demands/patient harassment and burnout more strongly than the relationship between workload/physical demands and burnout.

Method

Procedure and participants

The present study was conducted among Dutch home care professionals. McClelland and Judd (1993) argued that moderator effects are easier to detect when extreme values of each predictor variable co-occur with extreme values of the other predictor variable. Our sampling units were selected accordingly. The study focused on two home care organizations that were chosen from a total of 98 participating organizations. Out of these organizations we selected the one with the highest mean scores on the job demands and the lowest mean scores on the job resources and the one with the lowest mean scores on the demands and the highest mean scores on the resources tested. Thus, we avoided range restriction by capturing the extreme ends of the work characteristics under study.

All employees of both organizations received questionnaires and postage-paid return envelopes at their home addresses, together with a letter that explained the purpose of the study and invited them to participate. The confidentiality and the anonymity of the answers were emphasized. From the first organization, 520 employees (out of 1,126; 46 per cent response rate) filled in and returned the questionnaire; and from the second organization 310 employees (out of 617; 50 per cent response rate) filled in and returned the questionnaire. Thus, a total of 830 employees (48 per cent response rate) participated in the study. From those, 83 participants were excluded because they held positions in which they did not directly work with patients (e.g. administration). Our final sample comprised 747 employees. Their main tasks were taking care of clients with health impairments, and helping them with their daily functioning at home (e.g. eating, washing, conducting household chores). The large majority of the participants were women ($N = 730$, 98 per cent), and their mean age was 45 years (SD = 9.7). Their mean tenure in

the specific organizations was 9.5 years (SD = 7.32), and their mean working experience in home care organizations was 10.3 years (SD = 7.6).

Measures

Burnout. The core dimensions of burnout were assessed with the Dutch version (Schaufeli and Van Dierendonck, 2000) of the Maslach Burnout Inventory – General Survey (Schaufeli *et al.*, 1996). Exhaustion was measured with five items, such as: "I feel emotionally drained from my work". Cynicism was assessed with four items, including: "I have become less enthusiastic about my work". All items are scored on scale ranging from 0 ("never") to 6 ("every day"). High scores on exhaustion and cynicism signify burnout.

Job demands. Workload was measured with the Dutch version (Furda, 1995) of Karasek's (1985) Job Content Instrument. Quantitative job demands were measured with five items, including "My work requires working very hard" (1 = "never. 4 = "always"). Physical demands were assessed with a seven-item scale, based on the empirical work of Hildebrandt and Douwes (1991). Participants were asked to indicate how physically demanding seven work situations (like "working in a bending position") were on a scale ranging from 0 ("barely demanding") to 4 ("extremely demanding"). Emotional demands were assessed with the five-item scale of Bakker *et al.* (2003b). An example is: "Do you face emotionally charged situations in your work?" (1 = "never", 5 = "always"). Patient harassment was assessed with an adapted Dutch version (Van Dierendonck *et al.*, 1996) of Mechanic's (1970) scale. The scale contains seven items that describe different types of patient aggressive behavior, such as "A patient who threatens you physically" (1 = "never", 5 = "very often").

Job resources. Autonomy (skill discretion and decision authority) was assessed with the Dutch version (Furda, 1995) of Karasek's (1985) Job Content Instrument. The scale consists of nine items, including "I can decide myself how I execute my work" (1 = "never", 4 = "always"). Social support was measured with Van Veldhoven and Meijman's (1994) ten-item scale. A sample item is "Can you ask your colleagues for help if necessary?" (1 = "never", 5 = "always"). Performance feedback was measured with a three-item scale (Bakker *et al.*, 2003b), partly based on Karasek's (1985) Job Content Instrument. An example item is "I receive sufficient information about the results of my work" (1 = "never", 5 = "always"). Finally, opportunities for professional development were assessed with a seven-item scale constructed by Bakker *et al.* (2003b). A sample item is "My work offers me the opportunity to learn new things" (1 = "totally disagree", 5 = "totally agree").

Strategy of analysis

To test our hypotheses, we conducted moderated structural equation modeling (MSEM), using the AMOS software package (Arbuckle, 2005). The covariance matrix was analysed using maximum-likelihood estimation. We followed the MSEM procedure proposed by Mathieu *et al.* (1992) because it is considered both accurate, as well as easy to implement and least likely to produce convergence problems (Cortina *et al.*, 2001). For each hypothesized interaction effect we tested a model that included three exogenous (job demands, job resources and their interaction), and two endogenous (exhaustion and cynicism) factors. Preliminary regression analyses showed that a dummy organization variable explained 7 per cent of the variance in exhaustion, while education,

organizational tenure and organization (dummy) together explained 6.8 per cent of the variance in cynicism. Therefore, we controlled for these variables in all models.

In total, we tested 16 different models, one for each possible interaction between the four job demands and the four job resources. Each exogenous variable had only one indicator that was the standardized scale score of the respective factor (Mathieu *et al.*, 1992). The indicator of the latent interaction factor was the multiplication of the standardized scale scores of the respective job demand and job resource tested. For the two endogenous latent variables, we followed Bagozzi and Edwards' (1998) recommendation to use partial disaggregation models. Thus, instead of including all five items of the exhaustion scale as indicators of the latent exhaustion factor, we formed two parcels by combining the first three and the last two items of the scale. We followed the same strategy for the cynicism factor and we created two composites by combining the first two and last two items of the scale. The model included direct paths from the three exogenous to the two endogenous factors. The job demands and job resources factors were allowed to correlate, whilst correlations between job demands/job resources 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 variables to their indicators were fixed using the square roots of the scale reliabilities, whilst the error variances of each indicator were set equal to the product of their variances and one minus their reliabilities. We refer to Cortina *et al.* (2001) for the calculation of the reliability score of the interaction term.

The fit of the models was assessed with the χ^2 statistic, the Confirmatory Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Parsimony Goodness-of-Fit Index (PGFI). CFI values that exceed 0.90, RMSEA values as high as 0.08, and PGFI of around 0.50 signify good fit (Byrne, 2001). A significant interaction effect is evident when the path coefficient from the latent interaction factor to the endogenous factors is statistically significant. The final step for supporting a significant interaction is to test the model with and without the path from the latent interaction factor to the endogenous factors, and compare the two models on the basis of the χ^2 statistic. The alpha level of significance for the interaction effects was set at 0.05. In order to detect which of the significant effects were the most prominent, we applied Bonferroni correction and focused on significant interactions at the stricter 0.003 level. Bonferroni correction was used in order to aid decision making with regard to the most crucial effects, and not to assess evidence of interaction effects in our data (Perneger, 1998).

Results

Descriptive statistics

Table I presents the means, standard deviations and correlations among the variables, as well as internal consistencies of the scales. Correlational analyses were as expected with all job demands being positively and all job resources being negatively correlated with both exhaustion and cynicism (Demerouti *et al.*, 2001). Further, job demands correlated negatively with job resources in most cases (Bakker *et al.*, 2003b).

Direct effects

Results of the MSEM analyses are presented in Tables II-V. Results regarding the control variables are not presented, but can be obtained from the first author.

Table I.
Means, standard deviations, internal consistencies (Cronbach's alphas on the diagonal) and correlations among the variables ($n = 747$)

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Organizational tenure	9.52	7.32	–												
2 Education	5.68	3.78	−0.09*	–											
3 Organization (dummy)	0.39	0.49	0.07	−0.08*	–										
4 Workload	2.52	66	0.11**	0.07	−0.19**	(0.88)									
5 Physical demands	2.13	0.87	−0.06	−0.13**	−0.01	0.23**	(0.86)								
6 Emotional demands	2.28	0.60	−0.04	0.11**	−0.20**	0.40**	0.18**	(0.72)							
7 Patient harassment	1.65	0.39	−0.07	0.19**	−0.24**	0.41**	0.16**	0.73**	(0.65)						
8 Autonomy	2.53	0.42	0.04	0.07	−0.22**	−0.08*	−0.13**	0.14**	0.08*	(0.71)					
9 Social support	3.91	0.59	−0.03	0.01	−0.02	−0.17**	−0.12**	−0.11**	−0.13**	0.28**	(0.80)				
10 Performance feedback	2.60	0.97	0.05	−0.01	0.23**	−0.23**	−0.09*	−0.18**	−0.19**	0.32**	0.31**	(0.83)			
11 OPD[a]	3.13	0.85	0.09**	−0.14**	0.00	−0.21**	−0.12**	−0.18**	−0.24**	0.46**	0.30**	.41**	(0.89)		
12 Exhaustion	1.73	1.16	0.03	0.04	−0.26**	0.47**	0.21**	0.45**	0.42**	−0.15**	−0.20**	−0.28**	−0.28**	(0.84)	
13 Cynicism	1.20	1.05	0.10**	0.10**	−0.22**	0.35**	0.12**	0.31**	0.39**	−0.24**	−0.30**	−0.33**	−0.43**	0.56**	(0.76)

Notes: [a]OPD = Opportunities for Professional Development; $^{*}p < 0.05$; $^{**}p < 0.01$

Table II.
Results of moderated structural equation modeling: interactions of workload and job resources ($n = 747$)

Predictors	Exhaustion Unstandardized path coefficient (standard errors), and standardized path coefficients	Cynicism Unstandardized path coefficient (standard errors), and standardized path coefficients	Fit χ^2	CFI	RMSEA	PGFI
Workload	0.55 (0.04) 0.46***	0.39 (0.05) 0.31***				
Autonomy	−0.24 (0.05) −0.20***	−0.48 (0.06) −0.37***				
Workload × autonomy	−0.04 (0.05) −0.03	−0.10 (0.06) −0.08				
R^2	35%	35%	138.03	0.94	0.07	0.51
Workload	0.55 (0.04) 0.46***	0.38 (0.05) 0.31***				
Social support	−0.19 (0.04) −0.17***	−0.37 (0.05) −0.32***				
Workload × social support	−0.18 (0.05) −0.15***	−0.13 (0.05) −0.11*				
R^2	35%	30%	113.21	0.95	0.06	0.51
Workload	0.55 (0.05) 0.46***	0.38 (0.05) 0.31***				
Performance feedback	−0.21 (0.04) −0.18***	−0.36 (0.05) −0.30***				
Workload × performance feedback	−0.09 (0.04) −0.08*	−0.09 (0.05) −0.07				
R^2	33%	28%	134.82	0.94	0.07	0.51
Workload	0.51 (0.04) 0.43***	0.31 (0.05) 0.25***				
OPD	−0.28 (0.04) −0.24***	−0.56 (0.05) −0.46***				
Workload × OPD	−0.10 (0.04) −0.09**	−0.11 (0.04) −0.10**				
R^2	36%	41%	119.18	0.95	0.07	0.51

Notes: Results regarding the control variables included in the models (organizational tenure, education and organization) are not presented due to space limitations. For details see results section; OPD = Opportunities for Professional Development; χ^2= chi-square; CFI = Confirmatory Fit Index; RMSEA = Root Mean Square Error of Approximation; PGFI = Parsimony Goodness-of-Fit Index; the df of all models is 29; *$p < 0.05$; **$p < 0.01$; ***$p < 0.003$

Table III. Results of moderated structural equation modeling: interactions of physical demands and job resources ($n = 747$)

Predictors	Exhaustion Unstandardized path coefficient (standard errors), and standardized path coefficients	Cynicism Unstandardized path coefficient (standard errors), and standardized path coefficients	χ^2	Fit CFI	RMSEA	PGFI
Physical demands	0.21 (0.04) 0.20***	0.15 (0.05) 0.11**				
Autonomy	−0.22 (0.05) −0.21***	−0.50 (0.06) −0.38***				
Physical demands × autonomy	−0.15 (0.05) −0.14***	−0.18 (0.06) −0.15***				
R^2	24%	32%	119.50	0.94	0.07	0.51
Physical demands	0.26 (0.05) 0.21***	0.17 (0.05) 0.13***				
Social Support	−0.23 (0.04) −0.20***	−0.39 (0.05) −0.34***				
Physical demands × social support	−0.12 (0.06) −0.09*	−0.10 (0.06) −0.08				
R^2	20%	23%	100.68	0.95	0.06	0.51
Physical demands	0.26 (0.05) 0.21***	0.18 (0.05) 0.14***				
Performance feedback	−0.30 (0.05) −0.25***	−0.43 (0.05) −0.35***				
Physical demands × performance feedback	−0.11 (0.05) −0.09*	−0.07 (0.06) −0.05				
R^2	20%	21%	119.62	0.94	0.07	0.51
Physical demands	0.23 (0.05) 0.18***	0.13 (0.05) 0.10**				
OPD	−0.38 (0.05) −0.32***	−0.64 (0.05) −0.51***				
Physical demands × OPD	−0.01 (0.05) −0.01	0.03 (0.05) 0.03				
R^2	25%	37%	130.75	0.94	0.07	0.51

Notes: Results regarding the control variables included in the models (organizational tenure, education and organization) are not presented due to space limitations. For details see results section; OPD = Opportunities for Professional Development; χ^2 = chi-square; CFI = Confirmatory Fit Index; RMSEA = Root Mean Square Error of Approximation; PGFI = Parsimony Goodness-of-Fit Index; the df of all models is 29; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.003$

Table IV.
Results of moderated structural equation modeling: interactions of emotional demands and job resources ($n = 747$)

Predictors	Exhaustion Unstandardized path coefficient (standard errors), and standardized path coefficients	Cynicism Unstandardized path coefficient (standard errors), and standardized path coefficients	χ^2	Fit CFI	RMSEA	PGFI
Emotional demands	0.69 (0.05) 0.58***	0.56 (0.06) 0.44***				
Autonomy	−0.44 (0.05) −0.36***	−0.63 (0.06) −0.49***				
Emotional demands × autonomy	−0.13 (0.06) −0.10*	−0.21 (0.06) −0.16***				
R^2	48%	47%	118.79	0.95	0.06	0.51
Emotional demands	0.59 (0.05) 0.50***	0.40 (0.06) 0.33***				
Social support	−0.19 (0.04) −0.17***	−0.37 (0.05) −0.32***				
Emotional demands × social support	−0.15 (0.05) −0.13**	−0.16 (0.06) −0.13**				
R^2	38%	32%	94.28	0.96	0.06	0.52
Emotional demands	0.58 (0.05) 0.49***	0.38 (0.06) 0.31***				
Performance feedback	−0.22 (0.05) −0.19***	−0.39 (0.05) −0.32***				
Emotional demands × performance feedback	−0.05 (0.05) −0.05	−0.11 (0.06) −0.10*				
R^2	36%	29%	135.30	0.94	0.07	0.51
Emotional demands	0.55 (0.05) 0.46***	0.31 (0.05) 0.25***				
OPD	−0.28 (0.04) −0.24***	−0.55 (0.05) −0.46***				
Emotional demands × OPD	−0.08 (0.05) −0.07	−0.22 (0.05) −0.19***				
R^2	39%	44%	118.74	0.95	0.06	0.51

Notes: Results regarding the control variables included in the models (organizational tenure, education and organization) are not presented due to space limitations. For details see results section; OPD = Opportunities for Professional Development; χ^2= chi-square; CFI = Confirmatory Fit Index; RMSEA = Root Mean Square Error of Approximation; PGFI = Parsimony Goodness-of-Fit Index; the df of all models is 29; *$p < 0.05$; **$p < 0.01$; ***$p < 0.003$

Table V.
Results of moderated structural equation modeling: interactions of patient harassment and job resources ($N = 747$)

Predictors	Exhaustion Unstandardized path coefficient (standard errors), and standardized path coefficients	Cynicism Unstandardized path coefficient (standard errors), and standardized path coefficients	χ^2	Fit CFI	RMSEA	PGFI
Patient harassment	0.63 (0.06) 0.52***	0.65 (0.06) 0.52***				
Autonomy	−0.37 (0.05) −0.30***	−0.57 (0.06) −0.45***				
Patient harassment × autonomy	−0.09 (0.06) −0.07	−0.28 (0.07) −0.21***				
R^2	40%	55%	155.61	0.93	0.08	0.51
Patient harassment	0.57 (0.06) 0.48***	0.55 (0.06) 0.45***				
Social support	−0.18 (0.04) −0.16***	−0.33 (0.05) −0.29***				
Patient harassment × social support	−0.18 (0.06) −0.14**	−0.22 (0.06) −0.17***				
R^2	35%	41%	125.45	0.94	0.07	0.51
Patient harassment	0.51 (0.05) 0.44***	0.49 (0.06) 0.41***				
Performance feedback	−0.24 (0.05) −0.20***	−0.37 (0.08) −0.30***				
Patient harassment × performance feedback	−0.08 (0.06) −0.07	−0.13 (0.06) −0.10*				
R^2	32%	37%	176.36	0.92	0.08	0.50
Patient harassment	0.47 (0.05) 0.41***	0.41 (0.05) 0.35***				
OPD	−0.25 (0.05) −0.22***	−0.49 (0.05) −0.41***				
Patient harassment × OPD	−0.11 (0.05) −0.09*	−0.33 (0.05) −0.27***				
R^2	33%	51%	147.60	0.94	0.07	0.51

Notes: Results regarding the control variables included in the models (organizational tenure, education and organization) are not presented due to space limitations. For details see results section; OPD = Opportunities for Professional Development; χ^2 = chi-square; CFI = Confirmatory Fit Index; RMSEA = Root Mean Square Error of Approximation; PGFI = Parsimony Goodness-of-Fit Index; the df of all models is 29; *$p < 0.05$; **$p < 0.01$; ***$p < 0.003$

Organization was a significant predictor of exhaustion ($-0.12 < \gamma < -0.35$, $p < 0.001$), and of cynicism ($-0.09 < \gamma < -0.31$, $p < 0.01$) in all models tested. This is due to the oversampling of extreme observations in our study. Further, variance in cynicism was also explained by organizational tenure ($0.12 < \gamma < 0.17$, $p < 0.001$) in all the models tested, and education ($0.07 < \gamma < 0.10$, $p < 0.05$) in 11 out of the 16 models. Results regarding the direct effects of the work characteristics were in line with previous studies with the JD-R model (for an overview, see Bakker and Demerouti, 2007). Specifically, Tables II–V show that in general, job demands were the strongest predictors of exhaustion, whereas (lack of) job resources were the most important predictors of cynicism. Compared to the other job demands, physical demands had the weakest relationship with exhaustion (Table II), whilst harassment had the strongest relationship with cynicism (Table V). Moreover, emotional demands and patient harassment were the strongest predictors of exhaustion and cynicism, as expected for this particular occupational group (Tables II-V).

Interaction effects

Results of MSEM analyses provided partial support for our first hypothesis. Table II shows that all job resources except autonomy buffered the relationship between workload and exhaustion, whilst social support and opportunities for development buffered the relationship between workload and cynicism. Table III shows that autonomy, social support and feedback interacted with physical demands in predicting exhaustion, but only autonomy moderated the relationship between physical demands and cynicism. Further, autonomy and support buffered the relationship between emotional demands and exhaustion, whilst all job resources interacted with emotional demands in predicting cynicism (Table IV). Finally, patient harassment interacted with support and opportunities for development in predicting exhaustion, and with all job resources in predicting cynicism (Table V). After Bonferroni correction, autonomy, social support and opportunities for professional development proved to be the most crucial buffers of the relationship between the different job demands and the core dimensions of burnout.

All models fitted the data well (Tables II–V). When MSEM analysis resulted in a significant interaction effect, χ^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, thus further supporting these interaction effects. To conclude, 21 out of 32 (66 per cent) interactions were significant, providing some evidence for our hypothesis. At the $p < 0.003$ level, MSEM resulted in 8 out of 32 (25 per cent) significant interactions, which still supports 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 and West, 1991). Plotting procedures further substantiated our findings because they showed that all significant interactions were in the expected direction. Namely, high job demands coincided with high levels of exhaustion and cynicism only when job resources were low. For illustrative purposes, Figures 1 and 2 display one representative interaction effect for each burnout dimension. The plots for the remaining interaction effects are available from the first author.

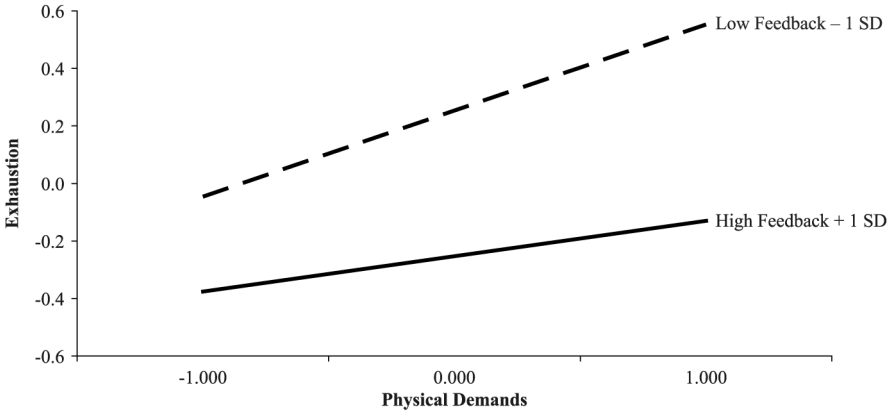

Figure 1.
Interaction effect of physical demands and performance feedback on exhaustion

Figure 2.
Interaction effect of patient harassment and opportunities for professional development on cynicism

Strength of interaction effects

In order to test our second hypothesis regarding the issue whether the interactions between emotional demands/patient harassment and job resources impact burnout more strongly than the interactions between workload/physical demands and job resources, we compared the standardized coefficients of the respective interaction effects. In total, we compared 16 different dyads of effects for exhaustion and 16 for cynicism. In order to compare the magnitude of two standardized coefficients we used a form of the Wald test (Field, 2005). Namely, we calculated the difference of the two coefficients, and then we divided it by the pooled standard error per parameter (i.e. the mean of the two standard errors of the respective parameters, when N is the same). This formula results in a *z*-statistic.

Calculations showed that in six independent tests there was a statistically significant difference in the strength of the interaction effects under comparison. Specifically, the emotional demands × opportunities for development effect was significantly stronger than the workload × opportunities for development effect on cynicism ($z = 2.00$, $p = 0.02$), and stronger than the physical demands × opportunities for development effect on cynicism ($z = 3.20$, $p = 0.001$). Furthermore, the patient

harassment × autonomy effect was stronger than the workload × autonomy effect on cynicism ($z = 2.00$, $p = 0.02$). Finally, the patient harassment × opportunities for development interaction effect was stronger than the workload × opportunities for development effect on cynicism ($z = 3.78$, $p = 0.0001$), stronger than the physical demands × opportunities for development effect on cynicism ($z = 3.00$, $p = 0.001$), and stronger than the physical demands × opportunities for development effect on exhaustion ($z = 1.60$, $p = 0.05$). The above results reveal than in all six cases the interaction effects between emotional demands/patient harassment and job resources on burnout were statistically stronger than the interaction effects between workload/physical demands and job resources, partially supporting our second hypothesis.

Discussion

The central aim of the present study was to test the buffer hypothesis of the JD-R model (Bakker and Demerouti, 2007; Demerouti *et al.*, 2001) in a sample of home care professionals. Particularly, the study investigated, for the first time, specific interactions between several job demands and several job resources that are crucial for home care employees, and assumed that job resources can buffer the effect of job demands on burnout. Support for the buffer hypothesis contributes to the development of the JD-R model in two ways. First, significant interaction effects between different types of job demands and resources increase our insight in the mechanisms that lead to burnout. Secondly, support for the buffer hypothesis is of practical value, because it suggests that the allocation of job resources may mitigate the role of job demands, thus preventing employees from developing high levels of burnout (Van der Doef and Maes, 1999). This is especially important for home care employees who, due to the unique demands of their job, are expected to be susceptible to burnout (Bakker *et al.*, 2003b; Büssing and Höge, 2004).

Meaning of the interactions

MSEM analyses resulted in significant two-way interactions, showing that different combinations of various work characteristics predict exhaustion and cynicism. Although results do not confirm our hypothesis that all job resources buffer the effect of all job demands on burnout, the percentage of interactions found (66 per cent and 25 per cent after Bonferroni correction) may be considered substantial. Most importantly, all significant effects showed the same pattern and were in the expected direction. Thus, the JD-R model (Demerouti *et al.*, 2001) is empirically empowered because the results sustain its buffer hypothesis. Further, these results extend previous research on the JD-R model by focusing on home care employees and by providing partial support for the buffering role of previously under-studied moderators (e.g. opportunities for professional development) in the relationship between under-studied job demands (e.g. patient harassment) and burnout (Büssing and Höge, 2004).

Further, our second hypothesis that job resources will be stronger buffers of the relationship between emotional demands/patient harassment and burnout is partially confirmed, since, if differences were significant, these types of demands produced the most robust interaction effects. Results indicated that it is mostly when home care employees face emotionally charged situations or aggressive behaviors from patients that they profit from autonomy they have over their work, support from their colleagues, or knowledge on ways to deal with such difficult situations. As a result, they confront these

situations more effectively, and prevent themselves from high levels of burnout. This mechanism may be explained as a form of proactive coping (Aspinwall and Taylor, 1997). Employees probably recognize the potential demands in advance, and activate resources that may undermine the negative effects of these demands, before these effects even occur.

Our findings also suggest that while job resources buffer the impact of job demands on cynicism, they are less successful in buffering the impact of job demands on exhaustion. This finding may be explained by the fact that cynicism, which is conceived as a form of extreme and negative psychological distancing and indifference towards the object of the job (Maslach *et al.*, 2001) is a crucial risk for home care employees due to the high levels of emotional demands they face (Büssing and Höge, 2004; Dollard et al., 2003, 2007). Thus, employees primarily use their resources in order to avoid such negative distancing, because indifference towards their patients is against the main objectives of their job.

Generally, our results support the DCS model principles, since they show that autonomy and support were amongst the most important buffers of job demands on the core dimensions of burnout. However, autonomy did not buffer the effect of workload on either burnout dimension. This is surprising as this interaction effect constitutes the central hypothesis of the DCS model (e.g. Van der Doef and Maes, 1999; De Lange *et al.*, 2003). Nevertheless, we should also note that many other studies did not support this interaction either (De Rijk *et al.*, 1998; Taris, 2006). A reason for this non-finding may be that the autonomy home care employees experience while working alone, may not allow them to modify the amount of their workload. To conclude, the present results underpin the conceptual idea of the DCS model, but at the same time extend it regarding several main points of criticism (De Jonge and Kompier, 1997; Van der Doef and Maes, 1999). Our results sustain the buffer hypothesis for different combinations of job demands and resources. Thus, the present study not only captures the complexity of the home care setting environment, but also supports the proposition that context-specific models like the JD-R model are valuable especially for tests of homogenous groups, and thus, can be particularly useful in designing interventions for reducing burnout.

Finally, it is interesting that our findings do not fully support the "matching" hypothesis (De Jonge and Dormann, 2006; Van der Doef and Maes, 1999). According to this hypothesis, resources are most likely to moderate the relationship between demands and outcomes if resources, demands and strains all match (e.g. are all at the emotional level). Observation of our most robust findings reveals that such a match is not a precondition for finding buffer effects. For example, emotional demands interacted with professional development (i.e. a cognitive type of resource) in predicting cynicism (i.e. a behavioral outcome). This finding, which is in line with previous studies (Bakker *et al.*, 2005), further substantiates the JD-R model regarding the role of job resources that by definition can act as buffers in the relationship between any type of demand and any type of outcome.

Limitations

The main limitation of the study is its cross-sectional nature, which excludes any causal inferences regarding the relationships tested. Future studies should examine the longitudinal effects of job demands-resources interactions on burnout. Further, oversampling extreme observations is a valuable tool for determining whether a hypothesize effect exists, as well as the direction of the effect (McClelland and Judd, 1993).

However, this technique can only lead to cautious conclusions regarding the standardized effect size in terms of the percentage of variance explained, as well as regarding the generalizability of the findings to the general population (Preacher *et al.*, 2005). Moreover, the results of the present study concern the specific group of home care employees, further restricting their generalization to the working population. However, the characteristics of our study sample generally resemble the characteristics of "caring" occupations, which constitute a big labor market section dominated by female employees (AZWinfo, 2003). Further studies on the buffer hypothesis of the JD-R model in different occupational settings are needed in order to strengthen our findings. Based on the present results as well as on previous studies with the same scope (Bakker *et al.*, 2005), we expect that the buffer hypothesis will generally be supported, but perhaps for different job demands and job resources, depending on the occupational setting under study.

Practical implications and future research

This study showed that job demands are the strongest predictors of burnout, and therefore the initial concern of organizations should be to avoid overwhelming levels of job demands in order to prevent employees' health impairment. Home care organizations should pay special attention to emotional demands and harassment from patients, which appear to be the main predictors of home care employees' burnout levels. However, if restriction of job demands is impossible, our results suggest that organizations should consider providing a sufficient amount of job resources (e.g. autonomy, support, opportunities for development) to employees, in order to offset the negative effect of job demands on burnout. However, the latter proposition should be considered with caution since there is a lack of evaluation studies of interventions that promote the reinforcement of job resources levels (Kompier and Kristensen, 2001). Another reason to be cautious is that not all hypothesized interactions proved to be significant in this study. Future studies should focus on the theoretically most prominent interactions depending on the occupational setting. Further, employees differ in terms of their personal characteristics, which determine their adaptation to the same working conditions. For example, Schaubroeck and Merritt (1997) found that job control mitigates the effects of high demands on stress among individuals with high self-efficacy, but it has stress-enhancing effects among those with low job self-efficacy. Such findings suggest that future studies should further expand the JD-R model by also testing the role of personal resources in the health impairment process.

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