A Multigroup Analysis of the Job Demands–Resources Model in Four Home Care Organizations

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The job demands–resources (JD-R) model was tested in a study among 3,092 employees working in 1 of 4 different home care organizations. The central assumption in the model is that burnout develops when certain job demands are high and when job resources are limited because such negative working conditions lead to energy depletion and undermine worker motivation and learning opportunities, respectively. A series of multigroup structural equation modeling analyses provide strong evidence for the JD-R model. Specifically, results showed that job demands are primarily and positively related to the exhaustion component of burnout, whereas job resources are primarily related to cynicism (negatively) and professional efficacy (positively). The theoretical and practical implications of the JD-R model are discussed.

KEY WORDS: job demands; resources; burnout; home care

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Initially, researchers assumed that the *burnout* syndrome was primarily the result of emotionally charged interactions with clients (Maslach, 1993). This view has been challenged by Schaufeli and Enzmann (1998), who compared the results of 16 studies among human service professionals. They found that general job demands such as workload, time pressure, and role conflicts correlated higher with burnout than recipient-related stressors such as interactions with difficult clients and frequency of contact with chronically ill patients. Moreover, meta-analyses (Cordes & Dougherty, 1993; Lee & Ashforth, 1996) have identified many correlates of burnout, including lack of social support, lack of autonomy, and poor performance feedback, which is consistent with the thesis that burnout is not limited to human service professions.

The primary aim of the present article is to integrate these earlier findings using the recently proposed job demands–resources (JD-R) model of burnout (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). According to the JD-R model, burnout develops, irrespective of the type of job or occupation, when certain job demands are high and when job resources are limited because such negative working conditions may lead to energy depletion and undermine worker motivation and learning opportunities, respectively.

OCCUPATIONAL BURNOUT

The most influential definition of burnout has been offered by Maslach and Jackson (1986), who defined burnout as "a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who do 'people work' of some kind" (p. 1). *Emotional exhaustion* refers to feelings of being overextended and exhausted by the emotional demands of one's work. *Depersonalization* is characterized by a detached, callous, indifferent, and cynical response to the recipients of one's service or care. Finally, *reduced personal accomplishment* refers to the feeling that one is no longer effective in working with recipients and in fulfilling one's job responsibilities (cf. Maslach, 1982). The three burnout dimensions included in Maslach and Jackson's (1986) definition can be measured with a reliable and well-validated in-

strument, the Maslach Burnout Inventory—Human Services Survey (MBI–HSS; Maslach, Jackson, & Leiter, 1996).

On the basis of the notion that emotional exhaustion, depersonalization, and personal accomplishment can be broadened beyond the interpersonal domain that is characteristic for the human services, Schaufeli, Leiter, Maslach, and Jackson (1996) developed the Maslach Burnout Inventory—General Survey (MBI–GS). They included three more generic burnout dimensions, which were labeled *exhaustion, cynicism*, and *professional efficacy*. Clearly, these MBI–GS subscales parallel those of the MBI–HSS. The MBI–GS includes items that refer to more general (social and nonsocial) aspects of the job. Studies in Canada (Leiter & Schaufeli, 1996), The Netherlands (Bakker, Demerouti, & Schaufeli, 2002; Taris, Schreurs, & Schaufeli, 2000), and Sweden and Finland (Schutte, Toppinen, Kalimo, & Schaufeli, 2000) supported the invariance of the MBI–GS's factor structure across various occupational groups, including maintenance workers, nurses, software engineers, university staff, and managers. Moreover, the first studies with the MBI–GS suggest that the process of burnout is similar in occupations within and outside human service professions (Bakker et al., 2002; Leiter & Harvie, 1998; Leiter & Schaufeli, 1996; Taris et al., 2000).

According to Leiter and Maslach's (1988) process model of burnout, (emotional) exhaustion arises first in response to environmental demands. Exhaustion, in turn, evokes negative attitudes toward recipients (depersonalization) or the work role in general (cynicism), as employees attempt to gain mental distance from their work as a way of coping with their exhaustion. Consequently, a negative attitude develops regarding one's accomplishment at work: a decline in one's feelings of competence and successful achievement in one's job. This process model of burnout has been supported by earlier studies (e.g., Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000; Cordes, Dougherty, & Blum, 1997; Leiter & Meechan, 1986). Therefore, these interrelationships among the three burnout dimensions are included in our research model (see Figure 1). We expect a positive relationship between exhaustion and cynicism and a negative relationship between cynicism and professional efficacy. That is, we assume that cynicism mediates the relationship between exhaustion and professional efficacy.

THE JD-R MODEL OF BURNOUT

Several scholars have pointed at the long laundry list of burnout antecedents that have been found in empirical research (see, e.g., Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Moreover, it seems as if every occupation has its own specific risk factors regarding burnout. For example, whereas for employees in call centers burnout is mainly caused by

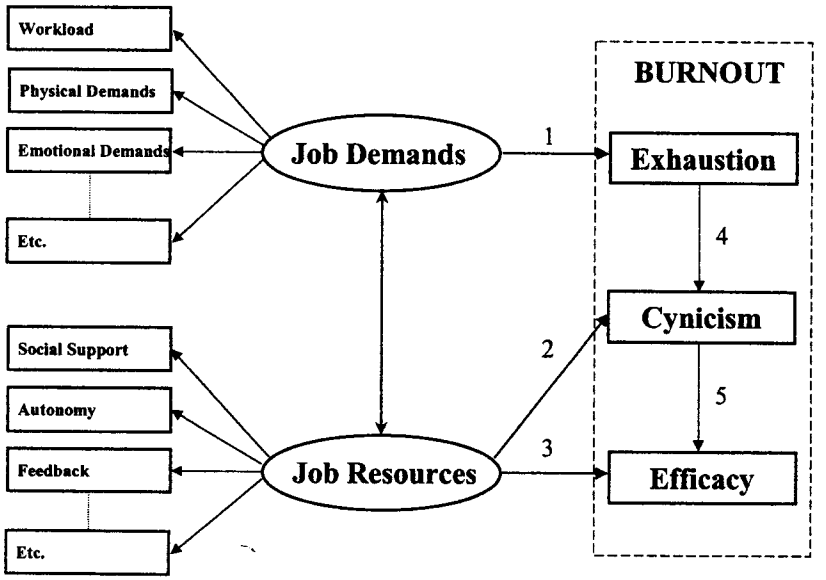

Figure 1. The job demands–resources model of burnout.

the dissonance between their genuine feelings and those that can openly be shown toward clients (Zapf, Vogt, Seifert, Mertini, & Isic, 1999), for general practitioners, patient demands are the most important determinant of burnout (Bakker et al., 2000). Similarly, for production workers, the combination of work overload and lack of autonomy seems the most important problem (De Jonge & Kompier, 1997), whereas for teachers the interaction with their pupils appears the most important determinant of burnout (Van Horn, Schaufeli, & Enzmann, 1999).

At the heart of Demerouti et al.'s (2001) JD-R model lies the assumption that whereas every occupation may have its own specific risk factors associated with burnout, these factors can be classified into two general categories (i.e., job demands and job resources), thus constituting an overarching model that may be applied to various occupational settings, irrespective of the particular demands and resources involved. Conceptually, the JD-R model bears some resemblance to Karasek's (1979) job demands–control (JD-C) model. According to the JD-C model, job demands (i.e., time pressure and work overload) have a detrimental impact on stress reactions such as job-related depression, anxiety, and burnout, particularly when employees lack autonomy or job control (De Jonge & Kompier, 1997; Landsbergis, 1988; see also Siegrist, 1996, for similar reasoning). The

demand–control–support model (DCS; Johnson & Hall, 1988) extends the JD-C model by assuming that lack of social support from colleagues and supervisors may suppress the moderating role of control in the relationship between job demands and stress reactions. Put differently, according to this extended model, a stressful work environment is characterized not only by high job demands and low job control but also by lack of social support.

Previous research has consistently supported the important role of job demands, job control, and social support in determining work-related health, although the hypothesized interactions among the three DCS factors are often not significant (cf. De Jonge & Kompier, 1997; Schreurs & Taris, 1998). Despite the empirical support for the JD-C and DCS models, the models have been criticized because of their simplicity. Given the fact that many more work-related factors have been identified as predictors of burnout (cf. Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998), it would seem that the DCS model is an oversimplification of the process that leads to burnout.

The JD-R model acknowledges that parsimony is an important feature of every research model but assumes at the same time that individuals in different occupations may encounter various kinds of job demands and job resources (Demerouti et al., 2001). Job *demands* refer to those physical, psychological, social, or organizational aspects of the job that require sustained physical or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological or psychological costs. Examples are high work pressure, an unfavorable physical environment, and emotionally demanding interactions with clients. Job *resources* refer to those physical, psychological, social, or organizational aspects of the job that (a) are functional in achieving work goals; (b) reduce job demands and the associated physiological and psychological costs; or (c) stimulate personal growth, learning, and development. Resources may be located at the level of the organization at large (e.g., pay, career opportunities, or job security); interpersonal and social relations (e.g., supervisor and coworker support, team climate); the organization of work (e.g., role clarity, participation in decision making); or at the level of the task (e.g., skill variety, task identity, task significance, autonomy, or performance feedback). In fact, these latter job resources are the core job dimensions included in Hackman and Oldham's (1976) well-known job characteristics model. They have argued and shown that these job characteristics have motivational potential because they make employees' work meaningful, hold them responsible for work processes and outcomes, and provide them with information about the actual results of the work activities (Hackman & Oldham, 1980).

The JD-R model assumes that two different underlying psychological processes play a role in the development of burnout. In the first process,

chronic job demands (i.e., work overload) may lead in the long term to exhaustion. According to Hockey's (1993) control model of demand management, individuals use performance-protection strategies under the influence of environmental demands. Performance protection is achieved through the mobilization of sympathetic activation (autonomic and endocrine) or increased subjective effort (use of active control in information processing). Hence, the greater the activation or effort, the greater the physiological costs for the individual. Even though the operation of this strategy makes it difficult to demonstrate overt decrements in primary task performance, according to Hockey's theory, several different patterns of *indirect* degradation may be identified. These are referred to as *compensatory costs* (increased activation or subjective effort), *strategy adjustments* (narrowing of attention, increased selectivity, redefinition of task requirements), and *fatigue aftereffects* (risky choices, high levels of subjective fatigue). The long-term effect of such a compensatory strategy may be draining of an individual's energy, eventually resulting in a breakdown of adaptation or exhaustion.

The second process is motivational in nature, whereby it is assumed that job resources have motivational potential and that therefore the lack of such resources will have detrimental effects on workers' motivation and performance, eventually leading to disengagement from work (cynicism) and a reduced sense of professional efficacy. Two types of job resources may be distinguished: (a) resources that are extrinsic to the job (e.g., financial rewards, social support, supervisor's coaching) and (b) resources that are intrinsic to the job (e.g., autonomy, feedback, and professional development). The former have been identified by Herzberg (1966) as *hygiene factors*, whereas the latter have been called *job characteristics* in Hackman and Oldham's (1976) model, *psychological task requirements* in sociotechnical systems theory, *requisite task attributes* in Turner and Lawrence's (1965) model, and *motivators* in Herzberg's two-factor theory (see Steers & Mowday, 1977, for a detailed discussion of these approaches). All these different approaches agree that particularly intrinsic job resources have powerful motivational effects.

In short, the JD-R model proposes that burnout may be caused by a wide variety of different aspects of the work environment, which can be integrated into a relatively simple model (see Figure 1). Exposure to job demands (duration and frequency) and lack of resources are predictive of burnout. More specifically, according to the JD-R model, the development of burnout follows along two lines. Following the first process, demanding aspects of work (e.g., work overload, physical job demands) may lead to chronic overtaxing and in the long term to exhaustion. According to the second process, a lack of resources (e.g., autonomy, performance feedback) precludes actual goal accomplishment, which causes failure and frustration.

The long-term consequence of this frustration is disengagement from work (cynicism) and a reduced sense of professional efficacy.

Theoretically, one may argue that the *interaction* between job demands and job resources is most important for the development of burnout. Unfortunately, little empirical evidence supports such an interaction effect (Hockey, 1993). For example, the predicted interaction between job demands and job control in Karasek's (1979) JD-C model has not consistently been supported (De Jonge & Kompier, 1997; Schreurs & Taris, 1998), although more consistent evidence for this interaction was found when explaining cardiovascular complaints (Karasek & Theorell, 1990; Siegrist, 1996). Nevertheless, in the present research, we examine the unique contribution of the JD-R interaction term in explaining variance in each burnout component, after controlling for the main effects of job demands and job resources.

THE PRESENT RESEARCH

The central aim of the present study is to test and expand the JD-R model of burnout in four different home care organizations. As previously outlined, the JD-R model assumes that job demands are most predictive of feelings of exhaustion, whereas job resources are most predictive of cynicism and professional efficacy (Hypothesis 1). Note that the relative contribution of *specific* job demands and *specific* job resources to the explanation of burnout may vary across organizations because the prevalence of job demands as well as the access to resources differs among organizations. That is, some of the home care organizations included in the present research went through a process of reorganization or had recently been privatized, whereas others had not. In addition, we predict that job demands will primarily show a positive relationship with exhaustion when job resources are low (Hypothesis 2a). In a similar vein, we predict that job resources will primarily show a negative relationship with cynicism and a positive relationship with professional efficacy when job demands are high (Hypothesis 2b). Finally, Leiter and Maslach's (1988) process model of burnout is incorporated in the JD-R model. This means that the paths from exhaustion to cynicism and from cynicism to professional efficacy are included in the research model.

METHOD

Procedure and Participants

The present study among home care employees started with a detailed qualitative analysis of existing documents regarding stress in home care

institutions. Over the 7 years preceding the present study, several small qualitative and quantitative studies had been conducted in this sector, and the results had been documented in internal reports. These reports were used to trace the job demands and job resources in home care potentially related to burnout. Each of the job characteristics was then operationalized and included in a questionnaire. After informative meetings with representatives of the management, personnel departments, and employee–employers committees of the four different home care organizations involved, all 7,024 employees received structured questionnaires and return envelopes at their homes. The questionnaires were accompanied by a letter, in which the goal of the study was briefly introduced. The confidentiality and anonymity of the answers were emphasized. A total of 3,092 employees (44%) filled out and returned the questionnaire. The response rate did not differ substantially among the four organizations. The number of participants for the four organizations was 1,424, 597, 461, and 610. Nonresponse analysis revealed that the sample did not differ significantly from the target population in terms of its distribution across known variables such as gender, age, work experience, job type, and organizational tenure. Thus, as far as the reported characteristics could tell, there was no reason to assume that the sample was not representative for the target population.

The large majority of the sample was female (93%), and the mean age was 42 years (SD = 10). The average number of years working experience in home care was 10 years (SD = 7), and mean organizational tenure was 9 years (SD = 7). Six percent of the sample had a supervisory position, and 7.5% had a staff position. The main activities of the home care employees included nurturing of clients with physical or mental health impairments who needed help with daily functioning. Thus, home care employees provide their clients with instrumental, emotional, and informational support to improve daily functioning (e.g., help them to get out of bed and to the toilet; wash them; listen to their grievances; and take care of household chores, such as washing, cleaning, and cooking).

Measures

Burnout

Burnout was assessed using Schaufeli et al.'s (1996) MBI–GS. The instrument consists of three subscales, tapping Exhaustion, Cynicism, and Professional Efficacy. Exhaustion is measured with five items, including "I feel burned out from my work" and "I feel tired when I get up in the morning and have to face another day on the job." Cynicism reflects in-

difference or a distant attitude toward work and is measured with four of the five items from the original scale. Item 4 ("I just want to do my job and not be bothered") was omitted, as suggested by Schaufeli and Van Dierendonck (2000) and Schutte, Toppinen, Kalimo, and Schaufeli (2000). They have shown that this item does not load on the intended factor and thus creates problems with factorial validity. Exemplary items are "I have become less interested in my work since I started this job" and "I have become more cynical about whether my work contributes anything." Finally, Professional Efficacy encompasses both social and nonsocial accomplishments at work and is assessed with six items. Examples are "I feel I am making an effective contribution to what this organization does" and "In my opinion, I am good at my job." Participants were asked to indicate the extent to which they agreed with each statement using a 7-point Likert-type scale that ranged from 0 (*never*) to 6 (*every day*).

Job Demands

Seven job demands were included in the present research. Workload was based on a Dutch version (Furda, 1995) of Karasek's (1985) Job Content Instrument. The scale includes five items that refer to quantitative, demanding aspects of the job (e.g., time pressure, working hard). A sample item is "My work requires working very hard." Items are scored on a 4-point Likert-type scale, ranging from 1 (*never*) to 4 (*always*). Physical demands were measured with a seven-item scale, based on empirical work by Hildebrandt and Douwes (1991). Participants were asked to indicate how demanding they thought each of seven situations was on a 4-point scale ranging from 1 (*barely demanding*) to 4 (*extremely demanding*). A sample item is "working in a bending position." Problems with planning were assessed with a self-constructed five-item scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). A sample item was "It often occurs that my work schedule changes at the very last moment." Emotional demands were based on a scale developed by Van Veldhoven and Meijman (1994) and included five items, which were rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*). A sample item is "Is your work emotionally demanding?" Sexual harassment was measured with a self-constructed three-item scale ranging from 1 (*never*) to 5 (*always*). A sample item was "At your work, how often are you confronted with unwanted intimacies by clients?" Finally, patient harassment was assessed using an adapted Dutch version (Van Dierendonck, Schaufeli, & Sixma, 1996) of Mechanic's (1970) scale. The scale contains seven items, each of which describes one type of patient behavior, for example, "A patient who threatens you physically." Participants were asked to indicate for each scenario the frequency of the patient behavior on a 5-point scale ranging from 1 (*never*) to 5 (*very often*).

Job Resources

Six job resources were included in the questionnaire. Autonomy was assessed with a Dutch version (Furda, 1995) of Karasek's (1985) Job Content Instrument. It includes 5 items concerning skill discretion (i.e., the breadth of skills used by workers in performing their job) and 4 items concerning decision authority (i.e., freedom of action in accomplishing the formal work task). In earlier studies, factor analyses repeatedly demonstrated that all 9 items loaded on one factor and could therefore be combined into one scale (De Jonge, Landeweerd, & Nijhuis, 1993; Furda, De Jonge, Le Blanc, & Meijman, 1994). A sample item is "I can decide myself how I execute my work." Items are scored on a 4-point scale ranging from 1 (*never*) to 4 (*always*). Social support was measured with a 10-item scale, ranging from 1 (*never*) to 5 (*always*), developed by Van Veldhoven and Meijman (1994). An example item is "Can you ask your colleagues for help if necessary?" Coaching by the supervisor was measured using a Dutch adaptation of Graen and Uhl-Bien's (1991) 12-item Leader–Member Exchange Scale (Le Blanc, 1994). A sample item is "My supervisor uses his/her influence to help me solve my problems at work." Items are rated on a 5-point scale ranging from 1 (*never*) to 5 (*always*). Possibilities for professional development were measured with a self-constructed 7-item scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). A example item is "My work offers me the opportunity to learn new things." Performance feedback was assessed with 3 items, partly based on Karasek's (1985) Job Content Instrument, rated on a 5-point scale ranging from 1 (*never*) to (*always*). A sample item is "I get sufficient information about the goal of my work." Finally, financial rewards were measured with a 3-item scale, which ranged from 1 (*totally disagree*) to 5 (*totally agree*), developed by Van Veldhoven and Meijman (1994). A sample item is "I receive sufficient pay for the work that I do."

All responses were coded so that higher scores referred to higher Job Demands and more Job Resources, respectively. The proposed two-factor structure of the working conditions was supported by preliminary confirmatory factor analyses. The fit of the model to the data was examined with the goodness-of-fit index (GFI) and the root-mean-square error of approximation (RMSEA). Further, the normed fit index (NFI), the comparative fit index (CFI), and the incremental fit index (IFI; Bollen, 1989) were used. In general, models with fit indices > .90 and an RMSEA < .05 indicate a good fit. The model, including the two latent factors Job Demands and

Table 1. Means, Standard Deviations, Intercorrelations, and Internal Consistencies of the Scales Used in This Study (N = 3,092)

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Workload (1–4)	2.53	0.62	.85					.61									
2. Physical Demands (1–4)	2.10	0.64	.20	.88				−.10	.72								
3. Emotional Demands (1–5)	2.40	0.64	.31	.26	.76			.25	−.26	.81							
4. Patient Harassment (1–5)	1.60	0.41	.30	.20	.46	.75		.23	−.35	.33	.82						
5. Sexual Harassment (1–5)	1.22	0.31	.12	.26	.30	.37	.79	.17	−.05	.16	.17	.65					
6. Problems Planning (1–5)	3.46	0.62	−.38	−.29	−.24	−.29	−.23	.21	−.44	.33	.45	.23	.90				
7. Autonomy (1–4)	2.34	0.41	−.04	.18	−.13	.03	.04	.27	−.19	.39	.57	.13	.41	.89			
8. Social Support (1–5)	4.01	0.58	−.19	−.13	−.12	−.22	−.12	−.27	.13	−.27	−.18	−.18	−.23	−.29	.85		
9. Feedback (1–5)	2.79	0.94	−.11	−.17	−.09	−.14	−.10	−.25	.24	−.34	−.29	−.18	−.42	−.30	.56	.76	
10. Financial Rewards (1–5)	2.76	1.03	−.20	−.20	−.18	−.17	−.07	.16	−.30	.24	−.29	.05	.33	.28	−.20	−.34	.72
11. Professional Development (1–5)	3.18	0.85	−.12	−.14	−.19	−.22	−.14										
12. Coaching (1–5)	3.00	0.78	−.18	−.06	−.18	−.18	−.10										
13. Exhaustion (0–6)	1.82	1.08	.37	.25	.33	.30	.17										
14. Cynicism (0–6)	1.31	1.00	.27	.14	.24	.32	.12										
15. Professional Efficacy (0–6)	4.16	0.85	−.04	−.07	−.05	−.16	−.10										

Note. Range of scale is in parentheses. Cronbach's alpha is on diagonal. $p < .01$ if $|r| > .05$.

Job Resources, showed a satisfactory fit to the data, $\chi^2(128) = 580.12$, $p < .01$, GFI = .97, NFI = .93, CFI = .94, IFI = .94, RMSEA = .03. Moreover, this two-factor model fitted significantly better than a model including only one latent factor, $\Delta\chi^2(4) = 258.38$, $p < .01$. Thus, confirmatory factor analysis confirmed that Job Demands and Job Resources could be empirically distinguished.

RESULTS

Descriptive Statistics

Table 1 shows the means, standard deviations, and correlations between the variables and the internal consistencies of the scales included in the analyses. As can be seen from this table, all scales show good reliabilities, save two exceptions. Preliminary analyses revealed that demographic variables were neither substantially (all $rs < .10$) nor consistently (across organizations) related to the three burnout dimensions, and these were therefore omitted from further analyses.

Test of the JD-R Model

According to the JD-R model of burnout and Hypothesis 1, job demands are primarily and positively related to exhaustion, whereas job resources are primarily and negatively related to cynicism and positively related to professional efficacy (see Figure 1). To test the JD-R model, we performed multigroup structural equation analyses using the AMOS computer program (Arbuckle, 1997).

The 12 aspects of the job were modeled in two latent factors, one representing Job Demands and the other representing Job Resources, which were treated as exogenous variables in the model. The three burnout dimensions—Exhaustion, Cynicism, and Professional Efficacy—were included as endogenous variables. In addition, the paths from Exhaustion to Cynicism and from Cynicism to Professional Efficacy were included (see Figure 1). Finally, the latent factors Job Demands and Job Resources were allowed to correlate.

Results of the multigroup structural equation analysis showed that the proposed model fits adequately to the data (see Table 2). All fit indices had values higher than .90, and the RMSEA was .03. All relationships in the model were as predicted. As can be seen in Table 3, for each of the four

Table 2. Multigroup Structural Equation Analyses: Standardized Maximum Likelihood Estimates of the JD-R Model of Burnout and the Alternative Model (N = 3,092)

Model	χ^2	*df*	GFI	RMSEA	NFI	CFI	IFI
JD-R model	1,047.10	264	.96	.03	.91	.93	.93
Alternative model	1,016.14	252	.96	.03	.91	.93	.93
Null model	11,534.15	420	.54	.09			

Note. JD-R = job demands–resources; GFI = goodness-of-fit index; RMSEA = root-mean-square error of approximation; NFI = normed fit index; CFI = comparative fit index; IFI = incremental fit index.

Table 3. Path Coefficients in the JD-R Model of Burnout for the Four Subsamples Separately

Variable	Organization 1 (n = 1,424)	Organization 2 (n = 597)	Organization 3 (n = 461)	Organization 4 (n = 610)
	Measurement model			
Job Demands				
Workload	.54	.51	.61	.54
Physical Demands	.38	.46	.41	.33
Emotional Demands	.60	.39	.46	.43
Problems With Planning	.54	.60	.43	.43
Sexual Harassment	.35	.20	.27	.25
Patient Harassment	.55	.50	.52	.44
Job Resources				
Autonomy	.50	.43	.38	.42
Social Support	.57	.60	.57	.57
Coaching by Supervisor	.58	.59	.49	.56
Prof Development	.75	.71	.82	.72
Performance Feedback	.58	.64	.55	.61
Financial Rewards	.22	.37	.38	.39
	Structural model			
Job Demands				
Exhaustion	.59	.53	.69	.65
Job Resources				
Cynicism	−.42	−.42	−.34	−.41
Prof Efficacy	.39	.33	.32	.37
Exhaustion				
Cynicism	.41	.39	.45	.40
Cynicism				
Prof Efficacy	−.12	−.18	−.17	−.15

Note. JD-R = job demands–resources; Prof = Professional. All loadings and structural paths are significant at $p < .05$.

organizations, all specific job demands loaded significantly on the latent factor Job Demands, and all specific job resources loaded significantly on the latent factor Job Resources. The correlation between Job Demands and Job Resources ranged from −.23 to −.58. In addition, for each organization, the coefficient of the path from Job Demands to Exhaustion was positive and highly significant (ranging from .53 to .69). The coefficient of the path from Job Resources to Cynicism was negative and highly significant (ranging from −.34 to −.42), whereas the coefficient of the path to Professional Efficacy was positive and highly significant (ranging from .32 to .39). For two organizations, workload had the highest factor loading on Job Demands. For the other two organizations, Emotional Demands and Problems With Planning had the highest factor loading on Job Demands. Possibilities for Professional Development had the highest factor loading on Job Resources for all subsamples (see Table 3). The JD-R model of burnout explained between 29% and 48% of the variance in Exhaustion, between 42% and 47% of the variance in Cynicism, and between 19% and

22% of the variance in Professional Efficacy. The exact amount of variance explained was dependent on the specific subsample. Finally, for each subsample, Exhaustion showed a significant positive relationship with Cynicism. Cynicism, in turn, was significantly and negatively related to Professional Efficacy for each subsample, albeit somewhat weaker.

Test of Alternative Hypothesis

To test the alternative hypothesis that the latent factor Job Demands is related to Cynicism and to Professional Efficacy and that Job Resources is related to Exhaustion, our next step was to include these three paths in the model. As can be seen from Table 2, this alternative and less parsimonious model improved only marginally on the proposed model. There was a statistically significant decline in chi-square points, $\Delta\chi^2(12) = 30.22$, $p < .01$. However, the fact that the other fit indices remained unchanged suggests that this significant increase was mainly due to the large sample size and should not be taken to mean that the alternative model is preferable to the proposed model. Most important however, in keeping with Hypothesis 1, t tests indicated that the coefficients of the paths from Job Demands to Cynicism and Professional Efficacy and from Job Resources to Exhaustion were nonsignificant in all samples, with only two exceptions. Contrary to our hypothesis, the paths from Job Resources to Exhaustion and from Job Demands to Professional Efficacy were significant and negative in one subsample. Taken together, results indicated that the proposed model, including exclusively the paths between Job Demands and Exhaustion and between Job Resources and Cynicism as well as Professional Efficacy, fits the data as least as good as the alternative model but has 12 degrees of freedom extra.

Invariance Across Organizations?

In an additional series of analyses, we examined whether the loadings of the specific job characteristics on the latent factors Job Demands and Job Resources and the structural relationships in the JD-R model were equal across the four organizations. More specifically, in three steps, (a) all loadings, (b) all structural relationships (regression weights), and (c) both the loadings and the structural relationships were constrained to be equal across all four organizations. Results of a series of multigroup structural equation analyses revealed that each of the competing, constrained models fit the data quite well (see Table 4). Although chi-square difference tests showed that constraining the factor loadings and regression weights to be equal across samples led to statistically significant increases of the chi-square value, the fit of these models remained virtually unchanged in terms

Table 4. Results of Multigroup Analyses: Standardized Maximum Likelihood Estimates for the JD-R Model and the Constrained Models (N = 3,092)

Model	χ^2	*df*	GFI	RMSEA	NFI	CFI	IFI	Model comparison	$\Delta\chi^2$	*df*	*p*
M1	1,047.10	264	.96	.03	.91	.93	.93				
M2	1,122.93	294	.95	.03	.90	.93	.93	M2–M1	75.83	30	<.01
M3	1,075.65	279	.96	.03	.91	.93	.93	M3–M1	28.55	15	<.05
M4	1,147.60	309	.95	.03	.90	.93	.93	M4–M1	100.50	45	<.01

Note. GFI = goodness-of-fit index; RMSEA = root-mean-square error of approximation; NFI = normed fit index; CFI = comparative fit index; IFI = incremental fit index; $\Delta\chi^2$ = chi-square difference; M1 = job demands–resources model (JD-R; all parameters free); M2 = equal loadings for all subsamples; M3 = equal regression weights for all subsamples; M4 = equal loadings and regression weights for all subsamples.

of the other fit indexes. Thus, although statistically significant, the differences among the results obtained for the various models were actually very small and should not be taken to mean that the unconstrained model M1 is superior to the other models. Rather, the results in Table 4 show that it is quite plausible that a single model accounts for the relations among the variables across all four samples and that the differences in factor loadings and regression weights across the samples (see Table 3) do not present systematic and meaningful variation.

Interaction Effects

In a subsequent multigroup analysis, we tested Hypothesis 2a and 2b, which state that the interaction between job demands and job resources explains a unique proportion of the variance in the three burnout dimensions, after controlling for the main effects of job demands and job resources. To build the interaction term for each organization, two separate principal-components analyses for the six job demands and the six job resources were conducted. The factor scores generated by these analyses were multiplied, and the product was added as a manifest, exogenous variable in the structural equation model, in which the two latent factors, Job Demands and Job Resources, were included as well. Results showed that the interaction term was significantly related to some burnout dimensions and that the results differed per organization. The interaction term was significantly related to Exhaustion for two organizations ($\beta = -.10$ and $\beta = -.12$), to Cynicism for one organization ($\beta = -.06$), and to Professional Efficacy for one organization ($\beta = -.11$). The interaction effects were in the predicted direction for Cynicism and Exhaustion but not for Efficacy. That is, the effect of job demands on exhaustion was especially strong if the participants possessed few resources. In a similar vein, the effect of job resources on cynicism was particularly strong if participants encountered many job demands. Unexpectedly, the effect of job resources on professional efficacy was strongest if participants encountered few job demands.

To examine the robustness of the interaction effects, we constrained the paths from the interaction term to the burnout components to be equal in all four organizations. Results of this final multigroup analysis showed that the interaction term had small but significant effects on Exhaustion ($\beta = -.05$, $p < .01$) and Professional Efficacy ($\beta = -.04$, $p < .05$) but not on Cynicism ($\beta = -.02$, *ns*). In conclusion, the present research partly confirmed the assumption that an interaction exists between job demands and job resources in explaining burnout scores in addition to both main effects. Note, however, that the interaction effects were relatively weak, suggesting that in practice the positive effects of high job resources cannot compensate the negative effects of high job demands.

DISCUSSION

The central aim of the present study was to test and expand the recently proposed JD-R model of burnout (Demerouti et al., 2001) in four home care organizations. This model identifies two categories of job aspects, job demands and job resources, that are assumed to play a key role in the burnout process.

Results of a series of multigroup structural equation analyses provided strong evidence for the validity of the JD-R model. Specifically, it was shown that job demands are primarily and positively related to exhaustion, whereas job resources are primarily and negatively related to cynicism and positively related to professional efficacy. An alternative model with three additional paths running from job demands to cynicism and professional efficacy and from job resources to exhaustion did not fit the data better than the proposed model. Moreover, in keeping with the JD-R model, *t* tests indicated that the coefficients of the paths from job demands to cynicism and professional efficacy and from job resources to exhaustion were not significant in three of the four home care organizations. These findings are in line with several authors' claims about the differential pattern of relationships among specific job demands, specific job resources, and burnout components (e.g., Burke & Greenglass, 1995; Cordes & Dougherty, 1993; Eisenstat & Felner, 1984; Friesen & Sarros, 1989; Lee & Ashforth, 1996; Leiter, 1989; Taris et al., 2000). Earlier burnout studies have reported fragmented evidence for the same role of each of these factors (e.g., Aström, Nilsson, Norgerg, Sandman, & Winblad, 1990; Friedman, 1991; Jackson, Schwab, & Schuler, 1986; Jackson, Turner, & Brief, 1987; Janssen, Bakker, & De Jong, 2001; Kandolin, 1993; Landsbergis, 1988; Leiter & Maslach, 1988; Schreurs & Taris, 1998; Taris et al., 2000; Whitehead, 1987). This observation not only underscores the validity of our findings but also shows that the JD-R model is a parsimonious model that may capture each of these job aspects simultaneously.

An important contribution of the present study is that it shows that despite the fact that every occupation may have its own specific causes of burnout, these causes fit into a general theoretical model that applies to many different settings. The JD-R model is able to integrate the results of earlier studies that produced a laundry list of burnout antecedents (see, e.g., Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Our findings suggest that the development of each burnout component is influenced by a specific constellation of work conditions. When job demands are high, we expect that employees experience primarily elevated levels of exhaustion (whereas cynicism and professional efficacy will be affected to a lesser degree, and only indirectly, through exhaustion). When job resources are lacking, we expect high levels of cynicism and a reduced sense of efficacy

(but not exhaustion). In jobs with high job demands and limited job resources, we expect that employees develop exhaustion, cynicism, and a reduced sense of competence, that is, burnout. Generally speaking, there seem to exist two main processes that take place in the working environment. The first process is a health impairment process that initiates from job demands and results in exhaustion. The second process is motivational and is driven by the availability of resources and resulting feelings of competence. When resources are lacking, individuals experience cynicism toward the job and reduced feelings of efficacy.

The JD-R model proposes that the degree to which workers feel efficacious depends on the amount of resources they can draw on. This reasoning is consistent with Bandura's (1986) notion that people develop a sense of control by engaging in corresponding actions. That is, conducting a particular action will promote the feeling that one will be able to perform that action at will in the future. Especially work environments that offer many resources (e.g., performance feedback, autonomy, or career opportunities) would seem to increase a worker's opportunities to experiment with (and, thus, to learn) new behaviors, thereby increasing their sense of control and efficacy. In keeping with this reasoning, the positive effect of job resources on professional efficacy in the JD-R model must be interpreted as a learning effect: Workers who may draw on a wide array of resources have more opportunities to learn new behaviors than others whose resources are lacking (see Leiter, 1993, for similar reasoning).

Leiter and Maslach's (1988) process model of burnout is also integrated in the JD-R model. Thus, although job resources are core determinants of the cynicism and efficacy components of burnout, the model acknowledges that job demands may indirectly influence these two attitudinal components, through their influence on exhaustion. Thus, physical and emotional demands, for example, may influence employees' attitudes toward their work (cynicism), as they attempt to gain mental distance from their work and clients as a way of coping with their exhaustion. Consequently, a negative attitude develops regarding one's accomplishment at work (see also Cordes et al., 1997; Leiter & Maslach, 1988; Leiter & Meechan, 1986). Although the present research only provides preliminary, cross-sectional evidence for this sequence, longitudinal evidence has been found in a study among a representative sample of general practitioners (see Bakker et al., 2000).

Note that the present research provides some evidence that job demands and job resources interact in influencing burnout. That is, the combination of high job demands and low resources results in comparatively more feelings of exhaustion than would be expected on the basis of the main effects of these two factors alone. Although this is interesting from a theoretical point of view, the magnitude of this effect was quite small,

suggesting that the practical relevance of this finding is rather limited. This is an important result, because it implies that high levels of job resources can only to a very limited degree mitigate the negative health effects of high job demands. Unexpectedly, the effect of job resources on professional efficacy was strongest if participants encountered few job demands. In retrospect, this finding is perhaps not so surprising, because extremely high job demands may limit, for example, employees' autonomy, possibilities for professional development, performance feedback, or social support. In contrast, under conditions of limited job demands, employees have the time to think over and plan their actions, use their autonomy, and listen to and learn from the feedback they receive. These explanations are speculative and should be tested in future research. In addition, the Job Demands × Job Resources interaction effect on professional efficacy was very small. The practical message is therefore that the positive motivational effect of high levels of job resources is only to a limited degree hindered by high job demands.

To conclude then, we believe that the present study makes a significant contribution to the job stress and burnout literature. First of all, the JD-R model that has been developed in Germany has been replicated in another country, The Netherlands, and extended to other (home care) organizations. Second, our research expands Demerouti et al.'s (2001) findings, in that it incorporates (a) the interaction between job demands and resources, (b) Leiter and Maslach's (1988) process model of burnout, and (c) the professional efficacy dimension of burnout. Finally, whereas Demerouti et al. (2001) incorporated limited scales to measure job demands and resources, the present study used other reliable scales that have been validated in previous research.

Study Limitations

A weakness of the current research is that both job characteristics and outcomes were measured with a cross-sectional, self-report questionnaire. In principle, this methodology puts under question the causality hypothesis. However, several longitudinal studies in this domain have shown that job characteristics like workload and autonomy have causal predominant relationships with health outcomes in such a way that the outcomes tended to occur after job perceptions, rather than vice versa (Buunk, De Jonge, Ybema, & De Wolff, 1998). As far as the self-report measures are concerned, the job incumbent (the employee) seems to be the most important source that can offer information regarding his or her unique job position (e.g., Frese & Zapf, 1999). Other, so-called objective methods like observers' ratings appear to be good alternatives but suffer from problems too. For instance, expert observations may be influenced by observers' bias as

well as stronger halo and stereotyping effects (De Jonge, Van Breukelen, Landeweerd, & Nijhuis, 1999). Nevertheless, although the correspondence among the results obtained in different organizations suggests that the findings are robust, because they are replicated and can be generalized across four home care organizations, longitudinal studies and quasi-experimental research designs are needed to further validate the hypothesized causality of the relationships in the JD-R model.

A further limitation of the present research is that only employees of home care organizations were involved, and the large majority of them were female. Thus, our findings may not be representative for populations of other workers. For one thing, the job demands and job resources in other populations may be different from those studied in the current research. This point is so obvious that it would hardly need to be mentioned; if it were not for the fact that the JD-R model itself explicitly proposes that types of demands and resources may vary across occupations and organizations. However, research in different populations (Demerouti et al., 2001) has shown that the basic distinction between job demands and job resources can be retained, although the specific demands and resources, which are prevalent in a certain occupation, may vary. A final limitation of this study is that it included a limited number of dependent variables, namely, only the three dimensions of burnout. It would seem important to examine the applicability of the JD-R model for different sets of dependent variables in future research, such as organizational commitment, engagement, turnover, and absenteeism.

Implications for Research and Practice

Despite the limitations of this study, the present findings may have important implications for future research and practice. The JD-R model may be applied for workplace interventions aimed at preventing or reducing burnout. Our results suggest that to avoid employees' exhaustion, specific job demands have to be reduced or redesigned. In addition, increasing their job resources may enhance employees' feelings of efficacy and prevent their cynicism. The specific job demands and resources to be addressed appeared to be equal for the four organizations included in the present research. This implies that burnout interventions will be most successful if they are tailored to the most important job demands and job resources in this occupational context. For example, the current study suggests that home care professionals may benefit most from interventions that optimize their planning schedules, address the demanding nature of patient interactions, decrease their workload, and increase their possibilities for professional development. All of these antiburnout interventions

have been described in the literature in greater detail (see Schaufeli & Enzmann, 1998). Each of these occupation-specific interventions may contribute to a reduction of job demands and an increase of job resources that can, in turn, lead to a reduction in feelings of exhaustion and cynicism. Furthermore, they may lead to motivation and feelings of competence and happiness at work.

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