

JOB CHARACTERISTICS, BURNOUT AND NEGATIVE WORK-HOME INTERFERENCE IN A NURSING ENVIRONMENT

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ABSTRACT

The objectives of this study were 1) to determine which job characteristics are associated with burnout and 2) to determine the mediating role of negative work-home interference (WHI) in the relationship between job characteristics and burnout within a nursing environment. Random samples ($n = 300$) were taken of nurses working in the Johannesburg, Klerksdorp, Krugersdorp, Pretoria and Potchefstroom areas. The results of the regression analyses indicated that the main job characteristics that predict exhaustion were pressure and a lack of autonomy, role clarity, colleague support and financial support. A lack of role clarity, colleague support and financial support were the main job characteristics that predict mental distance. Negative WHI played a partially mediating role in the relationship between job characteristics and burnout.

Key words

Job characteristics, burnout, negative work-home, interference, mediation, nurses

It is widely acknowledged in the literature on stress that the nursing profession is a very stressful and emotionally demanding profession (Coffey & Coleman, 2001; Fagin, Brown, Bartlett, Leary & Carson, 1995; Hodson, 2001; Peter, Macfarlane & O'Brien-Pallas, 2004; Snellgrove, 1998). In South Africa, nurses are faced with additional stressors, including budget constraints, medical inflation, overcrowded hospitals, high patient loads and exposure to HIV/Aids-infected patients (Hall, 2004). A stressful working environment like this makes nurses particularly susceptible to burnout, which has long been a proven reality within the nursing profession (Demir, Ulusoy & Ulusoy, 2003; Glass, McKnight & Valdimarsdottir, 1993; Levert, Lucas & Ortlepp, 2000; McKnight & Glass, 1995; Schaufeli & Janczur, 1994; Tarolli-Jager, 1994).

Although several antecedents for burnout exist (see Schaufeli & Enzmann, 1998 for a review), many researchers argue that one of the major contributors to burnout is the work environment and certain characteristics of the job (Bakker, Demerouti, De Boer & Schaufeli, 2003; Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Schaufeli & Enzmann, 1998). Possible factors within the nursing environment that may contribute to burnout include demanding patient contacts, an increasing workload, time pressure, excessive working hours and shift-work, inadequate salaries, a lack of support from supervisors and colleagues, and a lack of opportunities for learning and advancement (Daraiseh, Genaidy, Karwowski, Davis, Stambough & Huston, 2003; Demir et al., 2003; Hodson, 2001; Lambert, 2004; Lambert et al., 2004; Peter et al., 2004; Spielberger & Sarason, 1996). In order for South African nursing organisations to implement preventive organisation-based strategies to tackle high job demands and increase important resources, it is necessary for these organisations to know which specific job characteristics are associated with burnout of nurses.

Another factor that has become increasingly important to consider in Occupational and Health Psychology is the work/non-work interface (Geurts & Demerouti, 2003), which should also be considered as a possible antecedent of burnout. This concept has grown in importance, for various reasons. Firstly, various demographic and structural changes in the workforce and family structure have affected both work and family roles, and their interrelations (e.g. Bond, Galinsky & Swanberg, 1998; Ferber, O'Farrell & Allen, 1991). This is mainly due to the global workforce that has changed significantly during the last couple of years, especially with the increase of women in the workplace. The global workforce also includes a

greater proportion of dual-earner couples with the responsibility of taking care of children or elderly dependants (Hill & Henderson, 2004). These demographic and structural changes in the workforce and the family have not only affected work and family roles, and their interrelations (e.g. Bond et al., 1998; Ferber et al., 1991; Sulsky & Smith 2005), but they also have a significant impact on individual behaviour in an organisational setting, and ultimately on organisational functioning itself (Allen, Herst, Bruck & Sutton, 2000; Houston, 2005; Lewis & Cooper, 2005; Parasuraman & Greenhaus, 1999).

Although it seems that work-home interference (WHI) is an important concept to study, it has not frequently been explored in the nursing literature. Most researchers study healthy families (LaRossa & Reitzes, 1993) or focus on women's efforts to manage the dual-earner lifestyle (Bernal & Meleis, 1995; Douglas, Meleis, Eribes & Kim, 1996; Hall, 1987; Meleis, Douglas, Eribes, Shih & Messias, 1996; Walker & Best, 1991). As a result, it is important to investigate the impact of the interaction between work and home on several aspects in the organisation - including aspects that could have an influence on the well-being of employees.

A number of studies have indicated that job characteristics have a major impact on both burnout (Demerouti et al., 2001; Janssen, Peeters, De Jonge, Houkes & Tummers, 2004; Peeters, Montgomery, Bakker & Schaufeli, 2005) and negative WHI (Bakker & Geurts, 2004; Janssen et al., 2004; Montgomery, Peeters, Schaufeli & Den Ouden, 2003). It can therefore be derived that negative WHI can be rooted in the spill-over effect of certain stressful job characteristics and consequently that such (negative) spill-over can lead to higher levels of burnout. It therefore seems as if negative WHI could act as a mediating variable in the relationship between job characteristics and burnout.

Based on the above discussion, the objectives of this study were 1) to determine which specific job characteristics within the nursing environment are associated with burnout; and 2) to determine the mediating role of negative WHI in the relationship between job characteristics and burnout within a nursing environment.

Job characteristics

Several theoretical models can be used to improve our insights into job stress and its negative implications. Well-known examples of such models are the "Demand-Control Model" (Karasek, 1979; Karasek & Theorell, 1990), the "Michigan Model"

(Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964) and the Job Demands-Resources (JD-R) model (Bakker et al., 2003; Demerouti et al., 2001). Because the JD-R model is a parsimonious model that is capable of integrating a wide range of potential job demands and resources (see Demerouti et al., 2001), it seems that this model is the most appropriate one to use in this study.

A central assumption of the JD-R model is that every occupation has its own specific job characteristics, but it is still possible to model these characteristics in two broad categories, namely job demands and job resources. Job demands refer to those physical, psychosocial or organisational aspects of the job that require sustained physical and/or mental effort and are associated with certain physiological and or psychological costs. Job resources refer to those physical, psychosocial or organisational aspects of the job that may be functional in meeting task requirements (job demands), and may thus reduce the associated physiological and or psychological costs, and at the same time stimulate personal growth and development. These resources can be located in the tasks themselves (e.g. performance feedback, autonomy, skill variety), as well as in the context (e.g. organisational resources such as career opportunities and job insecurity) and in the social resources (e.g. supervisor support) (Demerouti et al., 2001).

Within the nursing environment, typical job demands include pressure as a result of heavy workloads and excessive administrative duties, time-related demands (e.g. working long hours, shift-work), emotionally demanding aspects (e.g. nurses being repeatedly confronted with people's needs, problems, and especially suffering) and demands that are typical of the nursing environment (e.g. dealing with an increasing number of patients infected with HIV/Aids) (Hall, 2004; Hodson, 2001; Lee, 2002; Peter et al., 2004). According to Van der Colff (2005), South African nurses experience a severe lack of resources, manifesting in inadequate salaries, staff shortages and a lack of organisational and colleague support when their co-workers are poorly motivated and are not doing their jobs.

In addition, the JD-R model proposes that the well-being of a person is the result of two relatively independent processes (Bakker et al., 2003). During the first process in particular, the demanding aspects of work lead to constant overtaxing, and in the long run to health problems (e.g. burnout, fatigue). In the second process, the availability of job resources may help employees cope with the demanding aspects of their work. At the same time, it may stimulate them to learn from and grow in their jobs. Within the nursing environment, sufficient job resources may therefore help nurses cope with their demanding jobs, ultimately leading to better quality of life and well-being.

Burnout

Maslach (1982) first defined burnout in a health-care setting as a work-related outcome that is characterised by three dimensions, namely emotional exhaustion (a reduction in the emotional resources of an individual), depersonalisation (an increase in negative, cynical and insensitive attitudes towards patients or clients) and low levels of personal accomplishment (being unable to meet clients' needs and to satisfy essential elements of job performance). Although burnout had been frequently studied in various occupational groups such as teachers, nurses, physicians and social workers, it became clear that burnout also exists outside the human services (Maslach & Leiter, 1997). Consequently, a new burnout measure was developed, namely the Maslach Burnout Inventory - General Survey (MBI-GS) (Schaufeli, Leiter, Maslach & Jackson, 1996). The MBI-GS assesses parallel dimensions to those contained in the original MBI, except that the items do not explicitly refer to working with people. The MBI-GS comprises three subscales: Exhaustion (referring to fatigue, but without direct reference to

people as the source of those feelings), Cynicism (reflects indifference or a distant attitude towards one's work in general), and Professional Efficacy (encompasses both social and non-social accomplishments at work).

Since the introduction of the MBI-GS, many variations have been introduced for measuring burnout. For example, many studies only use the exhaustion and cynicism subscales when they measure burnout (e.g. Peeters et al., 2005; Montgomery et al., 2003). This is mainly owing to the fact that many empirical findings point to the central role of exhaustion and cynicism as opposed to the third component - lack of professional efficacy (for overviews, see Cordes & Dougherty, 1993; Green, Walkey & Taylor, 1991; Lee & Ashforth, 1996; Leiter 1993; Shirom, 1989).

Recently, it became clear that people working in the human services might not only develop cynical negative thoughts towards their patients, but also towards their work. As a result, the need to include both cynicism and depersonalisation in the burnout definition became apparent. Jackson and Rothmann (2005) and Salanova et al. (2005) investigated the possibility of cynicism and depersonalisation forming one factor instead of two separate factors. Jackson and Rothmann (2005) found that a three-factor model - consisting of exhaustion, mental distance (cynicism and depersonalisation collapsed into one factor) and professional efficacy - fitted the data significantly better than a four-factor model consisting of exhaustion, cynicism, depersonalisation and professional efficacy. The internal consistencies of the cynicism and depersonalisation subscales were also found to be questionable if they were treated as two independent factors. However, Salanova et al. (2005) found that instead of one mental distance construct, cynicism and depersonalisation are separate constructs, each contributing in a distinct way to burnout.

Negative WHI

Greenhaus and Beutell (1985) defined work-family conflict as a form of interrole conflict in which the role pressures from the work and home domains are mutually incompatible in some respect. In a similar vein, Geurts et al. (2005) based their definition on the Effort-Recovery model (Meijman & Mulder, 1998) and define work-home interaction as an interactive process in which a worker's functioning in one domain (e.g. the home) is influenced (negatively or positively) by load reactions that have built up in the other domain (e.g. at work). Negative WHI is therefore defined as a situation in which negative load effects build up at work and hamper functioning at home (Geurts et al., 2005).

Research in the work/non-work field consistently shows that negative influence from work (negative WHI) is more prevalent than negative influence from home (negative HWI) (e.g. Bond et al., 1998; Burke & Greenglass, 1999; Demerouti, Geurts & Kompier, 2004; Frone, Russell & Cooper, 1992; Kinnunen & Mauno, 1998). This is mainly because many employees have difficulty combining work and domestic obligations. Furthermore, a considerable amount of knowledge has been gathered on the presumed consequences of WHI (Frone, 2003; Geurts & Demerouti, 2003). In their recent meta-analysis, Allen et al. (2000) showed that work-home interference was particularly associated with stress-related outcomes, including burnout, work-related stress and depressive complaints.

Several authors have suggested that negative WHI could act as a mediator between job characteristics and various psychological outcomes, such as burnout (Frone et al., 1992; Janssen et al., 2004; Montgomery et al., 2003). According to Baron and Kenny (1986), a variable functions as a mediator to the extent that it accounts for the relation between the predictor and the criterion. In other words, the impact of the independent variable on the dependent variable is manifested through the mediating variable (e.g. it explains how or why

such effects occur). The effect of a mediator could be either a partial or a full mediating effect. Barron and Kenny (1986) suggest that in a full mediational model, the relationship between the independent variable and the dependent variable is completely explained by the mediator. However, if the effect size of the independent variable on the dependent variable is smaller (after the entering of the mediating variable) than the size of the effect of the independent variable on the dependent variable in the first regression, the mediating effect would be partial. Most studies indicated a partial mediating effect of WHI between job characteristics and burnout (Janssen et al., 2004; Montgomery et al., 2003; Peeters et al., 2005), indicating that WHI accounts for additional variation in burnout levels beyond job characteristics.

To illustrate the underlying mechanism of the WHI process, a useful model to use as theoretical framework is the Effort-Recovery (E-R) model (Meijman & Mulder, 1998). The E-R model describes how work and private life may interact and which mechanisms may affect well-being during this process. According to this model, effort expenditure (i.e., task performance at work) is associated with specific load reactions (i.e., physiological, behavioural and subjective responses, e.g. changes in hormone secretion, energy levels and mood) that develop within the individual. Normally these load reactions are reversible as long as sufficient recovery during and after working time is warranted. However, when opportunities for recovery are insufficient, recovery from high job demands might be jeopardized when (i) these demands unremittingly require effort investment without the possibility to recuperate; (ii) the time available for recuperation after work is too short because demands do not cease but continue to exist; and (iii) individuals are slow to unwind.

The E-R model is also relevant when the relationship between job characteristics, negative WHI and burnout is studied. For example, when excessive job demands (e.g. job pressure, work overload, emotional contact with patients) and inadequate resources (e.g. social support, autonomy, performance feedback and possibilities for professional development) exist in the organisation, energy will be consumed and effort expenditure will not remain within acceptable limits. This implies that negative load reactions will develop during work that will spill over to the home domain, affecting it in a negative way. Because the individual does not have the opportunity to mobilise energy at work, the need for recovery at home increases and reduces the possibility that the person will start the next day in an optimal state. Over time, this process will result in increased negative outcomes, such as burnout (cf. Hackman & Oldham 1976).

RESEARCH DESIGN

Research approach

A survey design was used to achieve the research objectives. The specific design is the cross-sectional design, where a sample is drawn from a population at one time (Shaughnessy & Zechmeister, 1997).

Participants and procedure

Nurses working in hospitals in the Johannesburg, Klerksdorp, Nergersdorp, Potchefstroom and Pretoria areas were randomly selected to participate in this study ($n = 300$). After permission had been obtained from the specific hospitals, focus groups were held with registered nurses in the selected hospitals in order to gather information regarding their work environment. After the information from the focus groups had been analysed, the measuring battery was developed and distributed among the selected nurses in the hospitals. A letter was included, explaining the goal and importance of the study. The participants were assured of the anonymity and confidentiality with which the information would be handled. They were given

two to three weeks to complete the questionnaire, after which these were collected from the participating hospitals. The majority of the participants were female (97,70%) and white (83%), and 82,30% had an educational level higher than grade 12. A percentage of 82,30% of the participants were registered nurses, and 36,30% were between the age of 36 and 45 years. The majority of participants (94,70%) worked on a full-time basis, and 41% of the participants received monetary compensation for working overtime.

Measuring instruments

The following measuring instruments were used in the empirical study:

Job characteristics. Focus groups were held in several hospitals to determine the specific job demands and job resources that nurses experience in their work. The main demands and resources mentioned in the focus groups were then used to develop items for the questionnaire. After the responses had been analysed, the demands that were measured included Emotional Demands (e.g. "do you have to communicate with patients about death?"), Time-Related Demands (e.g. "do you have to work overtime?"), Nurse-Specific Demands (e.g. "do you have to deal with difficult patients?") and Pressure (e.g. "do you have to work very fast?"). Resources that were measured included Autonomy (e.g. "can you take a short break if you feel this is necessary?"), Role Clarity (e.g. "do you receive incompatible requests from two or more people?"), Colleague Support (e.g. "do your colleagues help you to get the job done?"), Supervisor Support (e.g. "can you count on your supervisor when you come across difficulties in your work?") and Financial Support (e.g. "can you live comfortably on your pay?"). All items were rated on a 4-point scale ranging from 1 (*never*) to 4 (*always*).

Burnout. An adapted version of the Maslach Burnout Inventory - General Survey (MBI-GS) (Schaufeli et al., 1996) was used to measure burnout. In this study, the "core dimensions" of burnout were used (see Cordes & Dougherty, 1993; Green et al., 1991; Lee & Ashforth, 1996; Leiter, 1993), namely Exhaustion (e.g. "I feel used up at the end of the workday") and Mental Distance (e.g. "I have become less enthusiastic about my work"; "I feel I treat some recipients as if they were impersonal objects"). All items were scored on a seven-point scale, ranging from 0 (*never*) to 6 (*every day*). Cronbach alpha coefficients for the MBI-GS reported by Schaufeli et al. (1996) varied from 0,87 to 0,89 for Exhaustion, and from 0,73 to 0,84 for Cynicism. Jackson and Rothmann (2005) confirmed the following Cronbach alpha coefficients for the adapted MBI-GS: Exhaustion = 0,79; Mental Distance = 0,74; and Professional Efficacy = 0,73.

Negative Work-Home Interaction. Negative WHI was measured using the Negative WHI scale of the 'Survey Work-Home Interaction - Nijmegen' (SWING) (Geurts et al., 2005). Negative WHI refers to a negative impact of the work situation on one's functioning at home (e.g. "Your work schedule makes it difficult to fulfil domestic obligations"). All items were scored on a four-point frequency rating scale, ranging from 0 (*never*) to 3 (*always*). Geurts et al. (2005) found the Negative WHI scale to be reliable ($\alpha = 0,84$), while Pieterse and Mostert (2005) noted a coefficient of reliability of 0,87 in their psychometric analysis of the SWING in the earthmoving equipment industry in South Africa.

Statistical analysis

The statistical analysis was carried out with the SPSS program (SPSS Inc., 2003) and the AMOS program (Arbuckle, 1999). Exploratory factor analyses were carried out to determine the validity of the job characteristics questionnaire. The following procedure was followed: Firstly, a simple principal components analysis was conducted on the items of the questionnaire. The eigenvalues and scree plot were studied to determine the number

of factors. Secondly, a principal components analysis with a direct oblimin rotation was conducted if factors were related ($r > 0,30$). A principal component analysis with a varimax rotation was used if the obtained factors were not related (Tabachnick & Fidell, 2001). Confirmatory factor analysis, using the AMOS program (Arbuckle, 1999), was used to confirm the factor structure of the adapted MBI-GS. The χ^2 and several other goodness-of-fit indices were used, including the Goodness-of-Fit Index (GFI), the Parsimony Goodness-of-Fit Index (PGFI), the Incremental Fit Index (IFI); the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA).

Cronbach alpha coefficients were used to assess the reliability of the constructs that were measured in this study. Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) and inferential statistics were used to analyse the data.

Pearson product-moment correlation coefficients were used to specify the relationships between the variables. In cases where the distribution of scores was skew, Spearman correlation coefficients were computed. The level of statistical significance was set at $p < 0,05$. Steyn (2002) criticises the sole use of statistical significance testing and recommends that effect sizes be established to determine the importance of a statistically significant relationship. While the reporting of effect sizes is encouraged by the American Psychological Association (APA) in their Publication Manual, most of these measures are seldom found in published reports (Kirk, 1996; Steyn, 2002). Therefore, effect sizes (Cohen, 1988; Steyn, 2002) were used in addition to statistical significance to determine the practical significance of relationships. Effect sizes indicate whether obtained results are important, while statistical significance may often show results which are of little practical relevance (Steyn, 2002). A cut-off point of 0,30 (medium effect) (Cohen, 1988) was set for the practical significance of correlation coefficients.

Multiple regression analysis was used to determine mediation. The four steps as suggested by Baron and Kenny (1986) were followed with the most prominent job characteristic (as independent variable A), negative WHI (as hypothesised mediator B) and exhaustion or mental distance (as dependent variable C). According to Baron and Kenny, beta coefficients of different regression equations must be compared. In the first step, the effect of the independent variable (A) on the dependent variable (C) was determined. In the second step, the effect of the independent variable (A) on variable B (the hypothesised mediator) was determined. In step three, it was determined how variable B affected the dependent variable C, whilst controlling for the independent variable (A). Lastly, the dependent variable (C) should be regressed on the independent variable (A), controlling for the mediator (B). If all steps prove significant, perfect mediation holds when, controlling for the mediator, the independent variable does not predict the dependent variable.

RESULTS

Construct validity of the measuring instruments

Before analysing the data, the construct validity of the job characteristics inventory was determined. In order to achieve the first objective, SEM was used to determine the construct validity of the adapted MBI-GS.

Job characteristics. A simple principal component analysis was conducted on the items of the job characteristics inventory. The scree plot and eigenvalues provided evidence for a nine-factor solution, which explained 50,28% of the total variance. Because the factors were related, it was decided to use principal factor analysis with an oblimin rotation to extract the factors. The nine

factors were labelled as follows: Emotional Demands (e.g. "Are you confronted in your work with things that effect you emotionally?"), Pressure (e.g. "Do you have to work very hard?"), Time-Related Demands (e.g. "Do you have to work overtime?"), Nurse-Specific Demands (e.g. "Do you experience insults from your patients or their families?"), Autonomy (e.g. "Can you take a short break if you feel it is necessary?"), Role Clarity (e.g. "Do you receive assignments without adequate resources and materials to execute them?"), Colleague Support (e.g. "Do your colleagues help you to get the job done?"), Supervisory Support (e.g. "Does your supervisor help you to get the job done?") and Financial Support (e.g. "Do you feel that your organisation pays good salaries?").

Subsequently, these factors were subjected to a second-order principal component factor analysis. Two factors, which explained 45,31% of the variance, were extracted. Because the factors were related ($r = -0,25$), it was decided to use principal factor analysis with an oblimin rotation to extract the two factors. The first factor was labelled "Job Demands" and consisted of Emotional Demands (loading = 0,78), Pressure (loading = 0,73), Time-Related Demands (loading = 0,56) and Nurse-Specific Demands (loading = 0,72). The second factor was labelled "Job Resources" and consisted of Autonomy (loading = 0,41), Role Clarity (-0,50), Colleague Support (loading = -0,74), Supervisor Support (loading = -0,79) and Financial Support (loading = -0,39).

Burnout. Structural equation modelling (SEM) methods, as implemented by AMOS (Arbuckle, 1999), were used to test two factorial models for the adapted MBI-GS. The first model consisted of three factors, namely Exhaustion, Cynicism and Depersonalisation. With the second model, it was assumed that Cynicism and Depersonalisation collapsed into one factor, namely Mental Distance. Before performing SEM, the frequency distribution of the items of the MBI-GS was checked in order to assess deviations from normality, and multivariate outliers were removed. It was assumed that the χ^2 goodness-of-fit statistics were not likely to be inflated if the skewness and kurtosis for individual items did not exceed the critical values of 2,00 and 7,00 respectively (West, Finch & Curran, 1995).

Data analyses proceeded as follows: First, a quick overview of model fit was done by looking at the overall χ^2 value together with its degrees of freedom and probability value. Global assessments of model fit were based on several goodness-of-fit statistics. Secondly, given findings of an ill-fitting initially hypothesised model, analyses proceeded in an exploratory mode. Possible misspecifications as suggested by the so-called modification indices were looked for, and eventually a revised, re-specified model was fitted to the data. The goodness-of-fit statistics of the two models are presented in Table 1.

TABLE 1
GOODNESS-OF-FIT STATISTICS OF THE MBI MODELS

Model	χ^2	χ^2/df	GFI	PGFI	IFI	TLI	CFI	RMSEA
3-factor model	211,17	2,85	0,91	0,64	0,92	0,89	0,91	0,08
2-factor model	212,86	2,80	0,91	0,66	0,92	0,90	0,91	0,08

As can be seen in Table 1, there are no statistically significant difference between the three-factor and two-factor model ($\Delta \chi^2 = 1,69_{(N = 300)}$, $\Delta df = 1,00$, $p < 0,001$). However, the internal consistency of the depersonalisation subscale was found to be questionable if treated as an independent factor ($\alpha = 0,64$). Since all the goodness-of-fit statistics met the criteria ($\chi^2/df < 5,00$; GFI, IFI, TLI and CFI $> 0,90$; and RMSEA = 0,08), it was decided to use the two-factor model (the Exhaustion and Mental Distance factors) in further analyses.

Descriptive statistics

The descriptive statistics and Cronbach alpha coefficients of the measuring instruments are shown in Table 2.

TABLE 2
DESCRIPTIVE STATISTICS AND CRONBACH ALPHA COEFFICIENTS OF
JOB CHARACTERISTICS, NEGATIVE WHI AND BURNOUT (N = 300)

Item	Mean	SD	Skewness	Kurtosis	α
Emotional Demands	21,67	4,89	0,22	-0,23	0,85
Pressure	20,01	3,77	-0,05	-0,24	0,82
Time-Related Demands	11,63	3,44	0,33	-0,27	0,76
Nurse-Specific Demands	12,82	2,90	0,70	1,12*	0,71
Autonomy	21,02	4,69	0,15	-0,50	0,82
Role Clarity	15,02	3,96	0,53	-0,11	0,81
Colleague Support	8,10	2,42	0,26	0,14	0,79
Supervisory Support	8,11	3,38	1,04*	1,18*	0,88
Financial Support	15,07	3,77	-0,57	-0,18	0,88
Negative WHI	11,79	5,05	0,34	-0,31	0,87
Exhaustion	15,46	7,00	0,02	-0,73	0,86
Mental Distance	14,45	9,66	0,60	0,04	0,82

* High skewness and kurtosis

As indicated in Table 2, all the scores of the measuring instruments were normally distributed, except for the scores of Nurse-Specific Demands and Supervisory Support. The alpha coefficients of all the measuring instruments were considered acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994).

Product-moment correlations

The results of the product-moment correlation coefficients between the constructs are reported in Table 3.

Table 3 indicates that Exhaustion is positively, statistically and practically significantly related (with a medium effect) to Pressure and Nurse-Specific Demands, negatively, statistically and practically significantly related (with a medium effect) to Role Clarity, Colleague Support and Supervisory Support, and

positively, statistically and practically significantly related (with a large effect) to Negative WHI. Mental Distance is positively, statistically and practically significantly related (with a medium effect) to Nurse-Specific Demands and Negative WHI, and negatively, statistically and practically significantly related (with a medium effect) to Role Clarity and Colleague Support. Furthermore, Negative WHI is positively, statistically and practically significantly related (with a medium effect) to Pressure, Time-Related Demands and Nurse-Specific Demands and negatively, statistically and practically significantly related (with a medium effect) to Role Clarity and Colleague Support.

Multiple regression analysis

To determine which job characteristics predict Exhaustion and Mental Distance, two standard multiple regression analyses, using the enter method, were performed. The first assessed the contribution that job characteristics (job demands and job resources) made to Exhaustion and the second assessed the contribution that job characteristics made to Mental Distance. The results are reported in Tables 4 and 5.

In Table 4, the entry of job demands and job resources in the second step of the regression analysis produced a statistically significant model ($F = 18,12_{(9,290)}$; $p < 0,05$), accounting for approximately 36% of the variance in Exhaustion. It seems that Pressure ($\alpha = 0,23$; $t = 4,20$; $p < 0,05$), Autonomy ($\alpha = -0,14$; $t = -2,94$; $p < 0,05$), Role Clarity ($\alpha = -0,14$; $t = -2,61$; $p < 0,05$), Colleague Support ($\alpha = -0,16$; $t = -2,78$; $p < 0,05$) and Financial Support ($\alpha = -0,22$; $t = -4,17$; $p < 0,05$) predict Exhaustion.

Next, Mental Distance was regressed upon the job characteristics. The results are reported in Table 5.

As can be seen in Table 5, the entry of job resources and job demands in the second step of the regression analysis also produced a statistically significant model ($F = 12,95_{(9,290)}$; $p < 0,05$), accounting for approximately 29% of the variance in Mental Distance. It seems that Role Clarity ($\alpha = -0,30$; $t = -5,41$; $p < 0,05$), Colleague Support ($\alpha = -0,12$; $t = -2,03$; $p < 0,05$) and Financial Support ($\alpha = -0,13$; $t = -2,27$; $p < 0,05$) predict Mental Distance.

Mediation Analysis

Next, a series of multiple regression analyses were performed to test whether negative WHI mediated the relationship between job characteristics and burnout. Since the criteria of Baron and Kenny (1986) suggest that all the variables entered in the

TABLE 3
CORRELATION COEFFICIENTS BETWEEN JOB CHARACTERISTICS, NEGATIVE WHI AND BURNOUT (N = 300)

Item	1	2	3	4	5	6	7	8	9	10	11
1. Emotional Demands	-	-	-	-	-	-	-	-	-	-	-
2. Pressure	0,34+*	-	-	-	-	-	-	-	-	-	-
3. Time-Related Demands	0,25+	0,32+*	-	-	-	-	-	-	-	-	-
4. Nurse-Specific Demands	0,39+*	0,37+*	0,30+*	-	-	-	-	-	-	-	-
5. Autonomy	0,04	-0,03	-0,09	-0,12+	-	-	-	-	-	-	-
6. Role Clarity	-0,17+	-0,25+	-0,21+	-0,28+	0,21+	-	-	-	-	-	-
7. Colleague Support		-0,12+	-0,15+	-0,18+	-0,28+	0,11	0,32+*	-	-	-	--
8. Supervisory Support	-0,04	-0,11	-0,15+	-0,10	0,09	0,24+	0,54+**	-	-	-	-
9. Financial Support	-0,10	-0,29+	-0,25+	-0,30+*	0,14+	0,11	0,27+	0,19+	-	-	-
10. Negative WHI		0,24+	0,43+*	0,42+*	0,34+*	-0,09	-0,40+*	-0,32+*	-0,23+	-0,29+	--
11. Exhaustion	0,20+	0,40+*	0,29+	0,35+*	-0,24+	-0,34+*	-0,34+*	-0,24+	-0,40+*	0,53+**	-
12. Mental Distance	0,24+	0,26+	0,26+	0,30+*	-0,18+	-0,43+*	-0,31+*	-0,20+	-0,26+	0,44+*	0,59+**

+ Statistically significant ($p < 0,05$)

* Correlation is practically significant $r > 0,30$ (medium effect)

** Correlation is practically significant $r > 0,50$ (large effect)

TABLE 4
MULTIPLE REGRESSION ANALYSIS WITH EXHAUSTION AS DEPENDENT VARIABLE

Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-4,25	2,30		-1,84	0,00	21,49	0,48	0,23	0,23
	Emotional Demands	0,05	0,08	0,03	0,53	0,60				
	Pressure	0,54	0,11	0,29	5,03	0,00*				
	Time-Related Demands	0,28	0,11	0,14	2,46	0,02*				
	Nurse Demands	0,52	0,15	0,22	3,59	0,00*				
2	(Constant)	-6,07	2,98		-2,04	0,00	18,12	0,60	0,36	0,13
	Emotional Demands	0,02	0,08	0,01	0,24	0,81				
	Pressure	0,43	0,10	0,23	4,20	0,00*				
	Time Demands	0,13	0,11	0,06	1,22	0,22				
	Nurse Demands	0,17	0,14	0,07	1,19	0,23				
	Autonomy	-0,21	0,07	-0,14	-2,94	0,00*				
	Role Clarity	-0,25	0,09	-0,14	-2,61	0,01*				
	Colleague Support	-0,45	0,16	-0,16	-2,78	0,01*				
	Supervisory Support	-0,00	0,11	-0,00	-0,03	0,97				
	Financial Support	-0,41	0,10	-0,22	-4,17	0,00*				

* $p < 0,05$

TABLE 5
MULTIPLE REGRESSION ANALYSIS WITH MENTAL DISTANCE AS DEPENDENT VARIABLE

Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-6,88	3,93		-1,75	0,00	19,70	0,50	0,25	0,25
	Autonomy	-0,13	0,11	-0,06	-1,19	0,23				
	Role Clarity	-0,87	0,13	-0,36	-6,54	0,00*				
	Colleague Support	-0,60	0,24	-0,15	-2,53	0,01*				
	Supervisory Support	-0,10	0,16	-0,04	-0,63	0,53				
	Financial Support	-0,46	0,14	-0,18	-3,37	0,00*				
2	(Constant)	-13,88	4,34		-3,20	0,00	12,95	0,54	0,29	0,04
	Autonomy	-0,15	0,11	-0,07	-1,42	0,16				
	Role Clarity	-0,74	0,14	-0,30	-5,41	0,00*				
	Colleague Support	-0,48	0,24	-0,12	-2,03	0,04*				
	Supervisory Support	-0,05	0,16	-0,02	-0,32	0,75				
	Financial Support	-0,32	0,14	-0,13	-2,27	0,02*				
	Emotional Demands	0,21	0,11	0,11	1,89	0,06				
	Pressure	0,12	0,15	0,05	0,84	0,40				
	Time-Related Demands	0,22	0,15	0,08	1,46	0,15				
	Nurse Demands	0,18	-0,20	0,05	0,88	0,38				

* $p < 0,05$

mediation analysis should be related to one another, only the job characteristics that predicted both exhaustion/mental distance and negative WHI were included in the analysis. Regarding the relationship between job characteristics and negative WHI, Mostert & Oosthuizen, 2006 found in the same sample of nurses that both job demands and resources produced a statistically significant model ($F(9,290) = 19,34; p < 0,05$), accounting for approximately 38% of the variance in Negative WHI. More specifically, they found that Pressure ($\alpha = 0,23; t = 4,29; p < 0,05$), Time-Related Demands ($\alpha = 0,23; t = 4,55; p < 0,05$), Role Clarity ($\alpha = -0,22; t = -4,23; p < 0,05$) and Colleague Support ($\alpha = -0,11; t = -2,00; p < 0,05$) predict Negative WHI. Based on their results and the results of the regression analyses in Table 4 and Table 5, it seems that the job characteristics which predicted both exhaustion/mental

distance and negative WHI were Pressure, Role Clarity and Colleague Support. It was therefore decided to include only these job characteristics in the mediation analysis.

The above-mentioned findings support the first criterion (e.g. the effect of the independent variable (A: job characteristics) on the dependent variable (C: exhaustion/mental distance)) and second criterion (the effect of the independent variable (A: job characteristics) on variable B (the hypothesised mediator: Negative WHI)) as outlined by Baron and Kenny (1986). In order to provide evidence for the third step, it was determined how the mediator B (e.g. negative WHI) affected the dependent variable C (e.g. exhaustion/mental distance). The results showed a statistically significant model for the relationship between negative WHI and exhaustion ($F = 189,50_{(1,505)}; \alpha = 0,52;$

TABLE 6
MULTIPLE REGRESSION ANALYSIS WITH JOB CHARACTERISTICS (AS DEPENDENT VARIABLE A), NEGATIVE WHI (AS DEPENDENT VARIABLE B) AND EXHAUSTION OR MENTAL DISTANCE (AS DEPENDENT VARIABLE C)

Multiple Regression Analysis with Exhaustion as Dependent Variable										
Independent variables: Pressure and Negative WHI										
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	0,46	2,00		0,23	0,00	58,07	0,40	0,16	0,16
	Pressure	0,75	0,10	0,40	7,62	0,00*				
2	(Constant)	0,30	1,81		0,17	0,00	70,58	0,57	0,32	0,16
	Pressure	0,40	0,10	0,21	4,04	0,00*				
	Negative WHI	0,61	0,07	0,44	8,35	0,00*				
Independent variables: Role Clarity and Negative WHI										
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-6,56	1,50		-4,38	0,00	37,76	0,34	0,11	0,11
	Role Clarity	-0,59	0,10	-0,34	-6,15	0,00*				
2	(Constant)	-3,81	1,36		-2,80	0,00	64,51	0,55	0,30	0,19
	Role Clarity	-0,26	0,09	-0,15	-2,76	0,00*				
	Negative WHI	0,66	0,07	0,48	9,00	0,00*				
Independent variables: Colleague Support and Negative WHI										
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-7,40	1,33		-5,56	0,00	40,02	0,34	0,12	0,12
	Colleague Support	-1,00	0,16	-0,34	-6,33	0,00*				
	(Constant)	-3,16	1,26		-2,52	0,01	69,67	0,57	0,32	0,20
	Colleague Support	-0,57	0,15	-0,20	-3,88	0,00*				
	Negative WHI	0,66	0,07	0,47	9,36	0,00*				
Multiple Regression Analysis with Mental Distance as Dependent Variable										
Independent variables: Role Clarity and Negative WHI										
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-1,29	1,98		-0,65	0,00	67,56	0,43	0,19	0,19
	Role Clarity	-1,05	0,13	-0,43	-8,22	0,00*				
2	(Constant)	-3,82	1,93		-1,98	0,00	54,86	0,52	0,27	0,09
	Role Clarity	-0,74	0,13	-0,30	-5,61	0,00*				
	Negative WHI	0,61	0,10	0,32	5,88	0,00*				
Independent variables: Colleague Support and Negative WHI										
Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-4,60	1,86		-2,47	0,00	30,48	0,31	0,09	0,09
	Colleague Support	-1,22	0,22	-0,31	-5,52	0,00*				
2	(Constant)	-0,10	1,85		-0,06	0,00	42,65	0,47	0,22	0,13
	Colleague Support	-0,74	0,22	-0,19	-3,43	0,00*				
	Negative WHI	0,73	0,10	0,38	7,06	0,00*				

* $p < 0,05$

$t = 13,77; p < 0,00$), as well as the relationship between negative WHI and mental distance ($F = 97,54_{(1,505)}; \alpha = 0,40; t = 9,88; p < 0,00$).

Finally, in order to test adherence to the fourth criterion and to test the possible mediating role of negative WHI in the relationship between job characteristics and the two burnout dimensions, exhaustion and mental distance were regressed on the job characteristics, controlling for negative WHI. The results of the mediation analysis are reported in Table 6.

Table 6 indicates that each time upon the inclusion of Negative WHI, the regression coefficient remained statistically significant. However, given the reduction in the standardised regression coefficient (beta) of each job characteristic upon inclusion of negative WHI, it appears that proof exists for a partially mediating effect of WHI in the relationship between job characteristics (e.g. pressure, role clarity and colleague support) and burnout (exhaustion and mental distance). Taken together, Negative WHI seems to mediate partially between 1) Pressure and Exhaustion (where Pressure predicted 16% of Exhaustion, which increased to 32% when combined with negative WHI); 2) Role Clarity and Exhaustion (where Role Clarity predicted 11% of Exhaustion, which increased to 30% when combined with negative WHI); and 3) Colleague Support and Exhaustion (where Colleague Support predicted 12% of Exhaustion, which increased to 32% when combined with negative WHI). Negative WHI also seems to mediate partially between 1) Role Clarity and Mental Distance (where Role Clarity predicted 19% of Mental Distance, which increased to 27% when combined with negative WHI); and 2) Colleague Support and Mental Distance (where Colleague Support predicted 9% of Mental Distance, which increased to 22% when combined with negative WHI).

DISCUSSION

The objectives of this study were 1) to determine which specific job characteristics within the nursing environment are associated with burnout; and 2) to determine the mediating role of negative WHI in the relationship between job characteristics and burnout within a nursing environment.

Before the main data analysis, the factor structure of the adapted MBI-GS was tested. Taking previous research findings regarding the role of professional efficacy into account (e.g. Cordes & Dougherty, 1993; Green et al., 1991; Lee & Ashforth, 1996; Leiter, 1993; Shirom, 1989), only exhaustion, cynicism and depersonalisation were included as burnout dimensions. Two competing models were tested with structural equation modelling. The first model assumed that burnout consists of three dimensions, namely exhaustion, cynicism and depersonalisation (implying that cynicism and depersonalisation each contributes to burnout in a distinct way). The second model assumed that cynicism and depersonalisation collapse into one factor, forming a two-factor model of burnout, consisting of exhaustion and mental distance. Structural equation modelling showed that there was no statistically significant difference between the two- and three-factor models. However, the Cronbach alpha coefficient of the depersonalisation subscale was found to be questionable if treated as an independent factor. It therefore seems that these results (although not very strong) support the findings of Jackson and Rothmann (2005) in that cynicism and depersonalisation could form one "mental distance" factor.

With regard to job characteristics, it was argued in line with the Job Demands-Resources (JD-R) model that employees are exposed not only to job demands, but also to job resources. The results of the multiple regression analysis showed that both demands and resources predict burnout in this sample of nurses. More specifically, exhaustion was predicted by pressure

and a lack of autonomy, role clarity, colleague support and financial support. A lack of role clarity, colleague support and financial support were the main job characteristics associated with mental distance.

These results suggest that high job demands and specifically high pressure (e.g. working very fast, working very hard, intense concentration for long periods of time, the amount of work exceeding the capacity of employees) contribute to higher exhaustion levels of nurses. Interestingly, emotional demands and time-related demands were statistically significantly related to exhaustion, and nurse-specific demands were practically significantly (medium effect) related to exhaustion. Time-related demands (working overtime, emergency hours, irregular hours or socially undesirable hours) and nurse-specific demands (experiencing insults from patients, families and doctors, dealing with difficult patients, experiencing language and communication barriers with patients) also predicted exhaustion independently (when job resources were not included in the regression analysis). Therefore, these two demands are also associated with exhaustion in the absence of job resources, such as autonomy, role clarity and support.

A lack of resources (e.g. having no input in the planning of work activities, unclear expectations about role and duties, insufficient support from colleagues, inadequate salary and no possibilities for financial advancement) seem to contribute to both exhaustion and mental distance, meaning that nurses become emotionally drained and less enthusiastic about their work and patients. These findings support previous research about the relationship between job characteristics and burnout (e.g. Demerouti et al., 2001; Janssen et al., 2004; Peeters et al., 2005).

Regarding the mediating role of negative WHI in the relationship between job characteristics and burnout, the results provided evidence for a partially mediating effect. This implies that job demands and job resources have a direct relationship with burnout in addition to the indirect effect through negative WHI. In the framework of the JD-R (Demerouti et al., 2001) and E-R models (Meijman & Mulder, 1998), it can be argued that job demands and job resources, as well as sufficient quantitative and qualitative recovery, have certain implications for work-home interference and are crucial for the well-being of employees. Furthermore, the results imply that continued job demands and too few job resources may cause negative interference between work and home. The negative interference between these two domains (e.g. work and home) could again result in employees worrying about their work when they are at home, making it difficult for them to fulfil their domestic obligations and to recover sufficiently after a hard day's work.

When these negative experiences reinforce each other, they could eventually adversely affect employees' well-being – and could lead to burnout. Therefore, high job demands may lead to interference between work and home, and reduce the opportunity for recovery. Employees then have to make compensatory effort, so that this process become accumulative, which could lead to a draining of the individuals' energy and a state of breakdown or chronic fatigue (Sluiter, 1999; Ursin, 1980). However, when the person has sufficient job resources to meet job demands, these may facilitate opportunities for recovery at work and consequently reduce the need for recovery at home. This, in turn, could buffer the negative effect of job demands on burnout. These findings also support previous findings regarding the partially mediating role of WHI between job characteristics and burnout (e.g. Janssen et al., 2004; Montgomery et al., 2003; Peeters et al., 2005).

In conclusion, the findings suggest that negative WHI is an important construct to consider in burnout research and that it plays a partial role in the relationship between job characteristics and burnout. Therefore, the direct relationship

that is often found between job characteristics and burnout may be better understood as an indirect relationship in which WHI is an important intervening pathway. Job demands and job resources may therefore not only directly cause exhaustion and mental distance, but may also exert their negative effects on burnout through a process of spillover of load-effects accompanied by insufficient quantitative and qualitative recovery during the non-working hours.

LIMITATIONS AND RECOMMENDATIONS

Although the research showed promising results, it was not without its limitations. The first and obvious limitation of this study was the use of a cross-sectional design, which means that no firm conclusions can be drawn with regard to causation. The second limitation was the exclusive use of self-report measures, which could increase the problem of common method variance. As the study focused on registered nurses, this limits the ability to generalise the findings to other occupational settings. Finally, it is worth noting that only negative WHI was included in this study. However, various scholars have agreed that the almost exclusive focus on the negative impact of work and home is a serious limitation in the work-home interaction literature (Barnett, 1998; Frone, 2003; Geurts & Demerouti, 2003; Grzywacz & Mark, 2000). Several researchers have argued that it can also be beneficial for workers to combine work and family lives, and that these benefits can outweigh the disadvantages (e.g., Hochschild, 1997; Kirchmeyer, 1993). Future research should therefore also investigate the effect of positive spill-over between the work and home domains.

Despite the limitations of this study, the present findings may have important implications for future research and practice. It seems that registered nurses may not only suffer from high work pressure, time-related demands and aspects specific to their environment that may influence their home lives, but they may also benefit from a work environment that offers adequate resources to deal with these demands, such as autonomy, clarity about their roles and support from colleagues and supervisors, as well as support from a financial point of view. This implies that strategies employed to reduce negative interference from work to home should not only focus on excessive pressure at work, but should also implement strategies that increase job resources that actually influence WHI.

The organisation should also provide work-family policies that will enable employees to better align both life spheres. However, the focus should not only be on formal policies (e.g. by offering flexible working hours, compressed work schedules, childcare facilities, parental leave), but also on the informal work environment (Geurts & Demerouti, 2003). According to Cohen (1997), employees who struggle with balancing their work and family responsibilities might benefit not only from formal family-friendly policies, but also particularly from an informal family-friendly organisational climate. Therefore, in addition to having a "family-friendly policy" (e.g. the formal arrangements that are provided by the company), companies should also create a company culture in which employees who experience WHI do feel entitled to use the facilities that are available. Therefore, the attitude of supervisors and colleagues towards the use of these formal arrangements should also be "family-friendly".

An important recommendation for future research is the use of longitudinal designs. With longitudinal designs, the hypothesised causalities of the relationships in this study can be further validated and can indicate whether these relationships hold true over time. Since the possibility of positive interference between work and home was not accounted for in this study, future research should include this aspect when the effect of job characteristics on burnout is investigated. It is also

recommended that various occupations and their specific job characteristics and family situations be investigated. Since working conditions are unique within the different occupations and are related to the work/non-work interface and well-being, the investigation of heterogeneous populations is important.

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REFERENCES

- Allen, T.D., Herst, D.E., Bruck, C.S. & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*, 278-308.
- Arbuckle, J.L. (1999). AMOS 5.0. Chicago, IL: Smallwaters.
- Bakker, A.B., Demerouti, E., De Boer, E. & Schaufeli, W.B. (2003). Job demands and job resources as predictors of absence duration and frequency. *Journal of Vocational Behavior, 62*, 341-356.
- Bakker, A.B. & Geurts, S.A.E. (2004). Toward a dual-process model of work-home interference. *Work and Occupations, 31*, 345-366.
- Barnett, R.C. (1998). Toward a review and reconceptualization of the work/family literature. *Genetic, Social and General Psychology Monographs, 124*, 125-182.
- Baron, R.M. & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.
- Bernal, P. & Meleis, A.I. (1995). Being a mother and a poor domestic worker: Companionship and deprivation. *Western Journal of Nursing Research, 17* (4), 365-382.
- Bond, J.T., Galinsky, E. & Swanberg, J.E. (1998). *The 1997 national study of the changing workforce*. New York: Families and Work Institute.
- Burke, R.J. & Greenglass, E.R. (1999). Work-family conflict, spouse support, and nursing staff well-being during organizational restructuring. *Journal of Occupational Health Psychology* (Special issue: Relationship between work and family life), 327-336.
- Coffey, M. & Coleman, M. (2001). The relationship between support and stress in forensic community mental health nursing. *Journal of Advanced Nursing, 34*, 397-407.
- Cohen, A. (1997). Personal and organizational responses to work-nonwork interface as related to organizational commitment. *Journal of Applied Psychology, 27*, 1085-1114.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (Rev. ed.). Orlando, FL: Academic Press.
- Cordes, C.L. & Dougherty, T.W. (1993). A review and an integration of research on job burnout. *Academy of Management Review, 18*, 621-656.
- Daraiseh, N., Genaidy, A.M., Karwowski, W., Davis, L.S., Stambough, J. & Huston, R.L. (2003). Musculoskeletal outcomes in multiple body regions and work effects among nurses: The effects of stressful and stimulating working conditions. *Ergonomics, 46* (12), 1178-1199.
- Demerouti, E., Bakker, A.B., Nachreiner, F. & Schaufeli, W.B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*, 499-512.
- Demerouti, E., Geurts, S.A.E. & Kompier, M.A.J. (2004). Positive and negative work-home interaction: Prevalence and correlates. *Equal Opportunities International, 23* (1), 6-35.
- Demir, A., Ulusoy, M. & Ulusoy, M.F. (2003). Investigation of factors influencing burnout levels in the professional and private lives of nurses. *International Journal of Nursing Studies, 40*, 807-827.

- Douglas, M.K., Meleis, A.I., Eribes, C. & Kim, S. (1996). The work of auxiliary nurses in Mexico: Stressors, satisfiers and coping strategies. *International Journal of Nursing Studies*, 33 (5), 495-505.
- Fagin, L., Brown, D., Bartlett, H., Leary, J. & Carson, J. (1995). The Claybury community psychiatric nurse stress study: Is it more stressful to work in hospital or the community? *Journal of Advanced Nursing*, 22, 347-358.
- Ferber, M.A., O'Farrell, B. & Allen, L.R. (Eds.). (1991). *Work and family: Policies for a changing work force*. Washington, DC: National Academy Press.
- Frone, M.R. (2003). Work-family balance. In J.C. Quick & L.E. Tetrick (Eds.), *The handbook of occupational health psychology* (pp. 143-162). Washington, DC: American Psychological Association.
- Frone, M.R., Russel, M. & Cooper, M.L. (1992). Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology*, 77, 65-78.
- Geurts, S.A.E. & Demerouti, E. (2003). Work/non-work interface: A review of theories and findings. In M.J. Schabracq, J.A.M. Winnubst & C.L. Cooper (Eds.), *The handbook of work and health psychology* (pp. 279-312). Chichester: Wiley.
- Geurts, S.A.E., Taris, T.W., Kompier, M.A.J., Dikkers, J.S.E., Van Hooff, M.L.M. and Kinnunen, U.M. (2005). Work-home interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. *Work & Stress*, 19 (4), 319-339.
- Glass, D.C., McKnight, J.D. & Valdimarsdottir, H. (1993). Depression, burnout, and perceptions of control in hospital nurses. *Journal of Consulting and Clinical Psychology*, 61, 147-155.
- Green, D.E., Walkey, F.H. & Taylor, A.J.W. (1991). The three-factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality*, 6, 453-472.
- Greenhaus, J.H. & Beutell, N.J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10, 76-88.
- Grzywacz, J.G., & Marks, N.F. (2000). Reconceptualizing the work-family interface: An ecological perspective on the correlates of positive and negative spillover between work and family. *Journal of Occupational Health Psychology*, 5, 111-126.
- Hackman, J.R. & Oldham, G.R. (1976) Motivation through the design of work: Test of a theory. *Organizational Behaviour and Human Performance*, 16, 250-279.
- Hall, E.J. (2004). Nursing attrition and the work environment in South African health facilities. *Curationis*, 27 (4), 29-36.
- Hall, W.A. (1987). The experience of women returning to work after the birth of their first child. *Midwifery*, 3, 187-195.
- Hill, E.J. & Henderson, P. (2004). Working families around the world: Implications for child care, elder care, and corporate programs. Symposium presented at the annual meeting of the Alliance for Work/Life Progress, Phoenix, AZ.
- Hochschild, A. (1997). *The time bind*. New York: Metropolitan.
- Hodson, C. (2001). *Psychology and work*. New York: Routledge.
- Houston, D.M. (2005). *Work-life balance in the 21st century*. Hampshire, UK: Palgrave Macmillan.
- Jackson, L.T.B. & Rothmann, S. (2005). An adapted model of burnout for educators in South Africa. *South African Journal of Education*, 25, 100-108.
- Janssen, P.M., Peeters, M.C.A., De Jonge, J., Houkes, I. & Tummers, G.E.R. (2004). Specific relationships between job demands, job resources and psychological outcomes and the mediating role of negative work-home interference. *Journal of Vocational Behavior*, 65, 411- 429.
- Kahn, R.L., Wolfe, D.M., Quinn, R.P., Snoek, J.D. & Rosenthal, R.A. (1964). *Organisational stress: Studies in role conflict and ambiguity*. New York: Wiley.
- Karasek, R.A. (1979). Job demands, job decision latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285-308.
- Karasek, R.A. & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life*. New York: Wiley.
- Kinnunen, U. & Mauno, S. (1998). Antecedents and outcomes of work-family conflict among employed women and men in Finland. *Human Relations*, 51, 157-177.
- Kirk, R.E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement*, 56, 746-759.
- Kirchmeyer, C. (1993). Nonwork-to-work spillover: A more balanced view of the experiences and coping of professional women and men. *Sex Roles*, 28, 531-552.
- Lamberg, L. (2004). Impact of long working hours explored. *American Medical Association*, 25 (1), 292.
- Lambert, V.A., Lambert, C.E., Itano, J., Inouye, J., Kim, S., Kuniviktikul, W., Gasemgitvattana, Y. & Ito, M. (2004). Cross-cultural comparison of workplace stressors, ways of coping and demographic characteristics as predictors of physical health and mental health among hospital nurses in Japan, Thailand, South Korea and the USA. *International Journal of Nursing Studies*, 41, 671-684.
- LaRossa, R. & Reitzes, D.C. (1993). Symbolic interactionism and family studies. In P. Boss, W. Doherty, R. LaRossa, W. Schumm & S. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 135-163). New York: Plenum Press.
- Lee, J.K.L. (2002). Job stress, coping and health perceptions of Hong Kong primary care nurses. *International Journal of Nursing Practice*, 9, 86-91.
- Lee, R.T. & Ashforth, B.T. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Leiter, M.P. (1993). Burnout as a developmental process: Consideration of models. In W.B. Schaufeli, C. Maslach & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 237-250). Washington, DC: Taylor & Francis.
- Levert, T., Lucas, M. & Ortlepp, K. (2000). Burnout in psychiatric nurses: Contributions of the work environment and a sense of coherence. *South African Journal of Psychology*, 30 (2), 36-43.
- Lewis, S. & Cooper, C.L. (2005). *Work-life integration: Case studies of organisational change*. Chichester, UK: John Wiley & Sons Ltd.
- Maslach, C. (1982). *Understanding burnout: Definitional issues in analyzing a complex phenomenon*. Beverly Hills, CA: Sage.
- Maslach, C. & Leiter, M.P. (1997). *The truth about burnout: How organisations cause personal stress and what to do about it*. San Francisco, CA: Jossey-Bass.
- McKnight, J.D. & Glass, D.C. (1995). Perceptions of control, burnout, and depressive symptomatology: A replication and extension. *Journal of Consulting and Clinical Psychology*, 63, 490-494.
- Meijman, T.F. & Mulder, G. (1998). Psychological aspects of workload. In P.J. Drenth, H. Thierry & C.J. de Wolff (Eds.), *Handbook of work and organizational psychology* (pp. 33-55). Hove: Psychology Press.
- Meleis, A.I., Douglas, M.K., Eribes, C., Shih, F. & Messias, D.K. (1996). Employed Mexican women as mothers and partners: Valued, empowered and overloaded. *Journal of Advanced Nursing*, 23 (1), 82-90.
- Montgomery, A.J., Peeters, M.C.W., Schaufeli, W.B. & Den Ouden, M. (2003). Work-home interference among newspaper managers: Its relationship with burnout and engagement. *Anxiety, Stress and Coping*, 16 (2), 195-211.
- Mostert, K. & Oosthuizen, B. (2006) Job characteristics and coping strategies associated with negative and positive work-home interference of nurses. *South African Journal of Economic and Management Sciences*, 9 (4), 429-443.
- Nunnally, J.C. & Bernstein, I.H. (1994). *Psychometric theory* (3rd ed.). New York: McGraw-Hill.
- Parasuraman, S. & Greenhaus, J.H. (1999). *Integrating work and family: Challenges for a changing world*. Westport, CT: Praeger.

- Peeters, M.C.W., Montgomery, A.J., Bakker, A.B. & Schaufeli, W.B. (2005). Balancing work and home: How job and home demands are related to burnout. *International Journal of Stress Management*, 12 (1), 43–61.
- Peter, E.H., Macfarlane, A.M. & O'Brien-Pallas, L.L. (2004). The moral habitability of the nursing work environment. *Journal of Advanced Nursing*, 47 (4), 356–367.
- Pieterse, M. & Mostert, K. (2005). Measuring the work-home interface: Validation of the Survey Work-Home Interaction – Nijmegen (SWING) Instrument. *Management Dynamics*, 14 (2), 2–15.
- Salanova, M., Llorens, S., Garcia-Renedo, M., Burriel, R., Bresó, E. & Schaufeli, W.B. (2005). Towards a four-dimensional model of burnout: A multigroup factor-analytic study including cynicism and depersonalisation. *Educational and Psychological Measurement*, 65 (5), 807–819.
- Schaufeli, W.B. & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W.B. & Janczur, B. (1994). Burnout among nurses. *Journal of Cross-cultural Psychology*, 25, 95–112.
- Schaufeli, W.B., Leiter, M.P., Maslach, C. & Jackson, S.E. (1996). MBI-General Survey. In C. Maslach, S.E. Jackson & M.P. Leiter (Eds.), *Maslach Burnout Inventory Manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Shaughnessy, J.J. & Zechmeister, E.B. (1997). *Research methods in psychology* (4th ed.). New York: McGraw-Hill.
- Shirom, A. (1989). Burnout in work organizations. In C.L. Cooper & I.T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 25–48). Chichester: Wiley.
- Sluiter, J. K. (1999). *How about work demands, recovery, and health*. Unpublished Doctoral thesis, University of Amsterdam, The Netherlands.
- Snellgrove, S.R. (1998). Occupational stress and job satisfaction: A comparative study of health visitors, district nurses and community psychiatric nurses. *Journal of Nursing Management*, 6, 97–104.
- Spielberger, C.D. & Sarason, I.G. (1996). *Stress and emotion: Anxiety, anger and curiosity*. Washington, DC: Taylor & Francis.
- SPSS Inc. (2003). SPSS 12.0 for Windows. Chicago, IL: Author.
- Steyn, H.S. (2002). Practically significant relationships between two variables. *South African Journal of Industrial Psychology*, 28 (3), 10–15.
- Sulsky, L. & Smith, C. (2005). *Work Stress*. Belmont, CA: Thomson Wadsworth.
- Tabachnick, B.G. & Fidell, L.S. (2001). *Using multivariate statistics* (4th ed.). Boston, MA: Allyn & Bacon.
- Tarolli-Jager, K. (1994). Personal hardiness: Your buffer against burnout. *American Journal of Nursing*, 94, 71–72.
- Ursin, H. (1980). Personality, activation and somatic health: A new psychosomatic theory. In S. Levine & H. Ursin (Eds.), *Coping and health* (pp. 259–279). New York: Plenum Press.
- Van der Colff, J.J. (2005). *Work-related well-being of registered nurses in South Africa*. Unpublished doctoral thesis, PU for CHE, Potchefstroom, South Africa.
- Walker, L.O. & Best, M.A. (1991). Well-being of mothers with infant children: A preliminary comparison of employed women and homemakers. *Women and Health*, 17, 71–89.
- West, S.G., Finch, J.F. & Curran, P.J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 65–75). Thousand Oaks, CA: Sage.

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