

A model of burnout and life satisfaction amongst nurses

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This study, among 109 German nurses, tested a theoretically derived model of burnout and overall life satisfaction. The model discriminates between two conceptually different categories of working conditions, namely job demands and job resources. It was hypothesized that: (1) job demands, such as demanding contacts with patients and time pressure, are most predictive of exhaustion; (2) job resources, such as (poor) rewards and (lack of) participation in decision making, are most predictive of disengagement from work; and (3) job demands and job resources have an indirect impact on nurses' life satisfaction, through the experience of burnout (i.e., exhaustion and disengagement). A model including each of these relationships was tested simultaneously with structural equations modelling. Results confirm the strong effects of job demands and job resources on exhaustion and disengagement respectively, and the mediating role of burnout between the working conditions and life satisfaction. These findings contribute to existing knowledge about antecedents and consequences of occupational burnout, and provide guidelines for interventions aimed at preventing or reducing burnout among nurses.

Keywords: job demands, job resources, burnout, life satisfaction, nursing, exhaustion, disengagement, working conditions, stress

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INTRODUCTION

Nursing is considered to be inherently stressful (Schaefer & Moos 1993, Decker 1997). The occupation is plagued by a wide variety of stressors, such as demanding patient contacts, time pressure, and work overload. Moreover, nurses are confronted with increasing job demands due to the introduction of sophisticated technologies and budget cuts (Schaufeli *et al.* 1995). However, their job resources are often insufficient to cope effectively with these demands. Indeed, research among nurses has shown positive relationships between stress-reactions and lack of social support from colleagues (Cronin-Stubbs & Rooks 1985, De Jonge & Schaufeli 1998), poor performance feedback (Eisenstat & Felner 1984, Pfennig & Husch 1994), and limited participation in decision making (Lee & Ashforth 1996). Such working conditions form a breeding ground for burnout among nurses (De Rijk *et al.* 1998). To prevent or reduce burnout, it is important to assess and monitor the workplace, identify problems and propose interventions. Such preventive efforts may benefit substantially from conceptual models that integrate previous research findings regarding work-related stress and burnout among nurses, and that establish specific relationships between categories of stressors and burnout components. It is the central aim of the present study to develop such a model of burnout and life satisfaction among nurses.

THEORETICAL BACKGROUND

Burnout: definition and measurement

Burnout has been described as a specific kind of occupational stress-reaction among human service professionals, as a result of the demanding and emotionally charged relationships between caregivers and their recipients (Maslach & Schaufeli 1993). More specifically, burnout is most commonly defined as a syndrome of feelings of emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach *et al.* 1996).

Emotional exhaustion refers to energy depletion or the draining of emotional resources. Depersonalization refers to the development of negative, cynical attitudes towards the recipients of one's service or care. These two burnout dimensions are generally considered the core symptoms of burnout (Shirom 1989), and they show the most robust relationships with work-related stressors (Schaufeli & Enzmann 1998). The third dimension, lack of personal accomplishment, is often studied only as an afterthought. It refers to the tendency to evaluate one's own work with recipients negatively, and is accompanied by feelings of insufficiency (Schaufeli & Buunk 1996).

The instrument most often used to measure burnout is the Maslach Burnout Inventory (MBI) (Maslach *et al.* 1996). This questionnaire includes the three aforemen-

tioned burnout dimensions. Unfortunately, earlier studies with the MBI have encountered problems with the reproducibility of its factor structure (Powers & Gose 1986, Fimian & Blanton 1987), and the limited internal consistency of the depersonalization sub-scale (Schaufeli *et al.* 1993). In addition, limitations of the MBI include the one-sided wording of the items (Demerouti & Nachreiner 1996), and its restriction to human service professions.

To avoid these psychometric problems, Demerouti (1999) and Ebbinghaus (1996) proposed and constructed an alternative measure of burnout, called the Oldenburg Burnout Inventory (OLBI). The OLBI has been developed for use in different kinds of occupations, including non-service work. It includes two sub-scales, namely *exhaustion* and *disengagement*. The OLBI does not refer directly to working with people, and includes both negatively and positively worded items. Thus, the exhaustion items are generic, i.e. they do not refer to emotionally demanding contacts with service recipients as the source of exhaustion as in the MBI. Exhaustion is defined here as intensive physical, affective and cognitive strain, as a long-term consequence of prolonged exposure to work stressors. This conceptualization is quite similar to other definitions of exhaustion that have been proposed (Aronson *et al.* 1983, Shirom 1989). In addition, whereas depersonalization in the MBI refers to distancing oneself emotionally from service recipients and to the development of cynical attitudes towards them, disengagement in the OLBI refers to distancing oneself from one's work, and to negative attitudes towards the work object, work content, or one's work in general. Note that, in our conceptualization, depersonalization is only one form of disengagement.

Burnout among nurses

Nurses are considered to be particularly susceptible to burnout. According to two European epidemiological studies, burnout affects approximately 25% of all nurses (Landau 1992, Saint-Arnaud *et al.* 1992). Their jobs are typically stressful and emotionally demanding, since nurses are repeatedly confronted with people's needs, problems and suffering. Several studies have shown that burnout is positively correlated with the amount of time nurses spend with their patients (Cronin-Stubbs & Brophy 1985), with the intensity of the emotional demands posed by their patients (Lewinson *et al.* 1981), and with exposure to patients with a poor prognosis (Hare *et al.* 1988).

Moreover, a review of the literature referring to the nursing profession shows that there is a 'myriad' of stressors leading to strain and stress reactions among nurses (International Labour Organization 1998). In addition to emotionally demanding patient contacts, it has been shown, for example, that lack of time to plan and prepare work, frequent interruptions, and responsibility

in the absence of decision-making power, can be important stressors in the nursing profession. Such job demands seem to be particularly stressful when nurses lack a good support network and do not have the possibility to discuss and improve patients' quality of life. However, until now, there exists no conceptual framework in the literature to categorize these stressors in a theoretical model. In the present study, we will develop and test such a model of burnout among nurses.

THE PRESENT STUDY

Towards a model of burnout among nurses

Based upon general stress theories (Lazarus & Folkman 1984, Hobfoll 1989), the burnout model presented in this article distinguishes between two categories of working conditions relevant to the experience of stress and the development of strain among nurses, namely job demands and job resources.

Job demands are working conditions that potentially evoke stress-reactions, when they overwhelm nurses' personal limits and abilities. In Karasek's (1979) influential job demands-control model, it is assumed that workload and time pressure are, in general, the most important work-related stressors. The job demands-resources model presented and tested in the present study expands this view by proposing that several (demanding) characteristics of nurses' working environment may lead to the experience of burnout, including demanding contacts with patients, poor environmental conditions and problems related to shift-work. Thus, the job demands-resources model is more comprehensive than earlier models presented in the literature (Karasek 1979, Johnson & Hall 1988). In line with earlier research on occupational stress and burnout (e.g. Leiter 1993, Lee & Ashforth 1996), our model predicts that long-term exposure to job demands leads to feelings of exhaustion, but not necessarily to disengagement (hypothesis 1).

Job resources are working conditions that potentially evoke stress-reactions among nurses when they are lacking or insufficient. The job resources in our model are equivalent with their conceptualization in 'conservation of resources' theory (Hobfoll 1989). Examples of working conditions that may be considered job resources are performance feedback and task variety (cf. Hackman & Oldham 1976), participation in decision making and job control (cf. Karasek 1979), social support (cf. Johnson & Hall 1988), and financial rewards (Hobfoll & Freedy 1993).

Our second hypothesis states that lack of job resources will be more predictive of disengagement, than of exhaustion (hypothesis 2). This hypothesis is consistent with the research literature using the MBI (Friesen & Sarros 1989, Shirom 1989, Cordes & Dougherty 1993, Leiter 1993), and with a recent meta-analysis (Lee & Ashforth 1996). These

studies found relationships between job demands and emotional exhaustion, as well as between job resources and depersonalization. However, as far as we know, this specific pattern of relationships has not been tested *simultaneously* in earlier studies.

Life satisfaction

Overall life satisfaction is defined as the degree to which the experience of an individual's life satisfies that individual's wants and needs, both physically and psychologically (Rice 1984). These wants and needs may exist in several domains of life, for example when individuals take the role of employee, parent, spouse or friend (Biddle 1979). A job is assumed to have important effects on overall life satisfaction in several ways. Work is the source of income that helps people to meet their needs and wants. In addition, work accounts for a large amount of waking hours per day of most people, and there is evidence that work has a substantial influence on people's self-concept and self-esteem (Kahn 1981). The stressful effects of losing one's job, i.e. unemployment, are also well-documented (Warr 1987). As the link between work and life satisfaction is undoubted, one major goal of research has been to generate theoretical models that provide useful ways of thinking about the problem of improving life satisfaction or quality of life through changes in the workplace.

Rice (1984) has developed such a conceptual model, which proposes that working conditions have an impact on overall life satisfaction through perceptions of the quality of working life and non-working life. In short, the model proposes that working conditions influence life satisfaction, by changing characteristics of the person or the environment. Such changes include short-term effects of work (e.g. changes in mood, energy level and interests), and long-term effects of work (e.g. changes in skills, personality and health). As burnout may be conceived of as a long-term consequence of work (Shirom 1989), it can be used as an indicator of the perceived quality of one's working life. According to our model, working conditions are precursors of burnout, which further influences overall life satisfaction. Thus, a final prediction in this study is that exhaustion and disengagement mediate the impact of job demands and job resources on life satisfaction (hypothesis 3).

One may argue that impaired *job* satisfaction is an immediate consequence of burnout. Indeed, this relationship has been confirmed in several studies (see Schaufeli & Enzmann 1998), including a study using a longitudinal design (Wolpin *et al.* 1991). However, Judge and Watanabe (1993) used a cross-lagged panel design to show that job satisfaction and life satisfaction are positively and reciprocally related to each other. Therefore, we decided to include *life* (instead of *job*) satisfaction as an outcome

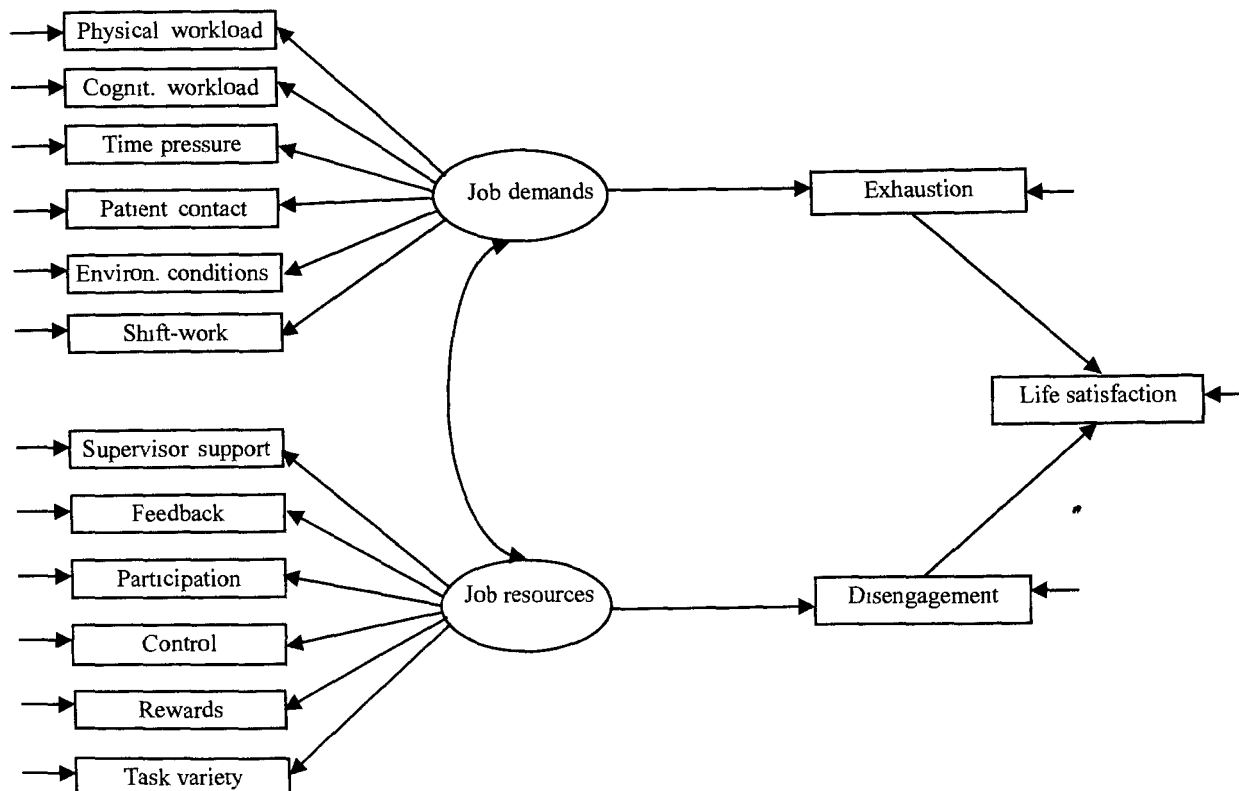


Figure 1 The model of burnout and life satisfaction.

of burnout, in order to test the hypothesis that work-related feelings might spill over to general life. Note that in our study we do not include indicators of non-work quality of life as in the model of Rice (1984). The hypotheses that are tested in the current study are summarized in Figure 1.

METHOD

Participants and procedure

The present study is part of a larger project (see Demerouti 1999) and was conducted among a sample of 185 nurses, employed at one hospital and two nursing homes for the elderly in Germany. At the time of the study, the nurses worked at one of two nursing homes, or at one of the following hospital units: surgery, oncology, intensive care, cardiology, and neonatal care. After a brief personal introduction to the study, the first author distributed self-report questionnaires and envelopes among the nurses. They were kindly requested to fill out the questionnaire in private, and to post it in a special box at the workplace. The confidentiality and anonymity of the answers was emphasized. A total of 109 nurses filled out and returned the questionnaire (response rate = 59%). The number of participants for each setting was: nursing home I ($n=14$), nursing home II

($n=15$), surgery ($n=14$), oncology ($n=15$), intensive care ($n=21$), cardiology ($n=19$), and neonatal care ($n=15$). The majority of the sample (80%) was female, and the mean age was 32 years ($SD=7.6$). The mean organizational tenure of the nurses was 4 years and 4 months ($SD=4$ years). Seventy per cent of the sample was full-time employed.

Measures

Life satisfaction

The measure of life satisfaction is based upon Rice (1984), and includes four items. Example items are: 'In general, I am satisfied with my life', and 'My life is interesting and full of variety'. The participants could respond to each statement using a four-point scale: (1) totally disagree, (2) disagree, (3) agree, and (4) totally agree. The internal consistency of the scale was reasonable: $\alpha=0.67$.

Burnout

The Oldenburg Burnout Inventory (OLBI) used in the present study has been constructed and validated in an independent study among 293 employees from different occupational fields, including human services and blue colour workers (Ebbinghaus 1996). The inventory measures burnout independent of vocational aspects on two dimensions, namely exhaustion and disengagement. The

seven items of the *Exhaustion* sub-scale are generic, and refer to general feelings of emptiness, overtaxing from work, a strong need for rest, and a state of physical exhaustion. Examples are: 'After my work, I regularly feel worn out and weary', and 'After my work, I regularly feel totally fit for my free time activities' (reversed) (1 = totally disagree, 4 = totally agree). In the present study, Cronbach's alpha of the exhaustion scale was 0.84. *Disengagement* refers to distancing oneself from one's work (work object and content), and to negative, cynical attitudes and behaviours towards one's work in general. This sub-scale encompasses eighteen items, including: 'I frequently talk about my work in a negative way', and 'I get more and more engaged in my work' (reversed). The same answer categories as for exhaustion were used ($\alpha = 0.92$).

A factor analysis confirmed the two-dimensional factorial structure of the burnout construct (Ebbinghaus 1996). In addition, discriminant and convergent validity of the exhaustion and disengagement sub-scales were examined by assessing their relationships with the sub-scales of the BMS (Belastung, Monotonie, Sättigung; Plath & Richter 1984) a reliable and valid German questionnaire measuring short-term stress-reactions at work. A series of first and second order factor analyses supported the OLBI's discriminant validity. Both burnout dimensions could, for example, be discriminated from measures of psychological fatigue (i.e. reduced performance efficiency), and satiation (i.e. a state of high irritability and reluctance to continue work tasks). More specifically, it was found that the items of both burnout sub-scales loaded on the intended separate factors, whereas the items of the BMS-sub-scales loaded on other factors. In addition, Ebbinghaus' (1996) study supported the convergent validity of the OLBI, by showing that both burnout dimensions were only (moderately) related to the conceptually most relevant constructs. Exhaustion was significantly related to psychological fatigue ($r = 0.52$, $P < 0.05$), but *not* to satiation ($r = 0.00$), whereas disengagement was significantly related to satiation ($r = 0.53$, $P < 0.05$), but *not* to psychological fatigue ($r = -0.10$, n.s.).

Job demands and job resources

Nurses' working conditions were self-assessed using 21 items. Ten of these items refer to job demands, namely physical workload (one item: 'My work does not tax me physically'; reversed), cognitive workload (two items, e.g. 'In my work, I have to make complex decisions'), time pressure (one item: 'I always have enough time to perform my tasks'; reversed), demanding contacts with patients (two items, e.g. 'I have demanding contacts with my recipients'), unfavourable environmental conditions (two items, e.g. 'During my work, I am continuously interrupted'), and a shift-work schedule that is unfavourable for physical health, family life and social life (two items, e.g. 'It is taxing for me to get used to my working times').

Eleven items refer to job resources: performance feedback (two items, e.g. 'I receive sufficient feedback about my performance'), job control regarding methods, time, etc. (two items, e.g. 'I can arrange myself how I perform my work'), task variety (two items, e.g. 'My tasks are very simple and repetitive'; reversed), supervisor support (two items, e.g. 'My supervisor keeps distance from the employees'; reversed), performance rewards (two items, e.g. 'My performance is rewarded properly'), and participation in decision making (one item: 'The management decides on its own what everybody has to do'; reversed). Participants could respond to each statement using a four-point scale (1 = totally disagree, 4 = totally agree). Afterwards, all answers were coded in such a way that higher scores on job demands and job resources refer to a higher prevalence of both working conditions.

Analyses

The job demands-resources model was tested through structural equation modelling (SEM) analyses (Jöreskog & Sörbom 1993), using the AMOS computer program (Arbuckle 1997). AMOS generates a LISREL generates a chi-square goodness of fit statistic to test the extent to which the hypothesized model is consistent with the data. Jöreskog and Sörbom (1993) suggest several other fit indices to investigate the overall fit of a postulated model, including the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), and the root mean square residuals (RMR). The values of these fit indices can be compared with the values of the fit indices of a Null-Model, which assumes no relationships between the variables in the model. For the AGFI and GFI, values of 0.90 or higher indicate a close fit between the model and the data. RMR values of 0.05 or lower indicate a close fit. AMOS provides maximum likelihood parameter estimates of the specified paths in the model, *t*-values indicating the significance of the specified relationships, and so-called modification indices. The latter provide information about the relationships in a model that should be added or altered to improve the fit between the hypothesized model and the empirical data (Hayduk 1987). In addition, AMOS provides several fit indices that reflect the discrepancy between the hypothesized model and the Null model. In the present series of analyses, the incremental fit index (IFI) (Bollen 1989), the normed fit index (NFI) and the comparative fit index (CFI) are utilized. For each of these statistics, values larger than 0.90 are generally considered acceptable.

Job demands and job resources were both operationalized by six variables (see Method section). This means that the measurement model includes 12 so-called *exogenous* observed variables and two-latent factors. In addition, the structural model includes three *endogenous* observed variables, namely exhaustion, disengagement and life satisfaction. Thus, the measurement and structural model

are tested together in the SEM-analysis. The analysis includes a comparison of competing models, which can be described as follows:

- 1 The proposed or indirect model, that includes only indirect paths from job demands and resources to life satisfaction, through the two burnout components (exhaustion and disengagement).
- 2 The direct model, in which the latent exogenous factors job demands and job resources and the burnout components are supposed to have only direct effects on life satisfaction.
- 3 The full model, in which job demands and job resources are supposed to have both direct *and* indirect effects through exhaustion and disengagement on life satisfaction.
- 4 The final, revised model, which includes only the significant paths (as resulting from the previous models) and paths that may be proposed by the modification indices

Model comparisons were made using the chi-square difference test. Both restricted models 1 and 2 were compared with the more general model 3. In addition, the hypothesized model 1 was compared with the revised model 4.

RESULTS

A Kolmogorov-Smirnov test showed that all scales were normally distributed except those of exhaustion, disen-

gement and control, which were elliptically distributed. Therefore, the factor values for exhaustion, disengagement and control items were calculated using principal component analysis and varimax rotation and included in the SEM. The one-factor solution explained 45%, 40% and 48% of the variance of each construct respectively. Inter-correlations among all variables are presented in Table 1.

Because previous studies have shown that gender, family status, age and working experience may be related to burnout and life satisfaction (see Schaufeli & Enzmann 1998), we performed additional analyses in which these demographic variables were controlled for. Only age and occupational tenure showed a significant, positive relationship with exhaustion. Age was significantly, negatively related to life satisfaction. However, the demographic variables did not modify the results of the SEM. In addition, regression analysis of the demographic variables on exhaustion, disengagement and life satisfaction showed that the demographics could not explain a significant amount of variance in any of the dependent measures. Only age made a significant contribution to explaining life satisfaction. We decided to exclude the demographic variables from the SEM-analyses in order to avoid testing a large model on a relatively small sample. A model including demographic variables would require at least 360 participants (for the 72 free parameters).

Table 2 summarizes the results of the SEM-analyses for the competing models. We concentrate initially on the first three models. Models 1 and 2 are nested in model 3. Model 1 is described in Figure 1. Model 2 includes the

Table 1 Intercorrelations of the variables ($n = 104$)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Physical workload														
2 Cognitive workload	0.10													
3 Time pressure	0.27**	0.29**												
4 Patient contact	0.22**	0.05	0.22*											
5 Environment conditions	0.19	0.29**	0.25*	0.40**										
6 Shift-work	0.29**	0.13	0.24*	0.39**	0.33**									
7 Supervisor support	0.20*	0.11	-0.05	0.22*	0.05	-0.02								
8 Feedback	0.04	0.30**	0.16	0.31**	0.31**	0.00	0.32**							
9. Participation	0.05	0.05	-0.04	0.07	0.07	0.16	0.30**	0.32**						
10. Control	0.16	-0.15	0.07	0.19	0.19	0.16	-0.07	0.12	-0.07					
11. Rewards	0.20*	0.29**	0.26**	0.33**	0.35**	0.26**	0.12	0.40**	0.17	0.06				
12 Task variety	0.01	-0.18	-0.18	0.15	-0.10	0.02	0.12	0.21*	0.35**	0.09	0.05			
13 Exhaustion	0.44**	0.24*	0.40**	0.46**	0.39**	0.36**	0.08	0.28**	0.21*	0.19	0.46**	-0.06		
14 Disengagement	0.22*	0.05	0.09	0.40**	0.24*	0.27**	0.28**	0.50**	0.42**	0.11	0.45**	0.49**	0.38**	
15 Life satisfaction	0.32**	0.00	0.09	0.21*	0.13	0.30**	0.16	0.11	-0.06	0.11	0.27**	0.16	0.30**	0.50**

** $P < 0.01$, * $P < 0.05$

Table 2 Goodness-of-fit indices of structural models of burnout and life satisfaction among nurses

Model	χ^2	d.f.	P	GFI	AGFI	RMR	NFI	CFI	IFI	Comparison	$\Delta\chi^2$	d.f.	P
1. Indirect effects	114.45	81	0.009	0.87	0.81	0.06	0.75	0.91	0.91	M1-M3	2.05	2	n.s.
2. Direct effects	239.67	81	0.001	0.78	0.69	0.13	0.48	0.56	0.58	M2-M3	127.27	2	0.001
3. Direct & indirect effects	112.40	79	0.008	0.88	0.81	0.06	0.76	0.91	0.91				
4. Final revised	100.67	80	0.059	0.88	0.83	0.05	0.78	0.94	0.95	M1-M4	13.78	1	0.001
5. Null	461.28	105	—	0.51	0.44	0.15	—	—	—				

χ^2 = chi-square, d.f. = degrees of freedom, GFI = goodness of fit index, AGFI = adjusted goodness of fit index; RMR = root mean square residuals; NFI = normed fit index; CFI = comparative fit index; IFI = incremental fit index.

covariation between both latent factors, and only the *direct* relationships between job demands, job resources, exhaustion and disengagement on the one hand, and life satisfaction on the other hand. Model 3 contains all direct and indirect effects. The chi-square value for each of these models achieved the significance level, indicating a poor fit to the data. As can be seen from Table 2, the improvement in fit provided by the addition of the direct paths from job demands and job resources to life satisfaction (comparison of models 1 and 3) is not substantial, χ^2 (dif)=2.05, 2 d.f., *n.s.* Furthermore, the comparison of models 2 and 3 resulted in χ^2 (dif)=127.27, 2 d.f., $P < 0.001$. Thus, the addition of *indirect* paths from job demands and job resources to life satisfaction via exhaustion and disengagement respectively, resulted in a significant improvement of the model.

In each of the first three models, all manifest variables loaded significantly on the intended latent factors, with the exception of 'job control' (indicator of job resources). Nevertheless, it was decided to include this variable in the models, because it is recognized as an important aspect of work (see Karasek 1979). The paths from job demands and job resources to life satisfaction were not significant. All other path-coefficients in the first three structural models reached the significance level ($t > 1.96$, $P < 0.05$). Specifically, results show that job demands have a strong positive effect on exhaustion (cf. hypothesis 1), and that job resources have a strong negative effect on disengagement (cf. hypothesis 2). Exhaustion and disengagement, in turn, both showed a negative relationship with life satisfaction.

A final, revised model was based on the results of the tests of the three models and the modification indices. In this model, the paths from job demands and job resources to life satisfaction were excluded, whereas a path from job demands to task variety was included. Table 2 shows that the revised model 4 shows a satisfactory fit to the data, $\chi^2 = 100.67$, 80 d.f., $P = 0.059$, GFI = 0.88, AGFI = 0.83, RMR = 0.05, NFI = 0.78, CFI = 0.94, IFI = 0.95, and that this model is significantly better than model 1, χ^2 (dif) = 13.78, 1 d.f., $P < 0.001$. All included relationships were significant. Interestingly, while task variety loads

positive on job resources, it has a negative loading on the latent factor 'job demands'. This suggests that having different tasks is seen as a positive aspect of work, but also one that increases work requirements. The final model explains 55% of the variance in exhaustion, 66% of the variance in disengagement, and 29% of the variance in life satisfaction scores.

As can be seen in Figure 2, the final model confirms the first two hypotheses: job demands have a positive impact on exhaustion, and job resources have a negative impact on disengagement. The modification indices did *not* suggest a further addition of paths from job demands to disengagement, or from job resources to exhaustion (cf. hypotheses 1 and 2). Finally, both burnout components have significant, negative relationships with life satisfaction. This means that hypothesis 3 about the mediating role of burnout in the relationship between job demands and job resources on the one hand, and life satisfaction on the other hand, is also supported. Interestingly, job demands and job resources correlate negatively with each other, $\phi = -0.61$, $P < 0.001$.

DISCUSSION

In this article, we integrated previous research findings regarding categories of working conditions, burnout and life satisfaction. The resulting conceptual model of burnout and life satisfaction proposes that job demands are most strongly related to feelings of exhaustion, and that job resources are most strongly related to disengagement. In addition, results show that the impact of job demands and job resources on life satisfaction is mediated by burnout. The results of a series of SEM-analyses provide clear evidence for this model, and uncover some of the antecedents and consequences of burnout among nurses.

Of particular interest are the differential relationships found between two classes of working conditions and the two burnout components. Consistent with hypothesis 1, particularly nurses who evaluated their contacts with patients as demanding, and who reported high time pressure, high physical and cognitive workload, unfavourable environmental conditions, and problems with

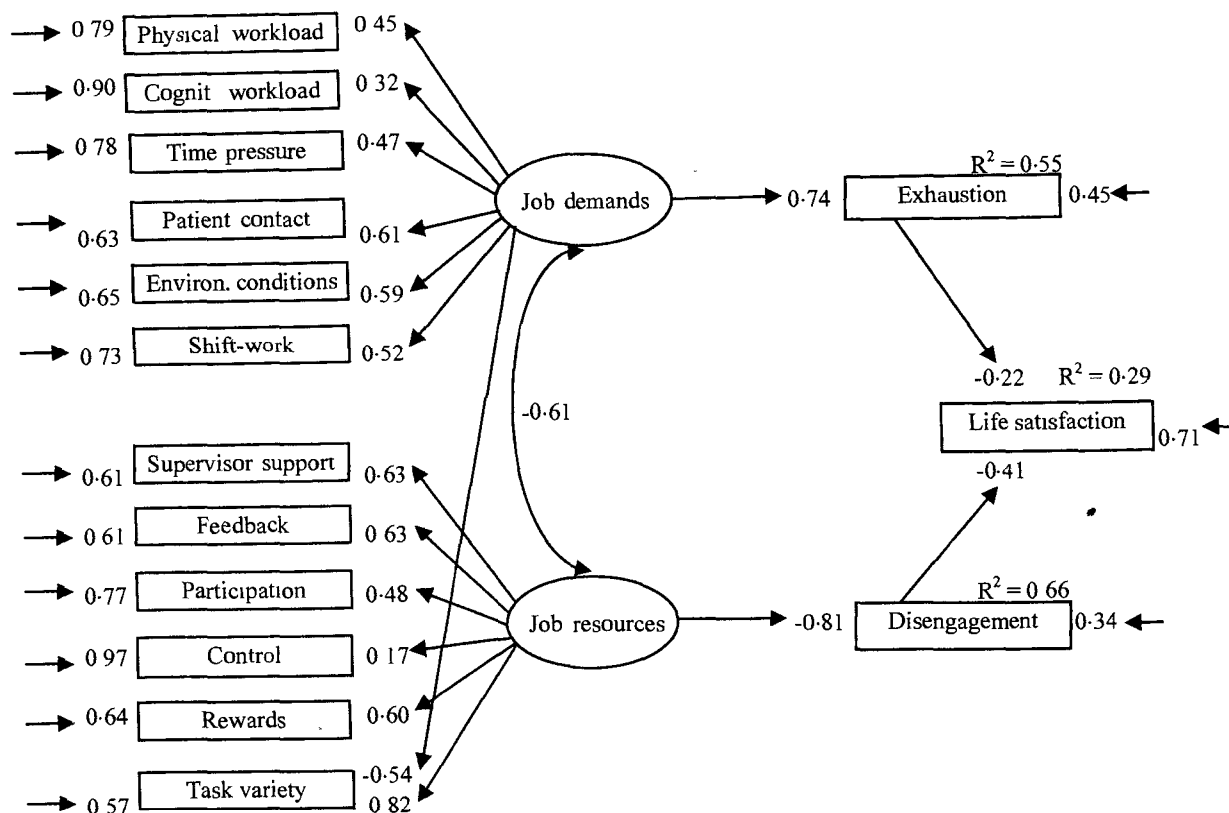


Figure 2 Standardized parameter estimates and square multiple correlations of the revised model of burnout and life satisfaction, $n = 105$. Note All relationships are significant at the $P < 0.05$ level.

their shift-work schedule, reported relatively strong feelings of exhaustion. These findings are consistent with earlier studies (Leiter 1993, Lee & Ashforth 1996) and can be understood using stress theories such as Selye's (1956) physiological general adaptation model. According to this model, long-term exposure to a stressor (in this case negative job demands), and repeated unsuccessful attempts to adapt to this stressor, can deplete the body's reserves and lead to physical exhaustion.

Importantly, nurses who reported high job demands did not necessarily dissociate themselves from their work, the hospital or the nursing home. In contrast, an attitude of disengagement was primarily found among nurses who were exposed to a working environment with insufficient resources (cf. hypothesis 2). The (lacking) job resources important in predicting disengagement included performance feedback, job control, task variety, support from supervisors, rewards, and participation in decision making. An explanation for the relatively strong relationship between job resources and disengagement can be found in theories about work motivation.

The crucial role of a strong initial motivation in the development of burnout is widely recognized (Schaufeli & Enzmann 1998). Herzberg's two-factor theory of motivation (see Herzberg *et al.* 1959) proposes that motivators such as achievement, recognition and responsibility lead

to satisfaction. When they are not adequately present in an organization, employees develop a neutral and indifferent attitude towards their work. In addition, according to Maslow's (1954) 'hierarchy of needs' theory, individuals who have fulfilled their basic needs, will try to achieve the final level of psychological development (self-actualization). In most of the industrialized Western countries, work is a domain where important *growth needs* (e.g. skill and knowledge development) can be satisfied (Hackman & Oldham 1976, Hall 1986). However, when the organization does not provide enough (or not the right) resources, employees will withdraw. Indeed, Lewis and Thomas (1987) have found that growth-related career needs were the most frequently mentioned underlying reasons for occupational change. This finding is conceptually similar to a main finding in the present study: particularly when nurses perceived insufficient job resources, they developed a distancing attitude towards their nursing tasks.

Rice (1984) has argued that working conditions can have a negative impact on overall life satisfaction by influencing both the environment and the person. Results of a series of SEM-analyses in the present study provide evidence for his conceptual model. It was shown that the development of burnout plays a central, mediating role in the relationship between job resources on the one hand, and life satisfaction on the other hand (cf. hypothesis 3).

As the *direct* relationships between job demands and job resources on the one hand, and life satisfaction on the other hand, were not confirmed, we can assume that working conditions influence life satisfaction via the impairment of health.

Our theoretical model explained 29% of the variance in overall life satisfaction even though the present study restricted itself to the working domain. It is evident that other domains of an individual's life influence life satisfaction as well, such as marriage, leisure time, and the family (Andrews & Withey 1976, Campbell *et al.* 1976). Future studies are needed, in which the unique effects of each life sphere on life satisfaction are simultaneously tested.

Study limitations

Limitations of this study clearly must be noted also. First, the analyses in the current study are correlational and thus do not confirm causality. In addition, since the design of the study was cross-sectional, more complex forms of non-recursive linkages could not be examined. Second, the present study is based on self-reports like the majority of burnout and stress studies (Schaufeli & Enzmann 1998). Self-report data might be contaminated by common method variance, because both the independent and dependent variables are based upon one source of information, i.e. the participants (Spector & Jex 1991). However, in general, there exists a fairly high consistency between objective and subjective ratings of variables such as the ones used in the present study (Spector 1987). A third limitation is that the specific job demands and job resources included in the present study were all measured with only a limited number of items. The result of such a procedure can be that the separate indicators of working conditions have low internal consistencies. In the present study, these problems were foreseen and circumvented by using the separate measures of job demands and job resources as *indicators* of latent factors in the SEM-analyses. Note that long questionnaires may reduce the response rate, particularly when employees are requested to fill out questionnaires at home (instead of during working time).

Fourth, although our measure of life satisfaction was firmly rooted in theory, its internal consistency was rather limited. Future studies should ideally include more items to measure the concept of overall life satisfaction, since a more reliable measure can be utilized to provide more insight in the crossover of work-related health problems to general well-being. A final limitation pertains to the limited power of the present study. Note that the likelihood that SEM-analyses produce non-significant *P*-values for overall fit of a model to the data increases with smaller samples. Thus, limited power may lead to the wrong conclusion that a model fits to the data (cf. Bentler & Chou 1987). However, we confronted no problems

with model testing and all hypothesized relationships were significant. Moreover, alternative fit indices for the final model, such as the CFI and IFI, had values higher than 0.90, indicating a close fit to the data. These latter indices depend less on sample size and are thought to provide superior information on model fit (Marsh *et al.* 1988).

CONCLUSION AND PRACTICAL IMPLICATIONS

According to our findings, intervention programmes aimed at preventing or reducing burnout among nurses, may focus upon the proposed dual framework of the working environment. However, given that the prevalent working conditions in each working position may differ, we expect that the process (high job demands → exhaustion, lacking job resources → disengagement) will hold for various environments, but that the operationalizations of job demands and job resources may vary. By using job redesign methods, first, a careful analysis of nurses' daily tasks may give more insight into these aspects of their tasks that are particularly demanding or poorly designed. A rescheduling of the working programme, technical support and an ergonomically redesigned workplace may, in turn, lower the workload and reduce time pressure. Second, hospitals and nursing homes may consider a reduction of the case load, or a reallocation of tasks related to patient contacts in nurses' daily programme in order to reduce demanding contacts with patients. In addition, shift-work systems may be optimized in order to meet ergonomic criteria and the personal preferences of the nurses. Such interventions may prevent or reduce feelings of exhaustion among nurses.

Regarding job resources, which act as facilitators in the performance process and as personality promoters (see Richter & Hacker 1998), first of all, according to our results and consistent with job enrichment approaches, it is important to increase nurses' participation in decision making. More specifically, representatives of the nurses could be invited to join regular meetings with supervisors or management. Second, supervisors can play a key role in creating a healthy working environment. Supervisors' roles may range from instrumental support to nurses during task execution, to conflict management and emotional support. Thus, supervisors may be trained in adopting a coaching leadership style, to give adequate feedback about nurses' performance, and to avoid role conflicts. Performance feedback, leading to awareness about the quality of performance, seems to be a very important job resource. Performance feedback and task variety are also postulated in the model of Hackman and Oldham (1976) as factors that promote motivational potential. Furthermore, our findings suggest that it is important to establish congruence between nurses' workload and their rewards. Each of these interventions may

contribute to the prevention and reduction of disengagement among nurses. Moreover, these interventions may be part of a broader development strategy of the health care institution, aimed at the promotion of a healthy and productive working environment for nurses.

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